UNIVERSAL
LIBRARY

OU_168639

UNIVERSAL
LIBRARY

OSMANIA UNIVERSITY LIBRARY

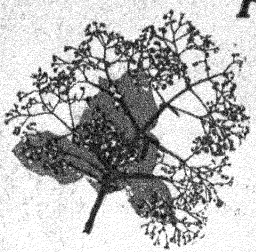
Call No. 634.9 M-C Accession No. G 11280

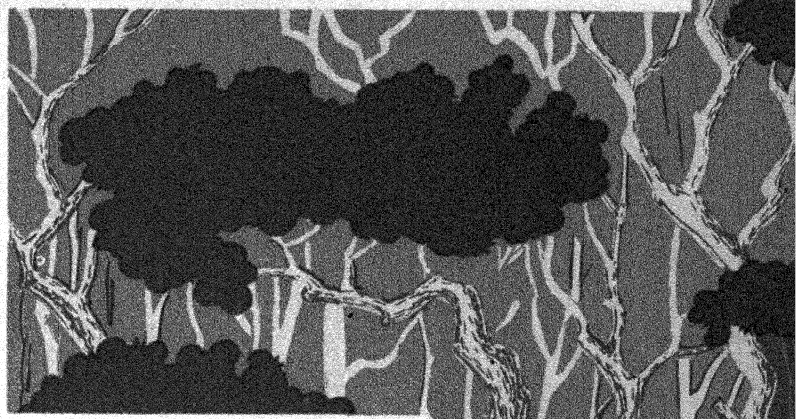
Author Maharashtra. forest Dept.

Title centenary of the forest administration 1847-1962 Souvenir.

This book should be returned on or before the date last marked below.

MAHARASHTRA STATE FOREST CENTENARY





SOUVENIR



1847

634.9
M-C

HEADS OF THE FOREST ADMINISTRATION IN BOMBAY STATE

SUCCESSION LIST

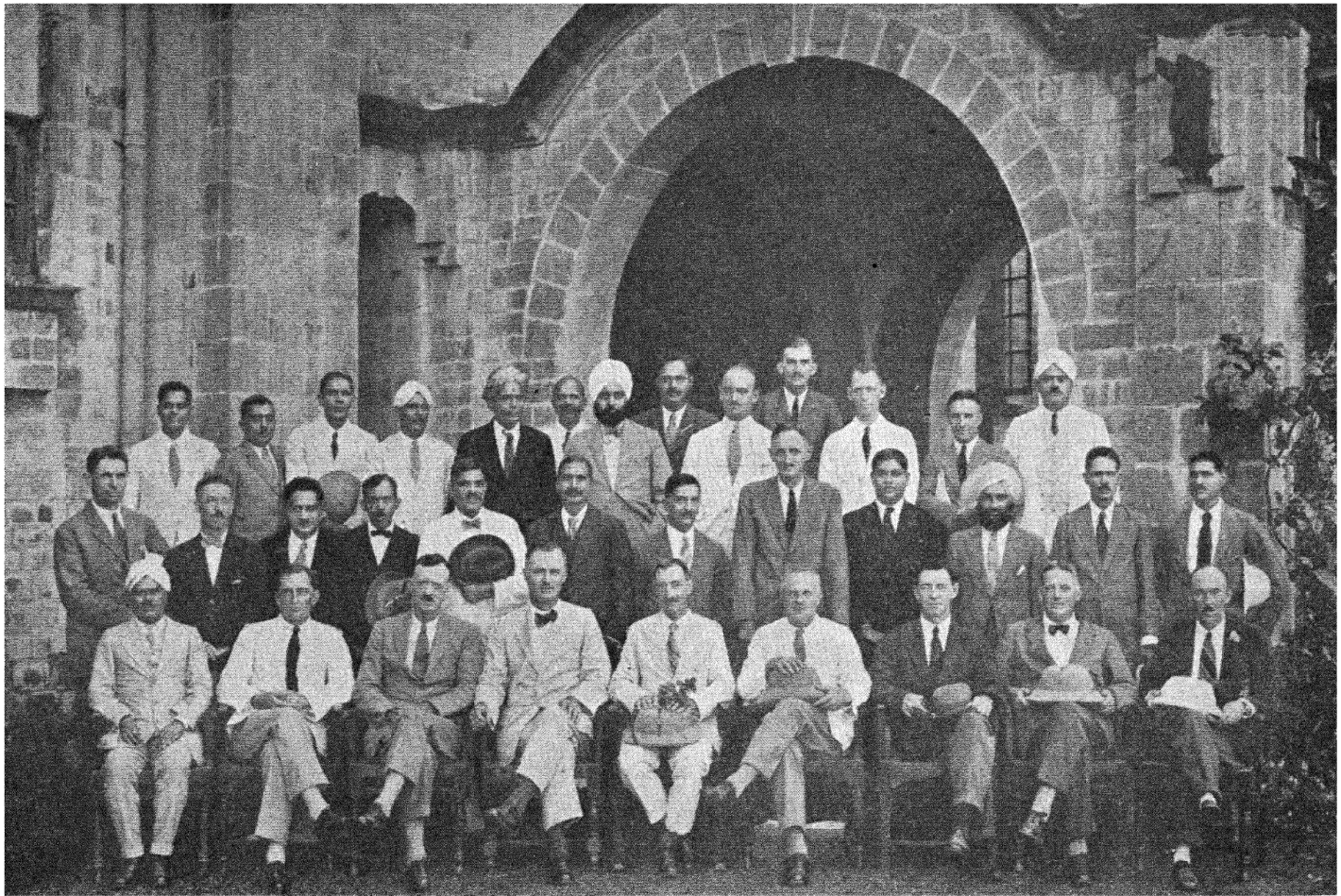


CONSERVATORS OF FORESTS GRADE I

THE PIONEERS

Dr GIBSON 1847 - 1860	W A TALBOT 1900 - 1909
D A.DALZEL 1860 - 1869	.FAGAN 901 -1903
AT SHUTTLEWOI 1869 - 1899	GLEADOW 901 - 1907
COLONEL W PE 1870 - 1887	.D. BELL 902- 1917
Dr SCHLIC 1871 - 1872	MILLETT 902 - 1917
W.S HEXTC 1872 - 1894	MURRAY 903 - 1911
J Mc. CAMPBI 1873 - 1876	I.WILKIN 907 - 1910
J.G Mc. RAE 1876 - 1891	M RYAN 907 - 1910
J.L L.Mc GREC 1887 - 1896	D FISHER 111 - 1920
F R.DESAI 1892 - 1901	OLIVER 12 - 1917
R C WROUGHTI 1893 - 1901	DUXBURY 13 - 1917
W.G.BETHAM 1896 - 1901	COPLESTON 14 - 1920
T.B FRY 1898 - 1901	IAPIER 14 - 1917

[contd on inside back cover]



R. W Inder W A H Sinner J. B. T Brooks

STANDING 1st ROW—Messrs. R P. Dalley H W Starte. T K. Murchandani G R. Patkar N C Ramchandani K. E. Korwal E O Sampson R. F. Sandeman, E. T. C. Vas, G. S Singh. M L. Khanna, A. Rahim.

STANDING 2nd ROW—Messrs. C. G Abichandani W. E Pereira, S. N. J. Ratnagar K V. Mankikar R. K. Kanitkar M. S. Tuggarse J. A Singh Y. R. Divekar. E. S. B. Tavener E. A. Garland J. Walker (Secretary), W. C de C Walsh R. A. Shirali.

THE CENTENARY

OF THE

FOREST ADMINISTRATION

(1817 TO 1962)

SOUVENIR

MARCH, 1962

MAHARASHTRA FOREST DEPARTMENT

Our Cover



FRONT

It is a striking synthesis, of the numerous values conferred by our forests.

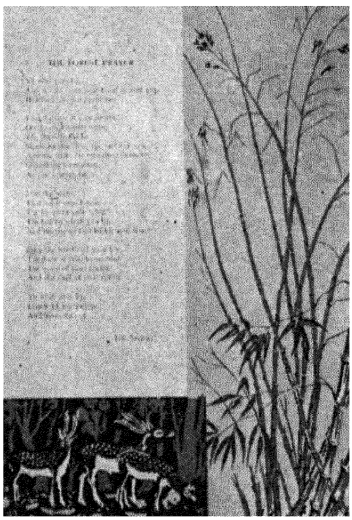
The loftiness of the tree, is given prominence as it symbolises maturity and progress over a hundred years

The vegetation in the back-ground, represents the diverse, floristic wealth, from which innumerable forest products of economic importance are derived

The letter "F" shown in bold relief, proclaims faith in our forests for all the beneficial influences they bestow, for the greatest good of the greatest number

The Tiger "the lord of the forest", brings out the majesty of wild life, as a treasured heritage and the shelter the forests provide to it

The inset on Teak inflorescence depicts the importance of Teak as the principal timber species in our forests The Maharashtra State is one of the largest producers of this prized commercial timber in our country.



BACK

The bamboo signifies the poor man's timber and a potential raw material for paper, pulp and rayon in industrial development

The spotted deer in a sylvan setting, stands for recreational value and sport.

The forest prayer alongside, makes a crowning finale.

1962— PRINTED AT THE GOVERNMENT CENTRAL PRESS, BOMBAY

Contents

PART I

	Pages
Preface	1
Messages	1

PART II Articles from some of the Past Officers

A few rambling reminiscences - *I Walker*	33
Some reminiscences - *J R Deckan*	34
Bombay Presidency to Maharashtra State in retrospect *I A Murchandani*	37
A pressing need, a wise policy, regarding cattle - *S N Kesarcodi*	39
Wild Life Preservation reviewed *R S Dharmakumarsinhji*	41
In retrospect— *D S Kaikini*	44
As I look back *I I Rego*	49
Forest wealth and its development in Maharashtra State *D M Hervatti*	51
Reminiscences of a forester *S J Gulwadi*	55

PART III Articles from some of the Present Officers

Trends in Forestry in Maharashtra State during the last century *R R Chaudhari*	61
The History of the Forest Department *S A Hegmadi*	77
Forest Policy of Maharashtra State *I D Mehendale*	83
Forest Administration in Maharashtra State *S G Bhogle*	93
Forest Protection in Maharashtra State *S S Bist*	97
Forest Development Plans in Maharashtra State *D I Khosla*	104
The role of Working Plans in the Management of Forests in the State of Maharashtra *R B Majumdar and I M Bagle*	110
Wild Life Management in Maharashtra State *I J Karamchandani*	113
Forestry Training in Maharashtra State - *M Y Sawani*	116
Forest Flora of Maharashtra State *I M Qureshi*	120
Silvicultural Research in Maharashtra State— *D A Marballi*	125
The role of Statistics in Forestry *V K Mokashi*	129
Forest Products of Maharashtra State, their Development and Utilisation *I H A Rege*	132
Forest Engineering in Maharashtra State—*N S Subnis*	139
Grazing, Grass and Fodder, in the Forests of Maharashtra State—*C M Joshi*	142

CONTENTS

	Pages
Forest Labourers' Co-operative Movement—Prospect and Retrospect—*U. R. Mavinkurve*	146
Teak plantations in Maharashtra State—*R. B. Kale*	149
Plantations of economic species other than Teak in Maharashtra State—*G. B Dashputre*	154
Babul " Bans " in Vidarbha—*J. C. Sarwate*	160
Farm-forestry—*M. K. Chitre*	162
Forest Settlement and its allied problems—*J. G Thosre and G. S Chandras*	165
Departmental Working of Forests and Saw-Milling in Maharashtra State—*S M Kalbag*	168
Pratapsinh Park, Mahabaleshwar—*T. S Borgaonkar*	170
Taroba National Park—*J S. Burkule*	173
Glory of Allapalli—*G. S. Chandras*	177

PART IV—Notes on Forest Divisions.

Poona Circle—	
Poona Division	181
Satara Division	182
Kolhapur Division	184
Nanded Division	186
Aurangabad Division	187
Thana Circle—	
North Thana Division	189
West Thana Division	191
East Thana Division	192
Kolaba Division	193
Janjira Sub-Division	195
Sawantwadi Sub-Division	196
Nasik Circle—	
West Nasik Division	199
East Nasik Division	200
North Dhulia Division	201
West Dhulia Division	202
Jalgaon Division	203
Amravati Circle—	
Amravati Division	205
Yeotmal Division	206
West Berar Division	208

CONTENTS

	Pages
Nagpur Circle—	
Nagpur Division	210
Bhandara Division	211
Gondia Division	212
Wardha Division	213
Chanda Circle—	
Central Chanda Division	215
West Chanda Division	216
East Chanda Division	217
South Chanda Division	218
Rajura Sub-Division	219

List of Appendicts

Map of Maharashtra Forests

Administrative set-up

Histograms

Succession lists — *Inside Front and Inside Back cover*



Acknowledgement

Co-operation and goodwill, have come forth from all sides, in an abundant measure, towards bringing out this Souvenir

To Shri J W. D'Souza, Director, Government Printing & Stationery, Bombay, and Shri B S Naik, Manager, Government Central Press, Bombay, we are particularly grateful, for accepting the work and producing the commemorative volume in such an excellent style and in record time With them are associated in our gratitude, Shri R B Alva, Assistant Manager, and his staff who have laboured hard to ensure the artistic production of the Souvenir For the attractive complimentary cover and panel designs kindly given us by the Pratibha Advertising, Poona and embellished by Shri P G Shirgaonkar, Art Executive of the Printing Department, we are indebted

We owe thanks to Dr J N Berry, M R C P., M.D, Professor of Medicine, Government Medical College, Nagpur, for his kind courtesy in permitting us the use of some of his excellent photographs, on the forests of Chanda and on Taroba National Park

To all those who have adorned the pages of this Souvenir through their contributions, we are grateful

And to the others who have helped us, all that we can say is a hearty "Thank you" knowing that it is difficult to express our appreciation individually

R R CHAUDHARI,
D V KHISTY,
R. B KALE,
D A. MARBALLI,
I H A REGO

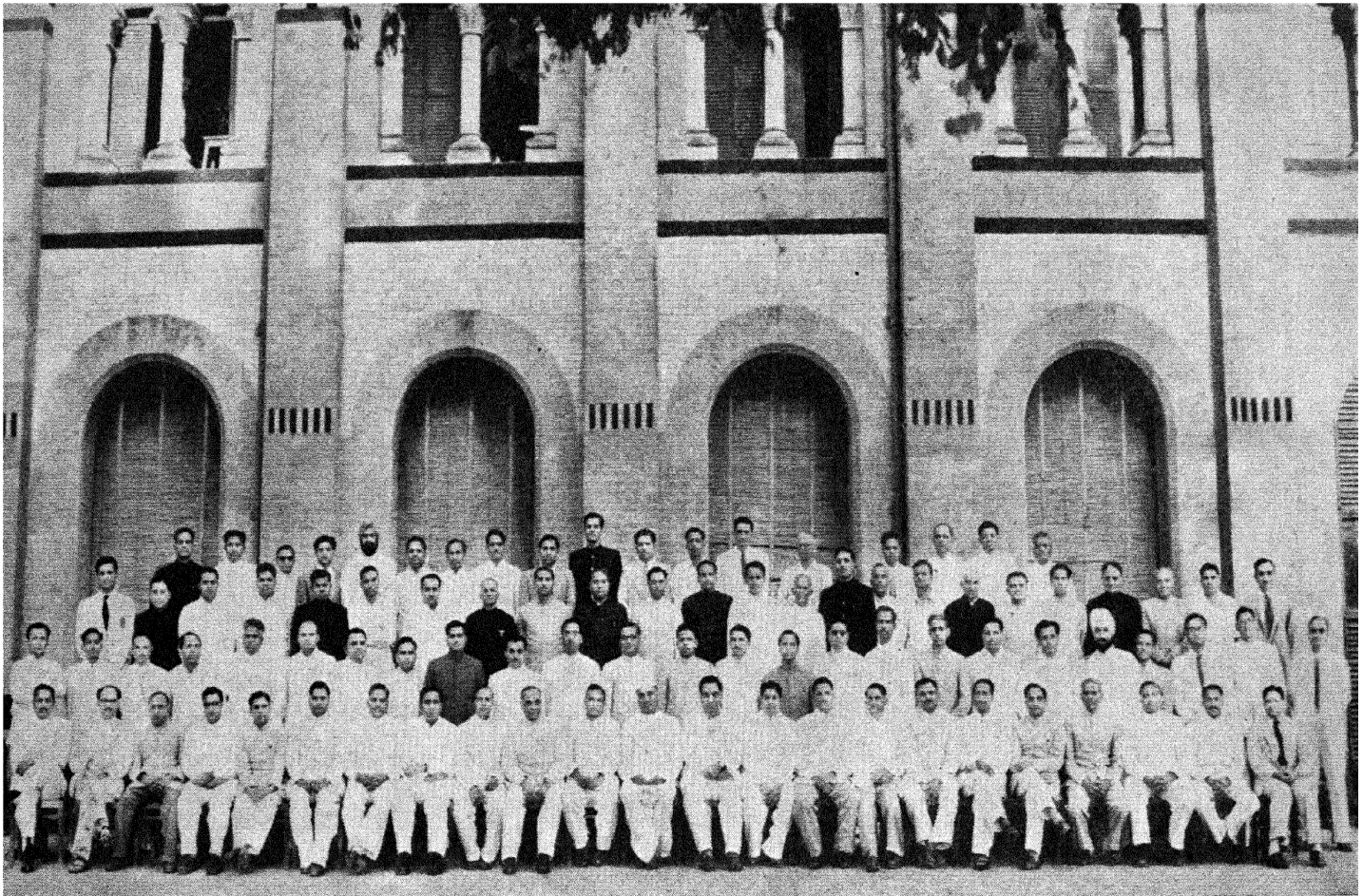
Poona . 1,
January 22, 1962

Editorial Board for
The Forest Centenary Celebrations

(The views expressed by the authors in this Souvenir, do not necessarily reflect those of the Editorial Board)

PART I

PREFACE AND MESSAGES



M. Y. Sowani, G. J. Kharkar, R. G. Patwardhan.

STANDING 3rd ROW (*L TO R*) :—Sarvashri V. J. Ketkar, A J. Madan, P. J Gurjar, V. V. Damle. R. N. Patil, V. K. Mokashi, T. S. Borgaonkar, P. P. Lele, U. B. Patil, V. G. Kekre, P. M. Bhopti, D. D Yellurkar, V. V. Khot, B. T. Bmawala, V. K Prabhu, B. V. Patil, B. D. Koppikar, S. J. Desai, M. N. Vaishnav, M. D Joshi, G. D. Saranjame, R. A. Mandke, V. D. Magre, N P. Choksi.

STANDING 4th ROW (*L TO R*) :—Sarvashri C. K Chaubal, A. R. Moon, B H. Upadhyay, D. V. Narurkar, Kartar Singh, P. M. Naik, R. K. Rathod, R. N. Garge, J. A. Dave, V. K. Sarwate, M. V. Khasty, R. N. Deo, A. M. Patwardhan, N. S. Sabnis, S. B. Kulkarni, N. M. Apte, A. S. Kapashi, P. M. Asabe.

Preface

A CENTENARY is not only an occasion for retrospect but also one for looking forward, seeking pastures anew The Forest Administration in Maharashtra State, has completed a centennial to commemorate which, this souvenir has been brought out. It broadly deals with its origin, its progress over the years since 1847, and its starting point and highlights some of its achievements. It brings into relief, the vital role the forests play in the economy of the State as a whole, and of the rural communities in particular, and calls for unstinted co-operation from one and all in the conservation and development of this valuable, and renewable natural resource, for their general well-being and economic prosperity.

This volume comprises four parts. The first one includes inspiring messages and counsel from the various distinguished personages, for which the Department is greatly beholden. From them we draw hope for the future. The second part records the reminiscences, experiences and the impressions of some of the past officers, who with the others have given their best and helped fashion the great traditions of the Forest Administration in this State, in no little measure. To the present generation of Forest Officers, these would be of much interest and value. The third part deals with the articles contributed by some of the experienced, present officers, on the prime aspects of forest administration in the State. They refer to the present rules and regulations and enactments, their limitations and the ways and means to remedy them, to ensure fuller and scientific development of the forests in the wider national interest. The developmental activities under the Five-Year Plans find a place in this part of the souvenir, which would be of particular interest to the administrators, politicians, legislators, students and the general public. The final part dwells on the various administrative units division-wise and narrates in brief the salient features such as the extension, composition, and the potentiality of forests.

It is gratifying to note that greater recognition has now been accorded to the role of forests in the national economy, as is evident in the enunciation of the revised National Forest Policy, and the implementation of various measures of far-reaching importance such as the Vanamahotsava, Soil Conservation, the growing of species of economic importance on an extensive scale, etc. This State has given a lead to the promotion of Forest Co-operatives which seek to do away with the intermediaries in forest exploitation and to ameliorate the backward economic status of the forest dwellers. This State has also pioneered a comprehensive legislation towards the preservation of wild life in this State. The constitution of a Central Board

of Forestry which meets periodically to discuss the problems relating to forestry, in the country as a whole, has served to focus attention to the all-round development of forests, as an important sector of our national economy, and of forming a liaison between the States and the Centre in this matter.

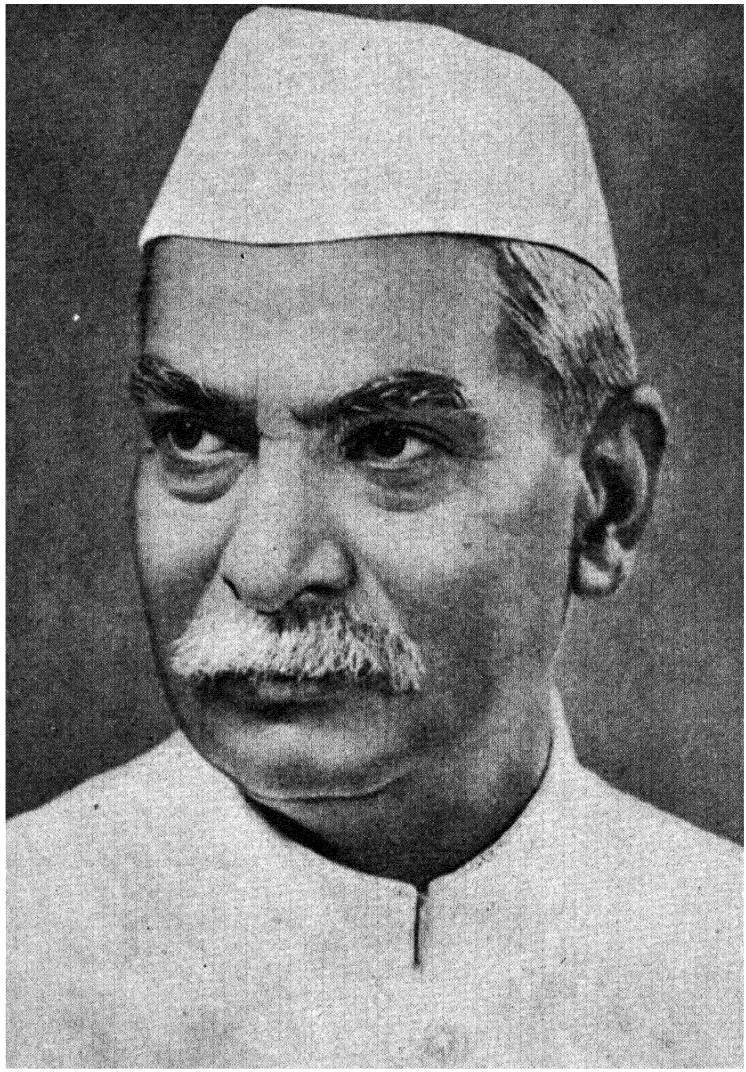
Yet much more remains to be done. The general public who are the real beneficiaries, have to participate with greater zeal and vigour, without whose willing co-operation, it is not possible to effectively conserve and fully develop our forests Our effort in bringing out this Souvenir shall not be in vain if it at least helps instil in the masses the true " Forest Sense " and enlist their wholehearted co-operation in the endeavours of the Forest Department.

In the end I would like to record here, our deep debt of gratitude to all the past officers who have toiled with great devotion to lay firmly the foundation of forestry and to build up the administration in the State against odds. To the present generation they have left a rich inheritance of their labours and striving, which posterity can never forget.

(R. R. CHAUDHARI)
Chief Conservator of Forests,
Maharashtra State, Poona

POONA: *December* 16, 1961





RASHTRAPATI BHAVAN,
NEW DELHI,
February 21, 1962.

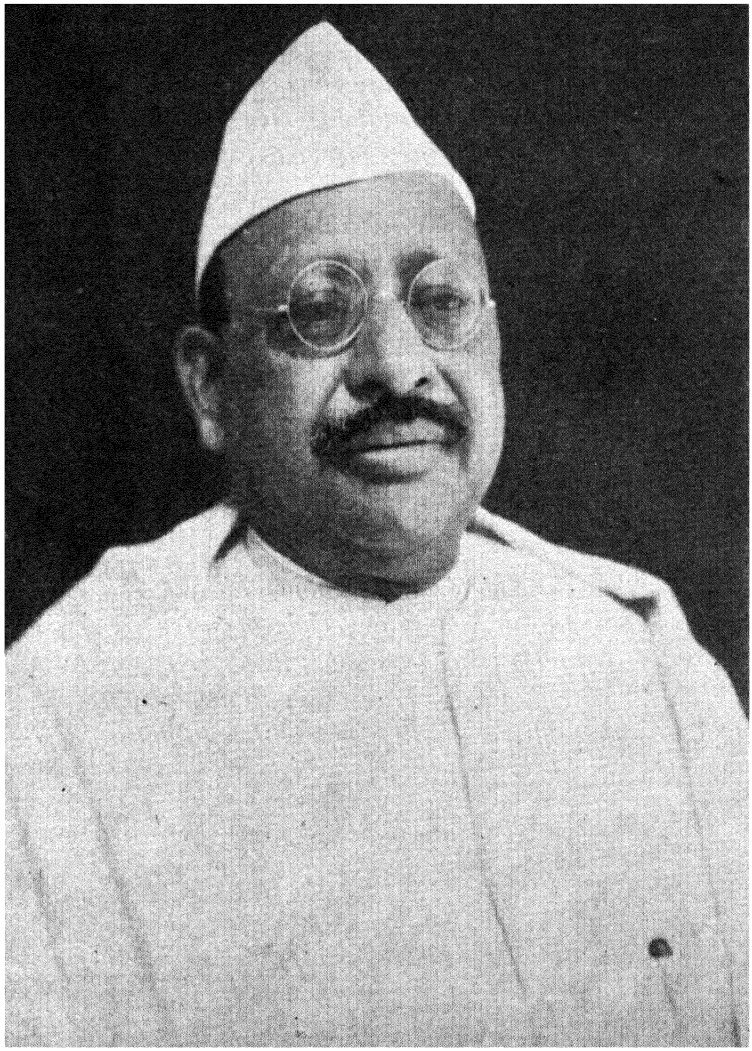
I send my greetings to the Forest Department of Maharashtra State on the occasion of its Centenary celebrations. There are not many things about which it could be said with the same correctness that they combine utility with beauty as one can say about forests.

Maharashtra is one of those States which are particularly rich in their forest wealth Quite a portion of the western ghats flanked by the Sahyadri hills, along with their rich timber and water resources, forms part of this State. Apart from the traditional benefits which forests have conferred on man since the dawn of human society, good many new uses have come to light in recent years as a result of modern researches, so that preservation and development of forests have come to be regarded as an integral part of a nation's economic reconstruction.

I am glad that the Centenary of Indian Forestry, including the Forest Department of Maharashtra, is being celebrated at a time when our people are getting more and more conscious about the place of forests in our national life. I wish the Maharashtra Forest Department Centenary celebrations success and hope that this event will give additional fillip to the good work the Department has all along been doing.

Rajendra Prasad
21.2.62

(RAJENDRA PRASAD),
21*st February* 1962.



RAJ BHAVAN,
MALBAR HILL, BOMBAY 6
December 26, 1961.

I am indeed happy that the Forest Administration in Maharashtra State, has completed a hundred years of its useful service, and is able to celebrate its Centenary under the auspices of freedom

Forests are our glory, the repositories of much of our wealth, and the pleasant homes of many types of wild life They are the source of an expanding range of varied industries in which wood forms the principal raw material They also have an important ameliorating influence on climatic conditions They greatly help in preventing floods, arresting the spread of deserts, and attracting rainfall They are useful and helpful to man in every way

Every advance in our industrialization is and will be reflected in increased demand on the produce of the forest In order to meet this, the area under forests, which is only about 22 per cent at present, will have to be enhanced In advanced countries, forests cover one-third of the total extent of land Our aim is also to achieve this target Our State fortunately possesses valuable and varied forest wealth with great potentialities

If developed on proper scientific lines, there is no doubt that our forests can help the industrialization of the State to a very great extent. This, however, is only possible if Government receive full public co-operation in their high tasks. I have every confidence that this will be forthcoming I wish the Centenary Celebrations all success

Sri Prakasa

(SRI PRAKASA)
Governor of Maharashtra.



SACHIVALAYA,
BOMBAY-32,
January 4, 1962.

The forest administration of Maharashtra State has completed a momentous century of its great national service. During these hundred years, it has been constantly endeavouring to conserve and enrich the forest resources to the general well-being of the people, by sustained supplies of their ultimate needs in respect of timber, firewood and other essential forest produce. It has also been catering to the needs of the industries, railways, defence and such other national projects. No doubt, this task entails constant struggle against heavy odds of hostile environments, involving great physical hardships and numerous hardships in remote and undeveloped tracts. The forest administration of the State deserves hearty congratulations on its pioneering work of laying the foundation of scientific forestry and its [illegible] development for the benefit of the people at large.

The benefits accrued from forests are too well known to be recapitulated by me. They make a sustained contribution to the State Exchequer and earn a sizeable foreign [illegible]. They also bring in valuable indirect benefits like moderating the climatic excesses, conserving soil and moisture, ensuring the sustained flow of springs and rivers, providing natural habitat for wild life, promoting healthy recreation, sport, increase in tourist trade, etc. Thus, one can see that forests play a vital role in national economy, as a renewable natural resource of inestimable value for the predominantly agricultural country like ours. Unfortunately however, this has not been appreciated as yet to the extent required by the general public, the real beneficiaries of the forests, with the result that there has been increasing incidence of illicit cuttings, unauthorised clearances for cultivation, indiscriminate grazing and other wanton violations of the forest regulations. In the context of our growing industries and developing economy, this is highly detrimental to the speedy realisation of our cherished goal of all-sided development and economic prosperity. It is high time that the people in general, realise the responsibilities in this respect and I hope that the centenary celebrations would create requisite consciousness among them and promote a more favourable atmosphere for conserving this valuable asset in our national reconstruction and economic development. Without their wholehearted co-operation, the various ambitious schemes undertaken by the Government under the periodic National Development Plans cannot be successfully implemented. I am sure the impending decentralisation of power, augurs well in giving effect to the useful schemes of vital importance in rural economy such as farm forestry, village panchayat forests, afforestation of catchment areas, road, canal and railway sides and improvement of pastures. I take this opportunity to make a special appeal to the people, especially those living in and around forest areas to take full advantage of the opportunities that have come their way to better their economic conditions as quickly as possible.

Y B Chavan

(Y. B. CHAVAN)
Chief Minister of Maharashtra.

NEW DELHI,
January 3, 1962.



It is with great pleasure that I send my greetings to the Maharashtra Government on the occasion of the Celebration of the Centenary of Scientific Forestry in their State.

Amongst the States and Union Territories as at present constituted in our country, Maharashtra is the third biggest in geographical extent ; her forest area too is the third largest. In the matter of annual out-put of teak which is our most valuable timber, Maharashtra ranks only next to Madhya Pradesh. I congratulate her on the high position she holds in our country in respect of forest resources.

That some of our forests, though not of adequate extent, have been conserved and improved by rigid protection and scientific management is due to the unceasing and devoted toil, during the past 100 *years, of numerous Forest Officers, working often, far in the interior, in difficult and dangerous terrain. Little they could have received by way of appreciation, and less by way of encouragement. Their perseverance, daring and foresight have saved for the nation, the forests on a little over a fifth of the land surface of our country. On this Centenary day, we remember them with affection and gratitude.*

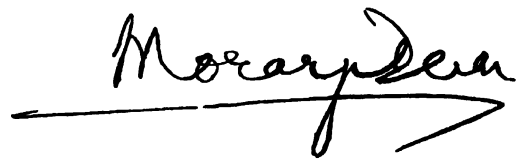
Today there are enormous demands made on the produce of forests by the agriculturists for their requirements of fuel and timber, by the townships and cities, by Railways for coach-building and for the millions of sleepers for their track, by Defence establishments, Posts and Telegraphs, Works, Housing and Supply and Electricity Boards, as well as for the rapidly developing wood-based Industries such as those, manufacturing paper, pulp, rayon, plywood,

matches, chip boards and a variety of other products needed in modern civilization. We now find that our present extent of forests is inadequate to meet these demands and we are faced with grave deficits in the near future.

Equally great is the need for forests, for their protective and ameliorative values. Forestry is a long-term enterprise, and we have to look well ahead and plan for our future requirements. The questions must be posed : " Are the forests being administered so as not to dwindle in extent ; are they being improved in quality and productivity so as to meet our increasing demands ; are they being protected rigidly so as to enable them to confer on us those intangible benefits of climatic improvement, prevention of floods, preservation of underground water resources, maintenance of steady and even flow of water in the streams, and lengthening of the span of life of our costly reservoirs—benefits which do not enter the financial assessment of the worth of our sylvan estate ?

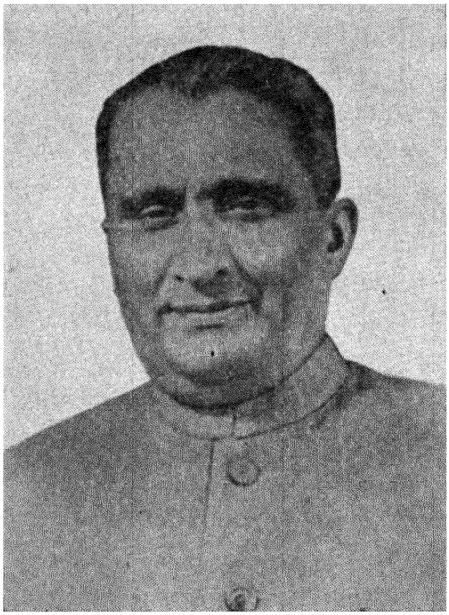
I cannot help feeling that, viewed in this light, our forestry administration all over the country will reve[illegible]ng draw-backs. The trouble is that forests are susceptible to severe local pressures, and our administrators do not seem to be able to resist them even though they are persuaded that the gains obtained, if any, are purely local and temporary. But if we desire the achievement of a balanced, [illegible] and prosperous economy, we must learn to be sensitive to the voice of posterity which may condemn us for our present failure and shortness of vision, or bless us for our [illegible] statesmanship.

The eyes of the foresters are trained for the vision of the future. I do hope that our Governments will give due consideration to their technical advice, rectify the defects in the present trends, and assist the country to march forward into an orderly, stable and permanent prosperity by [illegible] with wisdom one of our most useful natural resources, the Forests. With this earnest hope, I wish the Forest Centenary Celebrations of the Maharashtra Government every success.



(MORARJI DESAI)
Finance Minister, Government of India.

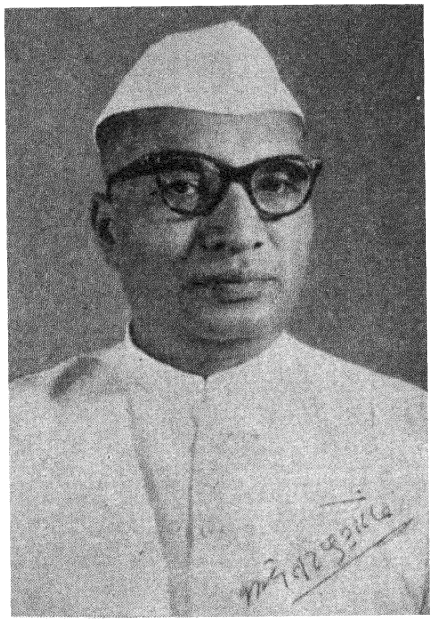
NEW DELHI,
December 27, 1961.



I send my hearty greetings to the Maharashtra State on the occasion of their Forest Centenary Celebration. Steps for regular Forest Conservancy and scientific management of the Forest estate appear to have been started in this region earlier than anywhere else in India, the first Conservator of Forests having been appointed in 1847. *Teak is an important element of the forest resources of this State and it is gratifying to note, that teak-bearing areas have been properly developed, and continue to contribute substantially to the national requirements of this valuable timber. In recent years also, the lead for the protection of Wild Birds and Animals has been taken by the erstwhile Bombay State in* 1951, *by enacting suitable legislation. Forests play a very important part in the prevention of erosion and their management on scientific lines is therefore, essential for maintaining productivity of our soils. In Maharashtra, there is considerable scope for extending the forest areas because forests cover less than* 13 *per cent. of the land surface in the State, against an average of* 33 *per cent. prescribed in the National Forest Policy. I trust that in the years to come no pains will be spared by the Maharashtra State towards the scientific expansion, management and exploitation of its forest resources. I wish the State Forest Department a second century of useful work.*

(S. K. PATIL)
Minister for Food and Agriculture,
Government of India.

SACHIVALAYA,
BOMBAY-32,
December 26, 1961.



A centenary is a milestone in the annals of an administration, the crossing of which means so much maturity and wealth of experience gained over the years. It is a matter for pride that the forest administration in the country as a whole took its starting point in Bombay and since then has made great strides. The attainment of independence increased the tempo of developmental activities, particularly of forests, in catering to the ever-increasing demands of a host of industries, in the sphere of rural economy and in providing sustained employment not only in the forest but in the various industries sustained by them. Their contribution to the railways, defence and other national needs has been of no mean measure The indirect benefits like the moderation of the climate, conservation of soil and regulation of the streamflow, and the recreational and aesthetic value, derived from forests, have now come to be recognised more and more. The forests can confer all these beneficial influences only if the optimum area is under the cover of forests as laid down in our revised National Forest Policy.

It is our national obligation to conserve our forest resources so as to be in a position to meet the growing needs of our developing economy. Therefore, it is on all of us, to preserve our forests and to enrich them by all means within our command.

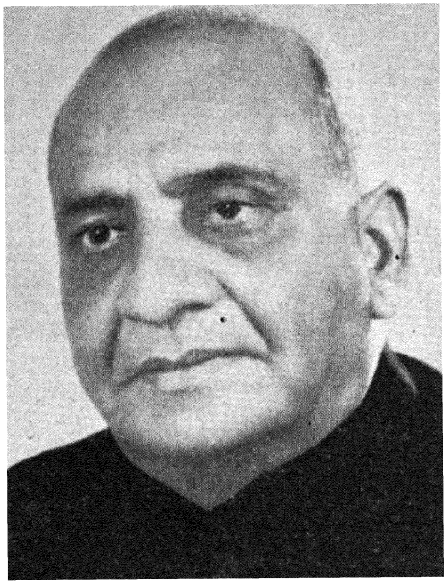
On the occasion of the Centenary Celebrations, I send my hearty greetings to the foresters and wish them all the best in their endeavours towards the cause of forestry. Our thoughts go back to the services rendered by the past generations of foresters of the State who have done pioneering work, the fruition of which we see today.

May the forests in this State grow and flourish for the betterment of mankind.

Bhagwantrao Ghade

(BHAGWANTRAO GHADE)
Minister for Rural Development and Forests,
Government of Maharashtra.

NEW DELHI,
December 21, 1961.



Over the past one hundred years the State of Maharashtra, or rather the territorial unit which in recent years goes by that name, has made very good progress in various aspects of forest administration. The province of Bombay (which was the parent of the present State) saw the beginnings of scientific forestry even earlier than eleven decades ago, for it was on the 22nd of March, 1847, *that the first Conservator of Forests, Gibson was appointed. From small beginnings the area in the charge of the Forests Department has been increased till it now stands at nearly* 22,000 *sq. miles and is about* 18 5 *per cent. of the land surface of the State.*

The total annual out-turn of timber is 12·8 *million c. ft. and of firewood* 53 4 *million c. ft. The revenue rose from Rs.* 12 *lakhs in* 1870-71 *to over Rs.* 577 *lakhs in* 1959-60 *i.e. an increase of about* 48 *times. In the last mentioned year about* 1,48,000 *acres of forests were exploited and the area artificially regenerated was* 23,590 *acres including areas covered under special afforestation schemes. There are* 3,583 *miles of forest roads through which forest produce flows to the centres of trade. This produce maintains numerous saw mills and industries making paper, pulp, matches, plywood, boards, katha, pencils, essential oil and a host of other useful products. The State has also the distinction of being the first to enact a comprehensive Wild Animals and Birds Protection Act, as early as in* 1951.

While all this achievement is on the credit side, I cannot help deploring the enthusiasm with which the State has in recent years been releasing forest areas for the landless. It is a matter of arithmetical calculation that if it is proposed

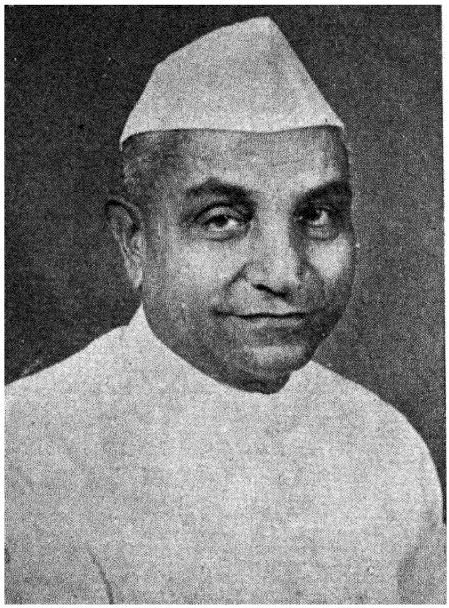
to distribute land to each of the 400 million people of our country, we shall not be able to retain a square inch of our forests. It is already well known that deforestation and poor treatment of forests on considerable areas, have been responsible for the recurrent disastrous floods, for losses of billions of tons of fertile soil each year, for the spreading of arid conditions in our country and for the low levels of our agricultural production. The National Forest Policy has indicated that the optimum proportion to be aimed at, is one-third cover of the land surface by forests. Maharashtra has less than a fifth of her land under forests and yet it is surprising that they propose to release 3 50 lakh acres of forest in the name of appeasing land hunger.

These are sad and glaring draw-backs in the implementation of policy, which I hope will be rectified early in the century of forest administration to follow I do not, however, blame the technical staff who have toiled hard for over a century to conserve, improve and add to the forest estate against great odds. I am sorry that their troubles are not yet over but I do hope that they will continue their missionary work with unabated zeal and win the blessings and plaudits of posterity, if not of the present generation.

I wish the Forest Centenary Celebrations of Maharashtra all success.

(P. S. DESHMUKH)
Minister for Agriculture,
Government of India.

SACHIVALAYA,
AHMEDABAD,
January 12, 1962.



I am glad to learn that the Government of Maharashtra is celebrating the Centenary of the Forest Department, this month. From ancient times, forests remained the source of spiritual and material inspiration and prosperity in this country. In the modern age of science and technology and its consequent impact on human outlook, rendering it almost entirely materialistic and utilitarian, as far as the natural flaura and fauna are concerned, revival of a synthetic and corporate spiritual outlook towards nature is highly desirable. I have, therefore, every hope that in the Centenary Celebrations the message of our ancient forests—a place where the chasm between man's material and spiritual beings is bridged—is revived and developed as a sacred legacy.

(JIVRAJ N. MEHTA)
Chief Minister of Gujarat.

VIDHANA SOUDHA
BANGALORE-1,
January 11, 1962.



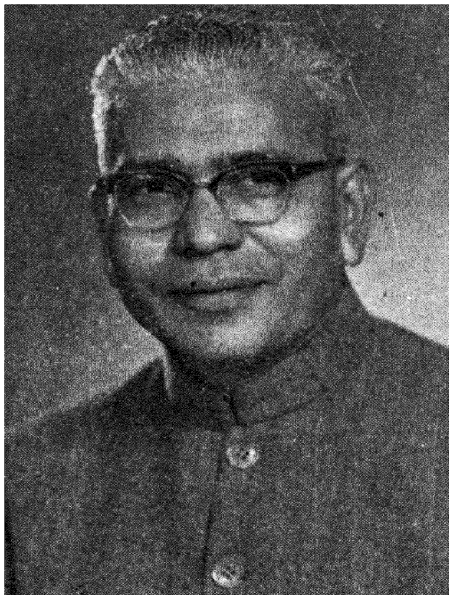
I am glad to hear that Government of Maharashtra have decided to celebrate the Centenary of their Forest Department during January 1962.

Like the proverbial banyan tree, Forests are associated with mankind from times immemorial. They speak of human progress and continue to be benevolent to mankind, despite its occasional uncharitable disposition towards them. They also disclose how ancient civilizations have disappeared from the face of the earth, for the simple reason that man did not pay proper attention for the maintenance and development of forests. I am happy to note that of late, man has become conscious, of both the importance of forests for his progress and the immediate need for their rehabilitation and development for future progress. A period of 100 *years in the history of forests is nothing. What is done by man during that period for the betterment of forests will perhaps give dividends only thereafter. I earnestly hope that the occasion which you have decided to celebrate will make us and particularly the " Foresters " more devoted towards forests and our future programme for the betterment of forests will receive due encouragement both from the general public and the Government.*

In sending you my very best wishes, I join your celebrations, though not in person, at least in spirit.

(B. D. JATTI)
Chief Minister of Mysore.

SACHIVALAYA,
BOMBAY,
January 5, 1962.



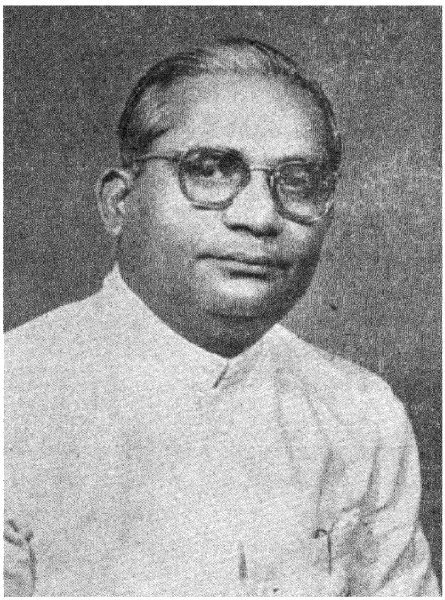
In a rural economy like ours, forests play a vital role. They confer values, both direct and indirect, that promote human welfare. They regulate the stream flow, check soil erosion, ameliorate the climate and provide raw materials to a host of industries, thereby contributing to the prosperity of the country. Therefore, it is our national duty to see to it, that forests are developed on sound and scientific lines.

I am happy to note that the Forest Administration of our State has completed hundred years of its useful service to the people, and that a souvenir is being brought out to mark the occasion. I send my best wishes for the success of the centenary celebrations.

V. P. Naik.

(V. P. NAIK)
Minister for Revenue,
Government of Maharashtra.

SACHIVALAYA,
BOMBAY,
January 13, 1962.



Hundred years of planned development is a matter of no small pride and deserves all praise for those who toiled and sweated and worked hard to shape the destiny of the Fauna and Flora of the wilds of Maharashtra. I need not repeat here the advantages that resulted from these developments, as they are far too obvious. However, I am glad that our Forest Department has a watchful note in its observations, of the progress made so far and is conscious of the great strides made by other countries in the field of forest development. I have no doubt that our officials and workers possess the ability and the right spirit to catch up with them.

I wish them all success.

(S. K. WANKHEDE)
Minister of Finance,
Government of Maharasht

SACHIVALAYA,
BOMBAY-32,
January 5, 1962.



It gives me great pleasure to learn that the Forest Department of our State is celebrating its centenary in January, and that it will publish a Souvenir on the occasion.

Like other Departments, the Forest Department also, has been doing its best in making the State a welfare one and adequately fulfilling the targets of the Five-Year Plans of the country.

I wish the celebrations and the Souvenir a big success.

(S. G. KAZI)
Minister for Civil Supplies, Housing, Printing Presses, Waqfs and Fisheries, Government of Maharashtra.

SACHIVALAYA,
BOMBAY-32,
January 2, 1962.



It is a matter of great pleasure to us that the Forest Department of our State is completing a hundred years of its useful service and is going to celebrate its centenary in January.

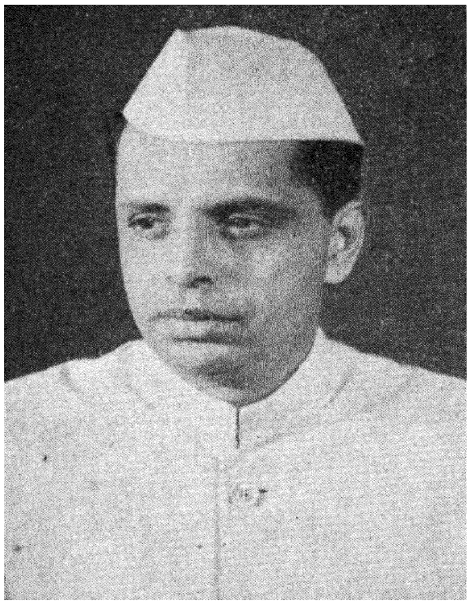
The forests of our State cover an area of about 26,000 *square miles, constituting about* 21·8 *per cent. of the aggregate land area of the State and fetch an annual revenue of about Rs.* 577 *lakhs. This is a good progress our State has made in the last* 100 *years.*

It is further gratifying to note that the Department is publishing a souvenir to commemorate the occasion.

I wish the celebrations and the souvenir all success.

(P. K. SAWANT)
Minister for Agriculture,
Government of Maharashtra.

SACHIVALAYA,
BOMBAY 32,
December 18, 1961.



Nothing could give me greater pleasure than to send this message of joy and felicitation on the occasion of the celebration of the Centenary of the Forest Administration of Maharashtra. The variety and wealth of forests in Maharashtra are well known throughout India. That we have been very well nursed by a competent administration is equally well known.

As a result of that, we find today that our forest resources and products have been on the increase, and that a good many of our development schemes have been going ahead with the assistance provided by our forests. Apart from their beauty and wonder, the utility of forest resources is very important.

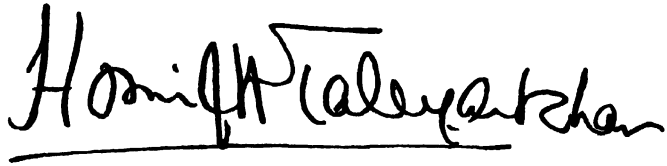
Over the recent years the revenue from forests has risen appreciably but naturally along with its growth, so has the expenditure. The quality and quantity of our timber and firewood produced from our forests, good and large as they are, could be better still, if there was a greater realisation of the importance of preservation of these great elbows of strength for the development of any State.

Illicit cutting of trees, the burning of lands and consequently the uprooting of the very foundations of the forests, have been responsible for the depletion of the great glory of jungles and forests in the fair land of Maharashtra. One of the most important schemes is the plantation of valuable trees. The necessity of realising the value of trees in a country, which is endowed with a very beautiful galaxy of trees is very great; for, if their worth and their wealth, which is our gift, were realised to the extent they should be, there would be no such indiscriminate cutting of trees, all over the country.

Such slaughter is really criminal, because it deprives the country and the State not only of its beauty but also the prospects of its development through them.

Yet, one more important aspect of the Forest administration, is the preservation of wild life which flourishes in the forests and jungles of Maharashtra. Connected with that is Tourism to some extent, because wild life attracts tourists both from the point of view of shikar, but what I would like to stress more, from the point of view of the grandeur and thrill of the spectacle. I am particularly interested in its proper preservation, and forests like those of Radhanagari in Kolhapur District and Tadoba in Chanda District among others, have much to offer in the shape of wild life, if only proper care were taken and full co-operation extended to prevent their wanton destruction.

I congratulate the Forest administration on the performance of a hundred years' work well done.



(HOMI J. H. TALEYARKHAN)
Minister for Public Health, Small Savings and Tourism,
Government of Maharashtra.



AHMEDABAD,
December 29, 1961.



I consider it a great pleasure to convey, on my own behalf and on behalf of the Gujarat Forest Department, most sincere and cordial greetings on the occasion of the Centenary Celebrations of the Forest Administration in Maharashtra State. The State of Maharashtra has come into existence only recently and therefore, these centenary celebrations are " ipso facto " the celebrations on the completion of 100 *years of the existence of the Forest Administration of the ex-Bombay State of which Gujarat State was till recently an integral part. One hundred years in the life of the forests is not a very long period as a single generation of trees, in fact, often takes more than a century to grow to maturity. The development of forests is therefore, a process of centuries and requires sustained efforts of the Foresters for the scientific development of the forests. During the last* 100 *years the State Forest Administration has established high standards of efficiency. Particularly in the field of forest co-operation, it is a matter of pride for the State that other States of the Indian Union are emulating the working of the Forest Labourers' Co-operative Societies. On this auspicious occasion, therefore, I extend hearty greetings and hope that the high standards already established would be maintained, nay enhanced. I wish the Forest Department of the Maharashtra State God-speed and a very bright future.*

Hitendra Desai

(HITENDRA DESAI),
Minister for Education, Agriculture and Law,
Government of Gujarat.

VIDHANA SOUDHA,
BANGALORE-1.
January 5, 1962.

The idea of bringing out a Souvenir by the Forest Department of the Maharashtra State on the occasion of the Centenary Celebrations in the third week of January 1962 *is a welcome step inasmuch as it is the retrospection on which have to be based the plans for future progress. The Souvenir will, I hope, serve as a guide to the futurity of the Forest Department to be corked out and used. The forests of the country are the back-bone of industrial resources and we will do well in developing the forests to the fullest extent. It is a matter of gratification that the Maharashtra Government has made commendable strides in this behalf and I am much impressed.*

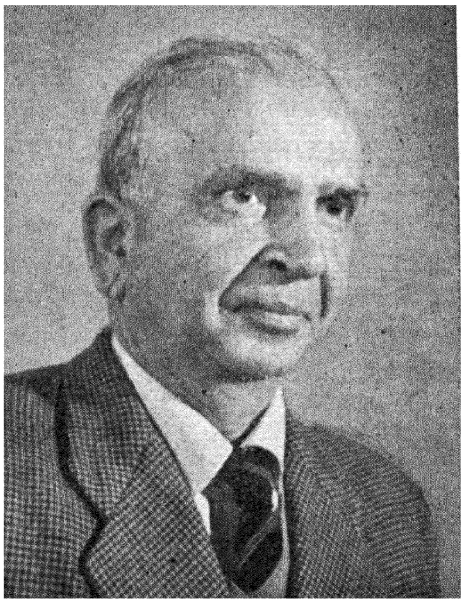
I wish the Centenary Celebrations every success.

H. S. Rudrappa

(H. S. RUDRAPPA),
Minister for Forests,
Government of Mysore.



NEW DELHI,
December 18, 1961.



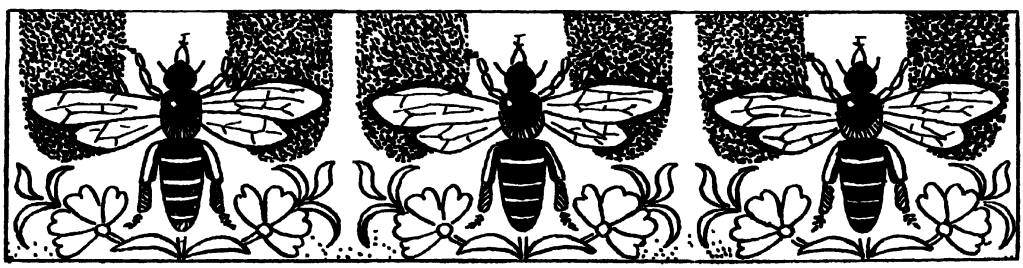
I have great pleasure in sending my warm greetings to the Forest Officers of Maharashtra on the occasion of the Forest Centenary Celebrations in their State. Devoted toil by successive generations of forest officers has brought into proper shape, the woods standing on about one-eighth (12·5 *per cent.*) *of her total land area, constituted as Reserved Forests. Forests on another* 6 *per cent. of her land surface, could apparently be offered less stringent protection, being burdened with rights, and those on another* 3·3 *per cent. of the land are still administered by the Revenue Department or private owners and are in various stages of deterioration.*

It is within about 15,000 *sq. miles of Reserved Forest which forms the core of the woodland estate of the Maharashtra that steady and impressive development and improvement have taken place ever since the appointment of the first Conservator of Forests, Dr. Gibson in* 1847 *more than eleven decades ago. Other forest regions of India may have come into the lime-light more often than those of Maharashtra but her contribution of timber towards national needs including large quantities of valuable teak has been extremely useful.*

By the standards set by the National Forest Policy, Maharashtra falls far short in the extent of forest cover. Hence the immediate need is for the Forest Department to consolidate the non-reserved forests by reserving them and taking over the present poorly managed "Revenue" and private forests for putting under sound systems of silvicultural treatment. It is a well known fact that wood-based industries are already feeling the pinch of timber shortage very keenly, and so are our essential Government Departments, such as Defence,

Railways, the Electricity Boards and Public Works. The Planning Commission is very anxious about the life of our costly River Valley Projects. There is great need to counteract droughts, water shortages, floods, dust storms, soil erosion and climate deterioration which are continually depressing our agricultural production. There is no doubt that in order to meet these various needs of the State and the Nation, there should be a substantial increase in the effectively protected and well managed forest area of Maharashtra—an increase at least upto one-third of her total land area This is the task which I hope the Maharashtra Government will set to itself, with far-sightedness and true statesmanship. With this ideal in view, may the Maharashtra Forest Department enter on another century of useful achievement.

V. S. RAO,
Inspector-General of Forests,
Government of India.



NEW FOREST, DEHRA DUN (U.P.)
September 13, 1961.

I am very glad to learn that Maharashtra is celebrating the 1st Centenary of its Forest Administration in January 1962, and hasten to send my greetings.

The Vidarbha region of Maharashtra was a part of the old Madhya Pradesh where I served in various capacities continuously from 1927 for over 25 years I have very pleasant memories of the time spent in these forests and of the association with the officers who worked in them. These forests have been carefully conserved and tended in the past. The famous Allapalli and Melghat forests of this region today, constitute one of the most valuable forests of Maharashtra. I am sure the new generation will see that these are progressively improved. The Forest Department of old Madhya Pradesh is well known for its espirit de corps *and for the meticulous care with which it regulated the privilege of user to ensure that the productivity of the forests is not impaired. Outside Vidarbha, Maharashtra has forests which have a great potentiality When these are developed, as I am confident they will be, Maharashtra will have a very enviable forest estate.*

I send my best wishes for the realization of this consummation and for the success of the function.

K. P. SAGREIYA,
President,
Forest Research Institute and Colleges.



CAMP CHINTAPALLI
(ANDHRA PRADESH)
January 13, 1962

I should like to send my wishes to the Forest Department of the State, on the occasion of the celebration of the completion of a century, since the commencement of organised management. On such occasions, it is not only appropriate to take stock of past accomplishments and the stage already attained, but still more, to look forward to the tasks ahead, and the prospects of success in undertaking them.

The competence of the Forest Department to make continued progress in the efficient management of the better forests cannot be questioned. Success in [illegible] quality and quantity of timber outturn is assured, provided there are no retrograde changes in national policy in respect of these forests. There is still scope for very considerable advance, as the benefits of intensive management naturally take time to show themselves, and extension over the large areas involved, can obviously not all be done at once. Concurrently there will be improvements in extraction, milling and processing, though these will be difficult of advancement unless working is organised in big enough units, (assured of supplies for a reasonable period of years) to justify the considerable investment of capital, without which they are impossible. As to demands for forest produce, it is apparent that they are at present insatiable and seem unlikely to fall for a long time ahead. As fast as wood is threatened with displacement for one purpose, new techniques are developed to modify it suitably or new uses are found, for wood is a most adaptable material.

But perhaps the bigger and more difficult task which is being thrust on the Forest Department, throughout the country, is the reclamation of waste and unproductive lands most of which were formerly tree-clad but have been denuded and abused in every possible way, till not only the supply of timber, fuel and fodder has been lost, but the soil itself has been washed and blown away, and only a few of the hardest plants can grow even with protection. This task is rendered doubly difficult by the unwillingness of Government to recognise the inevitability of still further extension of wilderness conditions, if overgrazing and unwise clearing for temporary, often very low productive cultivation, is permitted in areas at present classed as forests. However, it can be predicted that sooner or later it will be realised that the prevention of further degradation and the reclamation of the waste areas already degraded, are of prime importance in the interest both of the local people most directly affected and the State itself.

This reclamation work is inevitably nearly always very slow, difficult and costly and at the same time it is bound to be unpopular, but it has got to be done. Foresters still have a great deal of experimentation to do, to find the best techniques for the varying conditions met with ; the sooner this is done the better. Absolutely essential to the success in wide scale application of these techniques, is the firm support of the administration, both State and local. That support must take the form of the provision of adequate staff, equipment and finance, together with a drive to bring a better understanding of the vital issues involved to the general public, and particularly to the rural population and their leaders. Without this, little or nothing can be achieved. May it take far less than another century of effort to see a vast [illegible] in this field.

H. G. CHAMPION,
Colombo Plan Expert.



DURBAN,
October 20, 1961.

I send you my best wishes for the continued success of the service.

H. HOWARD,
Inspector General of Forests, India.
(Retd)

SALISBURY, S. RHODESIA,
October 14, 1961.

I welcome this opportunity of offering my good wishes to all—and I add my congratulations to the Maharashtra State Government, and its forest staff, for its fine contribution to the forests of India as a whole. There never was any question when our generation left, that our successors were not fully competent and qualified to maintain and even improve, the high standard of the State's forest estate—and you had, besides, the incomplete and the additional task of post-war reconstruction to carry. From the little I have heard and read, of your Province's doings and the results achieved, I raise my hat to you all.

Receiving your letter took me back to the many happy years, I had in India My wife and I often recall those happy days, particularly those in camps in the forests and we sincerely hope a day will come when we can visit India again and renew old acquaintances.

Best wishes and good luck.

W. DE. C. WALSH,
Chief Conservator of Forests, Bombay.
(Retd.)

40, HEATHHURST ROAD, SUNDERSTEAD,
SURREY, ENGLAND,
November 17, 1961.

From all accounts, India has made great strides forward, since the transfer of power and I sincerely hope that her progress will continue until a real state of prosperity for all is reached.

R. F. SANDEMAN,
Conservator of Forests, Bombay.
(Retd)

41-LOWER RICHMOND ROAD,
LONDON, S. W. 15, ENGLAND.
October 9, 1961.

It gives me great pleasure to respond to an invitation to contribute my mite, in words, to the centenary commemorative volume of the Maharashtra Forest Department.

Separated as I am from the scene of my labours by six thousand miles in distance and ten years in time, I can claim to be in a position to review and examine, in a fairly detached manner, all that affects forestry in Bombay. The thirty-three years (1918-51) *of my connection with it, saw many changes in the administrative set-up of the Department. We went through periods of great humiliation, unjust and wholesale condemnation from people who were no better than us and whose only motive was one of perpetuating their security and also through periods of hope and high morale. What really brought about this, was the fact that Bombay was one of the first two Provinces in which the Forest Department was "transferred" and we could not then have made a better start than with C. V. Mehta as the first Indian in control (though his successors were not of the same calibre). The Indian personnel never looked back from that date and obtained more and more share in the management of our forests, despite repeated attempts to depress their status. All this points to one lesson : set your servants a good example and give them their due, in responsibility and in wages, and you, the State, need not worry Only a good master can keep good servants, a bad master loses good servants fast, such a master can attract only bad servants.*

Turning to forestry itself, no system of management is worth a moment's consideration which does not safeguard the soil, both from prolonged exposure to the sun and from erosion, particularly in the present Bombay State extending as it does wholly on the Deccan trap. The measures to adopt would comprise : (i) selection of an appropriate system of exploitation and regeneration, (ii) limitation of the herds of useless cattle, (iii) changing the charcoal economy of Bombay and other large cities to modern fuels and (iv) conserving and harnessing the immense quantities of rain that fall on the Western Ghats only to drain away rapidly into the sea. The whole region is drying up as a result of inattention to these essential measures.

Tropical countries and least of all the Deccan, are not suited to a pastoral economy. Cattle-keeping must therefore be strictly regulated by suitable laws.

Cost accountants have a way of turning down hydro-electric schemes among others, as not economic propositions. So was the Bombay Reclamation Scheme. No cost accountant can foresee the future nor can he correctly evaluate all the factors of human welfare Electrical power could truly be the untapped wealth of mineral-deficient Bombay State. Once that is developed all else will follow.

Many of our industrialists seem to be under the illusion that if they provide money and import some machines they can establish an industry. They are far too often apt to forget two more essential 'm's—men with technical knowledge and material to feed the machines Some of our politicians share another common illusion that our forests are rich enough to provide raw materials for a host of industries. It is the duty of the forester unpleasant though it is at times, to educate such groups to realise that tropical forests are in reality too poor relatively, to support modern industries

This leads me finally to the question of educating our masters—the public and their representatives, the politicians Alas, the ordinary forester is more at home with his trees and seedlings than with the public and therefore his case goes by default Success in these days, for corporate bodies as well as for individuals, depends so much on public relations. The truth of this, is so well realised in the West, that big corporations, Government Departments and even some Governments employ people or agents to handle public relations. I would advise as a first step, every forester of whatever rank, to welcome opportunities of speaking in public, in village gatherings, taluka and district committees so that forestry and the forester's work are better understood and appreciated.

I am indeed delighted that a truly Bombay man is at the head of the Department on the occasion of the first centenary, and hope that a tradition of sound orestry and efficient service to the State will be firmly established

S. N. KESARCODI,
Conservator of Forests, Bombay.
(Retd,)

SHAIKH MEMON STREET, BOMBAY 2
October 5, 1961.

On the occasion of the celebration of the Centenary of the Forest Administration of Maharashtra State, I pay my homage to the silent, hard-working band of foresters who in the face of numerous difficulties tried to bring the forests to their present state. I wish the function every success.

S. P. PANDYA,
Conservator of Forests, Bombay.
(Retd)

MEN OF THE TREES PLANTING SONG

(Tune : Men of Harlech)

Rise, and sing in exhortation,
Spread the world in tree plantation,
Be there no back-sliding nation,
Slothful, and at ease.
Danger lurks in lazy motion ;
Treeless lands run rain to ocean,
Bringing famine, soil erosion,
Chaos, and disease.

Mother-Earth is waiting,
Sapling trees for mating ;
Forth with spare them to her aid, and
Rally to her reafforestating
Land and water conservation
Be our aim, New Earth Salvation,
Work for good of every Nation,
Brothers, guard the Trees.

Without trees the world would languish,
Man would faint and die in anguish ;
Ignorance we'll fight and vanquish.
Heal the earth with trees,
Trees for beauty, inspiration
Trees for future generation
Trees for health and sure foundation,
Heaven bless our trees.

Mother-Earth is waiting
Sapling trees for mating ;
Forth with spare them to her aid, and
Rally to her reafforestating
Land and water conservation,
Be our aim New Earth salvation,
Work for good of every Nation,
Brothers, guard the Trees.

—T. ANDREW DRAPER.



PART II

ARTICLES FROM SOME OF THE PAST OFFICERS

SALUTE TO THE TREES

Many a tree is found in the wood
And every tree for its use is good ;
Some for the strength of the gnarled root ;
Some for shelter against the storm,
And some to keep the hearth stone warm,
Some for the root and some for the beam,
And some for the boat to breast the stream ;
In the wealth of the wood since the world began,
The trees have offered their gifts to man.

But the glory of trees is more than their gifts,
'Ts a beautiful wonder of life that lifts, from a wrinkled seed in an earthbound clod,
A column, an arch in the Temple of God,
A pillar of power, a dome of delight,
A shrine of song and a joy of sight,
Their roots are the nurses of rivers in birth ;
Their lives are alive with the breath of the earth ;
They shelter the dwellings of man : and they bend,
O'er this grave with the look of a living friend.

And now, when the morning gilds the boughs,
Of the valuted elm at the door of my house,
I open the window and make salute,
" God bless thy branches and feed thy root
Thou hast lived before, live after me,
Thou ancient, friendly, faithful tree."

—HENRY VAN DYKE.



A FEW RAMBLING REMINISCENCES

BY

J WALKER

Conservator of Forests

(Retd)

I STEP down from the Punjab Mail at Nasik Road Station and look up and down the long platform A long rather gaunt figure in khaki shorts, shirt and stockings and a "pig-sticker" topee, recognises the new chum and accosts me "Hullo, are you Walker ?" "Yes Sir," "Are you from Edinburgh" ? "Yes Sir," "Are you the Scot from Edinburgh ?" "Yes, Sir" "Thank goodness for that" That was my encouraging greeting from Mr Marjoribanks (The other new men were an Irishman and a Rhodesian)

On the way to Nasik, in the tonga, Marjoribanks said how he and others like him felt a bit diffident about bossing men who had already commanded others in a war I still felt the new chum I do not think we of that generation ever measured up to the stature of Marjoribanks, Edie & Co

I at once saw something of the New India of 1921 when Marjoribanks welcomed to his house the first Indian Minister of Forests and Excise of the new regime (Mr Chunilal Mehta)

Time passes Another war has convulsed the world and I am shaking hands with the first Indian Minister for Forests and Agriculture of a completely autonomous Bombay State and accompanying him along with the Collector (Nanjappa) round the Southern Circle and being astonished at his energy and grasp of affairs

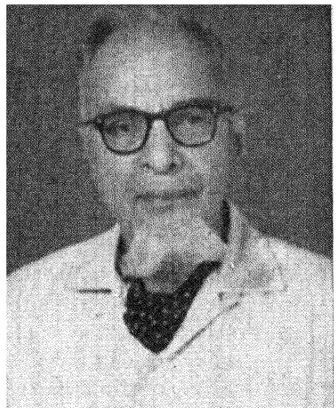
Highlights in between I am scrambling up a steep hillside in Thana some yards behind Marjoribanks, from patch to patch of teak plants, through head-high grass and scrub which tore at clothing and spot seeds and prickles down one's neck and inside the shirt—I had not yet learned to move in this strange environment --, the little figure in front twins round after some time and grunts "Hullo, are you still there ?" "Aye, just" "You'll do", says he and proceeds to explain this new system of raising teak plantations It recalls to mind Humphrey Millet, "doggerel in the Indian Forests" beginning "Can a Beat Guard's tender care cease towards the patch that's bare ?"

Then, later, I am a new chum in the S.C, learning the ways of the bigger jungles and I visit N D K for a lesson I am armour-plated against ticks and snakes — hefty boots, long semi-jodhpurs hermetically sealed to the boots by half putties I see with amazement this taciturn Parsi D F.O doing his inspection of the biggest plantations in the Presidency in blue serge shorts, blue woollen stockings and dancing pumps, at least that is what his footgear looked like Ratnagar had green fingers He grew wonderful dahlias and begonias with the same success which crowned his efforts in the teak plantations I am on the outskirts of a tiger shoot in the evergreens and after some shots have gone off, join in the search (through Storbilanthes laced together with creepers) for the supposedly wounded tiger — I never yet saw the rule observed, which prescribes a half hour wait to allow the wound to stiffen There was some confusion and then a couple of bangs Clayton and Gilbert, shoulder to shoulder, had dropped the quarry in the ditch at their feet — an unwounded, three-quarters grown male in the act of charging the two veterans, when he met his end

Back memory takes me to Dangs, where I am accompanying Hiley for inspection Dear old Mohanji Desai meets us at the end of the monsoon and proudly leads us to the new bungalow he has built He got things done, albeit on the cheap, and Hiley spots at once that mouldings on the door are off the straight Pointing to this, "Yeh kya hai, Ranger saheb" "Ha saheb, bahut achha panelling hai"—and what could one do but agree

Another flight of fancy and I am at Ganeshgudi looking across with awe to the famous Gund jungles and hearing for the first time the reverberating sound of the tractors and skidders at work on the other side Ah ! Gund and the Kalinadi slopes ! — full of mystery and romance, I have left a lot of sweet and a good chunk of my heart there

I astly to that morning of August 15th, 14 years ago, when I saw the Congress flag hoisted over the Belgaum office and led the staff in making our salute to the new Ind a, I had confidence that, in the Forest Service, you had a lot of very devoted and able men I have heard of energetic developments since then and s› I send my greetings to the Service, the men and last but not the least the very forests themselves and wish you all many fruitful years in your 2nd Century



SOME REMINISCENCES

BY

Y R DIVEKAR

Conservator of Forests
(Retd)

MY active connection with the Forest Department began in 1914 and ended in 1947 A forest career in those days was not a popular choice Although our sages in the past found the charms of the forest irresistible and its peace most satisfying, we their degenerate descendants have grown to hanker more after the comforts and soft life of the cities The forest evokes in us, pictures not only of wild beasts, unbeaten tracks strewn with thorns but also of malaria and disease, and of lack of medical aid, of bazars, cinemas and other amenities of civilized existence And to live in the forest a person must be either a beast or a saint: that is the general sentiment.

People with advantages — money or pull — would go rather for a career in the Revenue Department, the law, the judiciary, medicine or engineering. The approach of the Indian intellectual was — and to a great extent still is — one of admixture of dread, disdain and distaste so far as a career in forestry was concerned As late as 1940, an engineer friend called me a "Jungly Sab" with some condescension; but was not too pleased when I called him a "Sadakya Sab" with its double meaning of "roads" and "rotten".

Needless to say that this approach is entirely mistaken For an advanced economy, with its need for division of labour and function, all careers are necessary for national well-being and none should be despised.

Fifty years ago, Indians, even the tallest — as Gokhale put it -- had to bow before the merest pigmy of a European. Europeans behaved as if they were the lords of creation and nowhere so much as in the Forest Department They seemed to think the forests were their private property, the way they would treat an old woman gathering a few faggots for cooking her evening meal as an offender — while themselves burning huge bonfires at their X'mas camps and destroying trees and bamboos to erect "Machans" and to clear the path for their ladies to go for a "shoot". No less remarkable was our servile attitude. The first story I heard on arrival at Dehra Dun was of a Rai Bahadur, Personal Assistant to the President, Forest Research Institute, whose greatest current pre-occupation was finding a mate — for the President's bitch which was in heat An Indian Sub-Divisional Forest Officer, though entitled to occupy a Forest Rest House under the rules, would sneak into one of the out-houses of the Rest House because he felt that his occupation of the Rest House would be resented by his European Superiors The European Officers too, descended to such petty minded tricks as referring to Indian Officers as "Lala" Ram Swarup or "Babu" Rama Sharan or "Mr" Batliwala while retaining for exclusive use of Europeans the "Esquire" e.g B B Osmaston Esq

Nor was this the worst We Indians could not trust one another Puran Singh, an eminent Chemist at the Forest Research Institute, was known to be shadowed by the C I D We did not know which amongst us trainees, might not be in the pay of the C I D to do their work of espionage Thanks to Gandhiji, that is now an evil memory of the older generation of Indians

But to give the devil his due, if his petty-mindedness and racial arrogance are left aside, the European Officer was in many ways a splendid fellow, and in manliness, sense of discipline, sportsmanliness (both in its literal and figurative sense), sheer physical fitness and courage, superior to the average Indian It may be, that prolonged servitude has a degrading effect on character: but it was not unusual to find many Indians prefer a European superior to

an Indian The European's sense of fairness was deemed superior to an Indian's In my own case I had occasion more than once for clashes with European Officers who were my superiors But in fairness I must state, that in spite of this, they tried to be scrupulously fair to me which is more than I could say of Indian superiors

Intellectually, barring a few outstanding men like Troupe, Trevor, Clutterbuck or Champion, they were mostly mediocre men But their public school sense of discipline, team spirit and loyalty and of what is not done made them capable administrators -- though in this respect the post-War generation was definitely below the standard of the older officers To these India and her forests owe a heavy debt of gratitude At a time when communications were not developed at all and the horse and later the bicycle (where there were any tracks at all) were the only rapid means of transportation and forest regions had to be tackled mostly on foot, these pioneers surveyed, demarcated and classified India's forests, penetrated their depths through canebrakes and brambles and swarms of leeches and other obstructions, made working plans framed a forest law, checked destruction of forests by fire and Kumri cultivation and unrestrained clearances for the purpose of shifting or permanent agriculture controlled grazing and by adopting the principles and practice of European Silviculture to Indian conditions built up the edifice of Indian silviculture In all this the Indian too played his part but it was a secondary part and under European guidance The initiative, the drive, the motive force was theirs And in fairness the credit too must go to them

The European Officer had one great advantage over his Indian Colleague - his love of outdoor life and his tradition of sportsmanship This tradition we have still to build This task has been made doubly difficult by the coming of the motor car which has had a deteriorating effect even on European Officers I was told of Marjoribanks in 1917, that once while demonstrating at a saw mill in Waghai how to push a log against a circular saw he almost had a finger severed ! No medical aid was near Marjoribanks put a torniquet on the finger, wrapped it up in a clean hand-kerchief as a bandage walked all the way to Billimoria (then unconnected by rail with Waghai), waited for the train to take him to Surat and received treatment there. It was said of this officer in the Dangs that no local pony could beat him in that undulating country since though the pony gained on him uphill, downhill he beat the pony hollow Of another equally famous Forest Officer T R D Bell, I was told by Aitchison that once Bell took Aitchison as a passenger on a bike up the Malimane Ghat, all the way up from Gersoppa to Jog falls, a distance of nearly 20 miles When they neared the Jog Rest House the approach to it was so steep that Aitchison wanted to hop off the bike But Bell would not allow him to do so It was a matter of personal honour with him to take Aitchison right up to the steps of the Rest House Even after retiring the athletic Bell could clear a dining table with a standing jump

This tradition of physical fitness, the motor car, is fast destroying Today we have "Lions" with elephantine waists, who pant and puff and drip fat after a brisk walk of less than two miles ! Early in my service, I was told of an Indian Officer whose jungle inspection (the Guard said with a smile) consisted of riding up to the pillar line and making water and then heading back for camp on his horse ! Plantations now have a growing tendency to spring up only by the side of motorable roads (or tracks), because where the car does not go, the superior Officers will not go and what the superiors won't see no subordinate is going to be foolish enough to waste effort on creating ! The natural carollary to this is vast hinterlands are left to 'natural regeneration" after exploitation, in other words are allowed to go waste They are exploited like mines and not on the principle of sustained yield

Working of forests like a mine may suit the purpose of people described by Burke's famous phrase "birds of prey and passage", but is not forestry During the Second World War I was asked by my Conservator to supply teak ballies by carrying out a "thinning" I did so Some time later, the Conservator happened to see the thinning with a fine stand of good teak poles and wryly remarked "Are you having these for Japs ?"

If plantations tend to become more and more window dressings because superior Officers won't inspect them, if there are no motorable roads to them our forests will not be maintained let alone improved

A Centenary is quite properly an occasion for rejoicing, but it is also an occasion for stock taking A hundred years in geological time, is like a wink of Bramhas' eyelid To have

existed a hundred years may in itself mean little, the humble amoeba with its continued division is almost immortal and must be ever so old, but that means nothing. The Sahara sands are millions of years old — apparently to no purpose, until oil was discovered under them

If after a hundred years of the Forest Department, we are to-day set on the path of exploiting our forests like mines, it is anything but an occasion for rejoicing The Englishman had arrested the galloping destruction of our forests under the joint forces of an insatiable land hanger of a growing population and uncontrolled overgrazing and forest fires He had systematised their working and made plans for their maintenance and improvement and for their exploitation on the principle of sustained yield It is up to us to see that we carry forward his work and bring it to fruition. If we fail in this, it will be not because we are lacking in intelligence but because we are lacking in character "Window dressing" plantations are evidence of lack of character. So is the worsening position on the "protection" front Fires, illicit grazing, illicit clearances of forest are on the increase Here the politician is even more to blame than the forest official whose authority is being undermined by the politician out to catch votes by a policy of softness. Little wonder, if denudation of forests proceeds apace due to fires, over grazing, illicit fellings and clearings. All these must lead to rapid erosion of soil. Once the rock is exposed it is irreparable damage; the process is irreversible It must be checked in time — with firmness, not met by concessions or condonation of offences to curry political favour with the voters People have to be educated—in their own interests — to eschew these evil practices and if punishment is necessary, it should not be shunned but should be inflicted.

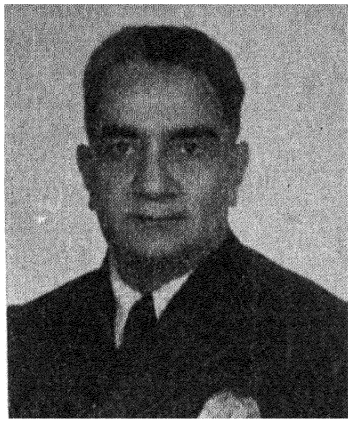
Instead of having annual "Tamashas" of Tree Planting Day with phoney figures of "crores" of seedlings planted, but with no after-care (leading to few survivals), we would do better to have a little more honesty and humility and learn how Israel has done real afforestation in an arid area "Less window dressing and more hard but unpretentious solid work" should be our motto, if our forests are to improve A people who live from hand to mouth, without vision, whose leaders are without principles and worship expediency are headed for disaster

---

The mountain and deep gloomy wood,
Their colours and forms were to me,
An appetite, a feeling and a love,
That had no need of remote charm.

—WORDSWORTH





BOMBAY PRESIDENCY TO MAHARASHTRA STATE IN RETROSPECT

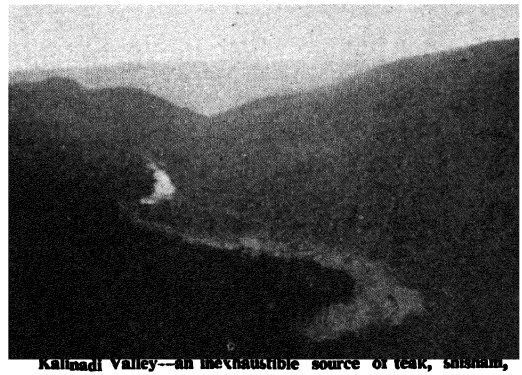
BY

T. K. MIRCHANDANI

Conservator of Forests
(Retd)

IN the year 1921 when I joined the Forest Service, the " Bombay Presidency " being the successor State to the great Maratha Kingdom, extended from Sind on the borders of Punjab to Karnatak, on the borders of Madras Presidency and Mysore State The British conquerers created this hotchpotch unit for administrative convenience Sind had been tagged on to it in 1848 although it had nothing in common with the administration of the rest of the Presidency Obviously such a State could not last forever The first crack came with the separation of Sind in 1936-37 The creation of Sind Province was based purely on religious considerations, as the majority of the Sindhies professed Muslim faith This was the first Province carved out on religious consideration and was the fore-runner of partition of India on religious lines in 1947 It is surprising that no political party objected to this method of separation of Sind from Bombay Only the British, who had integrated India, were reluctant to see this change. By his appendicectomy, the Presidency lost the valuable Babul forests of Indus valley and also the riverain forests of bahan (*Populus euphratica*) and lai (*Tamarix species*) The irrigated plantations of tali (*Dalbergia sissoo*) were also lost In addition, the inland forests of the dry zone, where kandi (*Prosopis spicigera*) propagates, went with this secession With the loss of Sind, lac which is an important forest produce was also lost, because a good host tree for the lac insect is babul Bahan timber, one of the best woods for turnery, which has been used from times immemorial for lacquered articles manufactured in Sind which were exported all over the world by Sind-work merchants, was also lost As regards the fauna, Bombay lost the 'phara' (the Swamp Deer) of Sind whose skins when tanned produce beautiful leather rugs which are much prized and are found in several museums in Europe

This left the Presidency with the forests of Khandesh, Panch Mahals, Nasik, the Sahyadri Ghats in Thana, Kolaba and Poona, the Western Ghats in Kanara and the semi-dry forests of Belgaum and Dharwar-Bijapur districts The predominant species in the dry zone of Poona, East Nasik and parts of Khandesh and Panchmahals are babul, khair, semal, salai and teak of very inferior quality In the better forests of West Khandesh, West Nasik and Dangs, moderately good quality teak and its associates like *Terminalia tomentosa, Lagerstroemia microcarpa, Gmelina arborea, Dalbergia latifolia. Bombax malabaricum* etc., produce logs up to 5' girth The Konkan (below ghat) forests of Kolaba and Thana also produce larger-size timber of the above species. In addition, in certain areas of heavy rainfall, like Lonavla



Kalinadi Valley—an inexhaustible source of teak, shisham, honne and various peelable timbers. The home of elephant, sambhar, bison and tiger.

jungles, Mahableshwar and Igatpuri, evergreen forests have established themselves In the Kanara district, there are large areas of the original primeval forests –real virginal evergreen tropical forests—of lofty trees and luxuriant growth Outside the evergreen belt, the forests of the Kanara district produce first class timber of teak, nana, ebony, honne, shisham, ain, kindal and jamba of 7′ to 10′ girth and 80′ to 90′ clear bole These are, or rather were, the finest timber forests in the Presidency and by far the best teak and shisham produced in India comes from these forests High quality Sandal wood comes from the forests of Dharwar-Bijapur districts

From 1937-1938, the Dangs, which is hilly forest land leased from the Bhil Rajas in perpetuity, was taken over by the Government of India under the control of the Indian States Department With the merger of Indian States in 1948-49, the forests of Deccan States, Gujarat States, Kolhapur, Baroda, Sawantwadi and the Dangs were merged with the forests of the Bombay Province This amalgamation of forests from the States greatly diluted the efficiency of the administration Most of the forests of these States had no proper Working Plans and the staff was not trained up to Bombay standards Another jolt was given by the States Re-organisation in 1956 when the forests of Vidarbha, Marathwada and Saurashtra, were merged with Bombay and the best timber-yielding forests of Kanara, Belgaum, Dharwar and Bijapur were merged with the Mysore State at the same time A further blow came when the Bombay State was again sub-divided into Maharashtra and Gujarat States in May 1960 With it went all the forest lands in the Gujarati speaking areas of the Bombay State and also the Dangs was transferred to the new State of Gujarat, as *quid pro quo* in this partition agreement No one consulted the Dangies !

This progressive disintegration and reintegration has not been dictated by any sustained National Forest Policy From the water sheds of the Indus, the Ganges and the Brahmaputra in the North, to the Indian Ocean in the South, from the Indus Valley in the West, to the Brahmaputra valley in the East, India is one geographical unit Forestry is a science of geography and not politics The giant trees of Kanara and Vidarbha, when the wind blows over them hum the same tune and are not partial to any language For a sound Forest Policy, Indian Forests must be administered under a unified control of the Central Government

Never before in history has the geographical India been administered by one Authority, except during the short period of British occupation Unfortunately, the consolidation that British had done has been lost during the last 10 years by fissiparous tendencies inherent in all under-developed communities

What about the future ?

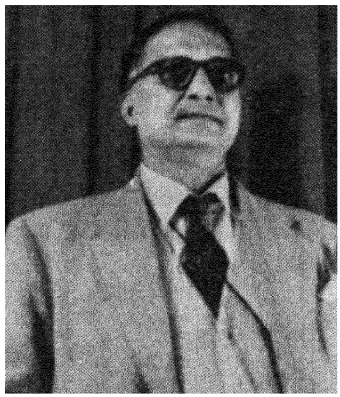
Has the disintegration reached its final phase or will Vidarbha demand its pound of flesh ? The future is in the lap of gods It is written in one of our religious books that whenever decay pervades a society, some Great Man rises to lead the people back to salvation Will another man like Mahatma Gandhi be born again to re-consolidate India ? Probably another world war might do what the British failed to achieve ? Will it usher a World Government ? Who knows ?

The tree which moves some to tears of joy is in the eyes of others only a green thing that stands in the way.

—WILLIAM BLAKE.

धत्से मूर्धनि दुःसहा दिनमणेरुद्दामधामच्छटाश्छायाभिः पथिकान निदाघमथितान पुष्पासि पुष्पैः फलैः।
धैर्यं मुचसि नैव येन भवता शाखाः सुविस्तारितास्तेनाशासु वनस्पते, तव यशः स्तोमः समुज्जृम्भते ॥

(हे वृक्षा, तूं आपल्या मस्तकावर सूर्याच्या असह्य आणि प्रखर प्रकाशाचे झोत घेतोस. आपल्या दाट सांवलीनें उन्हानें पीडिलेल्या वाटसरूंचें फुलांफळांनी पोषण करतोस. तूं आपला धीर मुळींच खचूं देत नाहींस. धीराने तूं आपल्या फांद्यांचा पसारा चांगलाच वाढविला आहेस आणि त्यायोगें तुझ्या लौकिकाचें स्तोत्र उत्तरोत्तर सर्व दिशांत लांब पसरत आहे.)



A PRESSING NEED, A WISE POLICY REGARDING CATTLE

BY

S. N KESARCODI

Conservator of Forests
(Retd)

THE stock-breeding and dairy produce industries are located in the temperate zone, extending towards the colder rather than into the warmer zone (except for small pockets in the tropics where due to elevation, the climatic conditions are temperate) The reasons for this are not sentimental but purely ecological and socio-economical Ecologically, the temperate and colder regions include vast stretches of natural grasslands sustaining a flora comprising nutritious grasses and legumes, conducive to them Advantage is therefore taken of these favourable conditions in developing the stock-breeding industry, the wool industry and dairying on a large scale The socio-economical reason for developing these industries is the vast utilization and reliance on animal products, e g., meat, hides, milk, butter and springing from these basic needs, the innumerable chemical, and biochemical industries. Typical of humans, what they like to eat, they strive to grow it to their taste. This is very true in the stock-breeding and dairy industries in the temperate regions. Scientific methods are applied at every stage to realise highest productivity at the least cost. There is much emphasis on the prudent use of natural resources, and on supplementing them artificially, though in the beginning there was some prodigality.

The tropics on the other hand suffer disadvantages on every count both as a result of natural deficiency and of human shortcomings. To begin with, there are no natural grasslands in the tropics comparable to those in the temperate zone. This is due either to destruction of tree growth by man followed by periodic fires or to natural poor soils unfit even for scrub vegetation In either case the grasses that come up are poor in nutrition and coarsen very quickly in the grazing season Nowhere is there stock-breeding or dairying practised on an industrial scale or on the advanced lines current in the temperate zone Where *pastoralism* is practised, it is done more for prestige than for profit and the herds in any case are far larger than what are wanted to satisfy their few needs Generally speaking, people in the tropics consume far less meat and animal produce than people living outside the tropics and although there is an urgent need to increase the consumption of animal proteins, this has to be based on wise methods of production Nor is this all—a change in the eating habits has to be brought about Whereas in India, meat eating, especially eating beef, is forbidden by deep-rooted religious creed, one may quail before ever thinking of attempting legislative action

In Maharashtra all these defects and shortcomings are evident to a degree There are herdsmen to whom their herds are only " laxmi ". They rove over large areas of the forest, grazing, trampling, hardening, and loosening the soil They are of no great use to the State unless their practices are controlled and directed with a scientific purpose In addition to these pastoral herds, we have the long established custom of maintaining large herds of cattle for apparently no economic reason It is not the love of animals that explains their custom, for they are ill-fed, ill-looked after, they do not yield much dairy produce, they are not bred for meat though some of them, the skinny ones, end up in the slaughter house, and any attempt to justify their existence as producers of manure cannot stand scrutiny The question is whether the individual is free to use the resources of the State in

a prodigal manner or should he be controlled and taught to use them wisely and helped to meet his real requirement by using alternative methods of production without detriment to the natural resources of the State

It is true that there is some sort of priority in allotting grazing privileges but the numbers in the top-priority itself are so enormous, that further restrictive regulations are called for

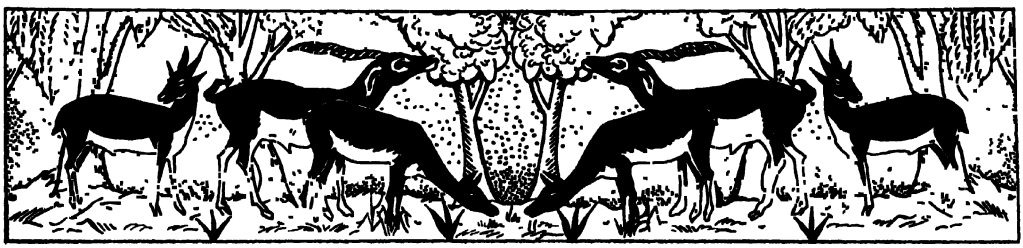
In Maharashtra, with no really extensive timber areas, the pressure on forests is tremendous and increasing In addition to traditional claims on forests for grazing, for the exercise of numerous privileges, charcoal burning (a primitive form of fuel which our larger cities must soon learn to do without) and small timber, new demands are being created by ambitious little industries Let us face them our forests are not inexhaustible nor do they restore themselves, naturally or with artificial assistance, exactly as we wish them to

The greatest destructive element is excessive grazing It must be brought under positive control, the more so as cattle-keeping by the various groups mentioned above is unsound from the point of view of domestic and of State economy

Restriction on numbers can be achieved by propaganda but it is slow and perhaps an uncertain process Legislation will yield quicker results and need not be very dictatorial, though our legislations have not refrained from enforcing amendments to the hitherto sacrosanct Hindu law A few suggestions may be made by way of setting the ball rolling Obviously it is a matter for an expert committee to consider the problem, as it affects people in every part of Maharashtra Firstly a system of licensing may be applied to wandering pastoral herdsmen restricting the numbers of their cattle and imposing certain breeding practices and compelling them to sell to the State (or a constituted authority) so many cows and bulls every year Only such licensees will be allowed in certain parts of the forests suitable for their herds Next a severe restriction on the cattle-keeping practices of forest villagers and those near forests, the policy being to encourage stall-feeding, silage making and the use of stored fodder Small forest areas may be set apart, as paddocks, for exercising (not grazing) such cattle Permits will be given only to those who still feed cattle and maintain them only for selling dairy produce Cattle kept purely for domestic use, whether for milk and butter or for manure, must not be permitted at all in forest or only in small numbers in parts not reserved for the dairy farmers These may seem severe measures but the preservation of our land is of paramount importance compared with the satisfaction of the present generation

Make me thy lyre,
Even as the forest is,
What of my leaves are falling like its own ?
The tumult of mighty harmonies

—SHELLEY



WILD LIFE PRESERVATION REVIEWED

BY

R S DHARMAKUMARSINHJI

Ex-Wild Life Preservation Officer Bombay State

THIS subject should really have been dealt with by a retired forest officer of the Old Bombay State rather than myself who is a newcomer to this region Yet having taken a keen interest in the preservation of wild life of Maharashtra and having had the opportunity to serve the Old Bombay State I take pride in writing this brief retrospective note in celebration of the Maharashtra State Forest Centenary

The Bombay Presidency has always held the lead in the preservation of wild life British officers of the Bombay State Forest Service were keen sportsmen who took interest in the conservation of wild life In those days wild life was abundant with big and small game species and game shooting was much encouraged The past Governors of Bombay often spent their Christmas camping in forest areas shooting tigers deer and jungle fowl and the forest department was keen to provide such sport The system of 'Shooting Blocks' was introduced in the Southern Forest Circle and this appears to be the first sign of special attention being given to wild life management in forest areas Another factor which brought the Bombay Presidency to the fore, was the establishment of the Bombay Natural History Society and also the Prince of Wales Museum of Western India with its Natural History Section Both these institutions worked in close co-operation The Society had as its patron the Viceroy of India, Vice-Patrons comprised Princes and Naturalists, and the President was the Governor of Bombay. This Society attracted members from all parts of India and is well-known in natural history circles throughout the world. The Society took up problems of wild life preservation to aid government Since then it has been a guiding star for the preservation of wild life in India

The Indian Forest Act of 1912 (VIII) had been the main legislation for dealing with wild life offences and the rules framed thereunder provide for the protection of wild life and promote shooting of game according to the ethics of sport For the interest taken in the preservation of wild life in the Bombay Presidency, I must mention the name of G Monteath, I C S. A comprehensive article pertaining to this subject is given in the series 'THE WILD ANIMALS OF THE INDIAN EMPIRE AND THE PROBLEMS OF THEIR PRESERVATION' of the Journal of the Bombay Natural History Society, VOL XXXVI, No 4 Of the Southern Circle, he writes 'Bison are apparently safe enough—they have nothing much to fear except rinderpest and Sambur and cheetal are in little danger from the licensed sportsman, the indigenous shikari, or their natural four-footed enemies' Of elephants he writes 'At present I believe there is *carte blanche* to shoot them'

Although, game species were plentiful then, the problem of wild life protection was becoming difficult The increase in licenses of rifles and guns continued, the motor-car poacher was becoming a pest and the so called 'Criminal Tribes' who swept the countryside trapping snaring and killing wild life were a real menace Over and above these destructive forces, was the indiscriminate slaughter of black-buck and chinkara in non-forest areas Such game took refuge in the borders of forest land and some were preserved by Princes in their game Preserves At this critical time, a suggestion was made that a separate game department should be created to mitigate the deteriorating condition of wild life Monteath however opined, 'A game department is anyhow not a practical proposition for Bombay' It must be remembered that Monteath's view carried weight, and the matter ended During the World War II wild life was persecuted everywhere in India, yet there were many areas in the reserved forests where it flourished. Strict management of forest areas in the Bombay State was somewhat a deterrent to poachers. However the worst impact on wild life during the war time was brought on by the advent of the "Jeep". This vehicle could negotiate country where no other motor-car could go. It penetrated deep into the forests, traversed undulating country and escaped being bogged in slushy ground by its 4-wheel drive In the post-war period, the wartime relic had established itself and nearly every hunter whether a businessman, an official

or a prince who could ride the chariot of war indulged in poaching Firearms, increased enormously and game meat became popular. This period was the worst that wild life had seen so far Game species were being slaughtered ruthlessly in sanctuaries, preserves, in private estates and even in forest areas With India facing food scarcity, crop protection became a National drive Crop-Protection guns were issued to farmers freely and Agriculture gained importance over Forestry Nevertheless, the forest department retained its hold on wild life administration in the forest areas, now shrinking, fast Experienced Indian forest officers, became Conservators and we see in G S Singh, I F S, an able and efficient Chief Conservator of Forests who could shoulder responsibility and take the legacy from the pioneer T R D Bell, a fine sportsman and naturalist

Tiger shoots for the Governor re-commenced and sportsmen were ready to co-operate There were Conservators of Forests keen on shooting and E K Kotwal was a fine example However, an enormous re-afforestation and protection to wild life was necessary, especially the big game species

The relaxation of wild life protection in the post-war period caused much criticism amongst sportsmen, naturalists and the bourgeoisie The climax was reached when the Bombay Natural History Society took up the problem with the State Government The Honorary Secretary, pierced the hard shell of red-tapism convincing the government to create a separate department for the preservation of wild life S H Prater, a former Curator of the Society had said 'The Forest Department which ordinarily administers the Forest laws has multifarious duties to perform and while the Forest Officer has discharged this trust to the best of his ability, he cannot give the question his personal attention, nor can he find time, except in a general way, to control the protection of wild life in our forests' Experience of other countries has shown the need of a separate and distinct organisation whose sole concern is the protection of wild life in the areas in which it operates Moreover, the Indian Forest Act, 1912, operated in forest areas only. What about areas of wild life outside forest ? A state legislation to protect wild life throughout the State was necessary Thus the Bombay Wild Animals and Wild Birds Protection Act, 1951 was enacted and much credit goes to the Government of Bombay to have taken the lead in the Republic of India for introducing such legislation for the protection of wild life. The Indian Board for Wild life in its inaugural session held in Mysore acclaimed the Act and the Government of India treated it as a model for other States to follow This Wild Life Act came into force from 1st May, 1953 Concurrently, a drafting Committee was set up for making rules under the Act, the Chairman of which was J A. Singh, I F S, the Director of Civil Supplies, the other members being Shri Humayun Abdulali and Shri N Desai (Parks & Gardens) Much credit must be given to the late B G Kher, Chief Minister of Bombay for taking deep interest in wild life preservation and for the setting up of National Parks such as at Kanheri, and Borivli. Subsequently, according to the provisions of the Act, a State Wild Life Advisory Board was constituted with the Chief Secretary to the Government of Bombay as Chairman It had ten members and a Secretary who was the Wild Life Preservation Officer Its functions were (i) Selection of areas for Game Sanctuaries (ii) Formulating a policy for granting licences and permits under the Act and administration of Game Sanctuaries (iii) Framing rules under the Act and elucidating any other matter connected with preservation and protection of wild life In order to administer the Act, an independent Department of Wild Life Preservation was created by Government At the head of the department was the Wild Life Preservation Officer, Bombay State, under whom was a skeletal staff consisting of a Head Clerk, Junior Accountant, two Clerks, and three Peons The department commenced to function from 1st May, 1953 The Chief Conservator of Forests, Shri J A Singh, I F S, started ball rolling, as a new milestone was struck in the history of wild life preservation in the Bombay State With a view to enforce the Act throughout the State, certain powers under this Act were delegated to various officers The important features were that, District Magistrates, the Police Commissioner and their subordinates were made responsible for the registration of arms and licence-holders And much of the Forest Staff from the rank of territorial Conservators to Rangers were given duties for the enforcement of some of the provisions of the Act. Honorary Game Wardens were also appointed to assist in the work. Although a separate department for wild life had been set up, the larger burden of work was still carried out by the forest department

Shri J. V. Karmachandani, an experienced Conservator of Forests, was appointed as the

head of the Wild Life Department for some time in addition to his forest work However, as the administration of the wild life in the State grew, a need for a qualified technical officer in wild life as a whole-time Wild Life Preservation Officer was felt and subsequently such an officer was appointed under the administrative control of the Chief Conservator of Forests This enhanced the position of the Wild Life Department and much improvement was seen Poaching was controlled, films on wild life were made and schemes for Wild Life Sanctuaries finalised The first Wild Life Day and the Wild Life Week were celebrated Census schemes for wild life were drawn-up and a proper assessment of the State's wild life resources was made

From the year 1956, political changes took place with the re-organisation of States Bombay became a bilingual composite State with the States of Kutch, Saurashtra, and portions of Vidarbha and Marathwada merged with it while parts of North Kanara and Belgaum went to Mysore Soon after, the composite State of Bombay bifurcated into Gujarat and Maharashtra Much was achieved, though these were critical years for wild life preservation and the Government thought it fit to wind up the Wild Life Department and merge the post of the Wild Life Preservation Officer with that of the Chief Conservator of Forests

The new state of Maharashtra has excellent resources of wild life especially in its Chanda forests These timber areas inherited from Madhya Pradesh harbour the Taroba National Park where forest officers are taking keen interest to develop it further The Radhanagari Gaur Sanctuary with the adjoining lake is another excellent refuge for wild life. The Koyna Valley as a wild life sanctuary is being planned and there are many small areas of wild life importance where the State can preserve such vanishing assets Young forest officers of the state are very keen in their work for the preservation of wild life and the forest department now has an able and experienced Chief Conservator of Forests in R R Chaudhari, whose interest in wild life is well known Vidarbha which teems with big game species in the State is a great attraction to foreign tourists for shikar Agencies are active in drawing foreign exchange by providing sport to foreign hunters The real danger to wild life is the increasing number of crop-protection guns and the illicit killing of game by poachers and nomadic tribes The Maharashtra State forest department is well aware of all these problems and is doing its best to cope with them, at the same time improving areas for wild life propagation The Maharashtra State is rich in wild life and with the fresh interest it is taking in its preservation much can be done

---

The big-game hunter was telling his wife, all about his encounter with a tiger

"Yes" he wound up "it was a case of the tiger or me" "I am so glad it was the tiger, dear" she said "Otherwise we would not have, this lovely rug"

Big Game Hunter "I was having a meal in the heart of the jungle and do you know what happened ? A big lion came so close to me that I could actually feel his breath on the back of my neck I was not afraid Do you know what I did ?"

Very bored listener · "Turned your collar up, I suppose"





IN RETROSPECT

BY

D S. KAIKINI

Divisional Forest Officer
(Retd)

"WHAT do you do in the forests ? Are you not frightened of wild animals ? How do you enter the jungles and find your way back home ? Do you always take a gun with you to scare away the wild animals ? ".

These were among the questions commonly put to me from the beginning of my service from April, 1918 to the end of it in early March, 1951 Yet, no one ever tried to listen, about the very interesting and healthy forest life, owing to the inherent apathy about everything concerning the forests and the staff. The climate of prejudice against the Department in general and the whole staff in particular, was so great that it was a herculean task to break through this wall of prejudice The first Centenary celebration of the Forest Department has now afforded me an opportunity to answer the above questions and I hope to do so as best as I can.

All in all, there is no great danger from carnivora and other wild animals any more than the frequent accidents occurring in cities and big towns many of which are fatal. Therefore, it follows that we do not get frightened, at the chance of meeting wild animals, just the same way as an office-goer or worker cheerfully boards a train or a bus unmindful of an accident. There is thus no need for us to take a gun with us while on our work. We just carry a scythe for cutting weeds or branches in our path or a stick to slash at the grass or remove the gaint cobwebs woven above, head-high, which are sticky and annoy us. It is not difficult to enter the forests, nor to get back home. There are familiar paths made by villagers or contractors' men or our own men when reaching their working units To get back is also not difficult. In the case of difficulty we have forest maps to fall back upon In addition, we depend upon our sense of direction developed in the course of our life I hope, I have given the answers to all the questions which were usually put to me and stated at the beginning May I crave the indulgence of narrating some of my unforgetable experiences in the course of the forest life I was living and how and why I look upon it as very pleasant and fascinating ?

When I entered the forest service in the summer of 1918, bamboos all over the country had completely flowered, seeded, dried up and whole clusters of them were lying flat on the floor of the forests They had thus become highly inflammable and a source of danger, because one spark in a remote part would cause a terrific conflagration sweeping from end to end This danger finally arrived early in 1919, February or March We could see on the far horizon blazes of red and orange colour rising high in the sky but we hoped they would stop somewhere near a broad nalla or a road of 30 ft. width and another 30 ft. on each flank completely swept clean to prevent fires crossing, called firelines Very soon the fire approached the forests in our area, we got the smoky smell burnt grass and leaves began to fly through the air and landed before us, signs which forecast that, within a day or two, the fire would engulf our area. We were asked to go with a labour corps of over 100 men in the opposite direction about 4 or 5 miles away to sweep a broad line of all inflammable material and before long, to start counterfiring in the direction of the advancing fire, to check its further advance. We worked the whole day and long through the night and were completely fagged out Just then relief came and with it the news that the fire had crossed the wide road not from the ground

but through the air when the burning bamboos had burst and the cinders had flown across, kindling afresh in that area. The operations were stopped and a senior officer took us to a sugarcane crushing mill at 6 a m near a village and cooked some rice, ground some coconut and chillie chutney and served us on broad leaves of forest trees, with sugarcane juice to drink instead of water, as no good water was available Due to hunger and fatigue this impromptu meal was greatly relished I remember this incident very vividly Soon after, we went home by a cart and lay ourselves in bed for a whole day and night, none the worse for the adventure

Certain unforgettable events that happened during the 3rd year of my service appear to me worth recording A retired Chief Conservator of Forests, the late Mr T R D Bell, C I E., a keen ornithologist, a great entomologist, and a moderate botanist, wrote to me requesting to search for the young one of a bird called hornbill This was 40 years ago He said that some years before, he had been able to send a young one of this bird to the London Zoo and it had lived for 60 years and died in 1921 He wanted a replacement He directed me to an Adiwasi who knew the place where these birds lived and also instructed me on the method of catching the young one Enquiries showed that the Adiwasi had died some years back and there was no one else who knew anything about bird-catching Undaunted by this and being elated by the fact that I was honoured by the letter to do this difficult errand I continued search in other places These birds are rare and live far away from human habitation, in the hollows of tall trees difficult to climb Usually one or two eggs are laid by the birds as big as a coconut, and the mother bird sits on them for long to hatch them, with its beak thrust out from a diamond-shaped opening in the tree plastered all round for protection while the mate who remains outside frequently feeds her The first search was a flop In the second search we were successful. An Adwasi climbed up the smaller tree in the close vicinity of the large tree, wrapping his hand and head with cloth to protect himself from the attack of the male and also the female bird which had flown out in search of food, and slowly putting his hand in the hollow, took out the young one—only one was found and lowered it down the tree in a basket. Very soon a wooden cage 6ft long, 1½ ft. broad and 2 fit. high, was to be the home of the young one Mr Bell had meanwhile gone to Kashmir Though he had given full instructions for forwarding the bird to the Natural History Society, Bombay, he had missed one important point about the feed of the young one I fed it on forest fruits, each day a different kind, lastly I found that plantains were its favourite food Eventually, the bird was transported to Bombay and thereafter transferred to the London Zoo It would perch on my shoulders, walk behind me It is an ugly bird to look at generally, but the two most beautiful features are its extremely charming eyes and an enchanting beak about 4" or 5" long and its colour of a peach fruit, in its full glory It was then about a month old

Soon after the exit of the hornbill, a doe cheetal arrived in my house She was presented to me by a forest contractor who was dissatisfied with it, because of the havoc she had wrought in destroying plantain trees, vegetable and rice fields for its food One cannot expect a better account from an animal accustomed to the abundance of forage and food in the forests She had a sweet name "Gulabi" that is 'Rosy' She was fairly big about 3 ft in height She found the new surroundings congenial and in addition to the grass she ate, she avidly took to eating cooked rice and dal and uncooked jowar She had a leather collar studded with small bells with a little bell in the centre This was her safe-guard against the unscrupulous poachers She would roam anywhere in the forest and instinctively knew to return home at night and rest on the open verandah There were then panthers about and a few months before, a dog of mine a fine spaniel—was carried away by a panther hiding behind a tree, when the dog had run out to ease itself, not far from my residence. But "Gulabi" was not afraid of panthers For days sometimes she would disappear from the house and coolly return home. Sometimes, she would not leave the home for days together After a couple of months with me she walked into the forest 50 yards behind my house for grazing, for there had appeared lush grass after some early showers in June As she was grazing at a distance, a herd of about 10-12 cheetal from the forest also came slowly to the same spot to graze. There was still some distance among them but they had not seen one another being absorbed in grazing Just then I happened to go on the back verandah of my house and saw "Gulabi" quietly and slowly closing up the distance The herd of the jungle cheetal was a picture of health with a sleek coat, while "Gulabi" was poor in health and of rough

brownish coat When she came nearer and nearer to the herd and was at close quarters, one in the herd suddenly made an attempt to attack her and I promptly shouted "Gulabi" The attack did not take place and the whole herd looked up in the direction of the shout and made away as fast as it could into the interior leaving "Gulabi" to continue grazing undisturbed Why the attack was attempted I would not know, but I guess that "Gulabi" did not belong to that herd and looked somewhat different from the rest and must have been looked upon as an outcaste! Yet what follows is more interesting She did not become an outcaste when she played an important part in nature's scheme of things Within a year a Shakuntala type of romance took place A fine buck met her, not in a forest but in a cultivated field of rice quite close to the forest For all I know, both may have met somewhere in the forest earlier and the male may have lured her to get to the field Both began to meet often in a hut near the field Most villagers had seen both, more especially the poachers who were out for the blood of the male for their table It had a majestic head with nice spreading horns The people were also annoyed as both of them were damaging their rice plants So some shikaris were on the look out to shoot the male Every time a shikari raised his gun to shoot the male, "Gulabi" would protect the male by standing in front of it She had the collar and the bell on her neck and everybody knew her owner She did not allow her romance to be disturbed and the life of her mate destroyed by them They were thus left to themselves and in due time the male returned to the forest after completing the romance "Gulabi" returned home. In proper time she gave birth to a male. What a thing love is!

Meanwhile, I had left the place on transfer before the birth of the male What followed later would evoke pity and sorrow I had intended to take "Gulabi" with me to the new place of my transfer I had to perform the journey by boat When all was ready to set sail, "Gulabi" came near the boat, and the boatman and I tried to pull her into the boat, but she would not. Then she swam round the boat 3 to 4 times and after a final attempt, I gave her up. She was a friend of all in the station and I left her in the hope that she would fend for herself. We set sail and she stood on a rock in the river and stood a good two long hours looking towards the boat sailing down-wards until the boat was out of sight. What a great pity!

She continued in the old station for some time longer when a buck fawn was born Sometime later she fell not in the jaws of a panther but to the shot of the illicit shikari who had his eye on her for long What a strange world this!

When I heard that a young buck was born to "Gulabi" I came to fetch it to the new place I was posted to But it did not come– the same dislike to the change of places as her mother!

In the new place I was transferred to, wild elephants were known to be roaming about the forests The Forest Department, for the sake of safety had cleared wide strips of forests along both sides of the road passing through thick forest One morning in June—1st June to be exact, I was moving to a camp seven miles from my head quarters to tend a teak plantation I had to pass through one such forest road I had sent my kit in a cart in advance and I followed on bicycle After covering half the distance, I felt a little suspicious about the presence of wild elephants in that part of the forest My suspicion was confirmed when some fresh, elephant droppings at the road side, attracted my attention and I looked out for more Then traces of bamboo leaves and branches wrenched from trees and in addition the leaves and fruits of kumbhia (Careya arborea) eaten and bits left under the tree were clearly visible A digression here will not be out of place In the all-round training given in the forest colleges at Dehra-Dun,--there is another college at Coimbatore we are initiated into keen observation of things in forests and this sense of observation develops with the years of service So I observed these prognostications and cautiously proceeded on my bicycle looking out this side and that I climbed an incline and reaching some distance on the flat portion looking out on my left, lo! four elephants walking in line very close to each other were emerging from the forest, on to the cleared portion of the forest along the road. They were cheerfully chewing bamboo branches, pull ng some more, spraying earth on their heads, backs and flanks to stave off flea bites They did not see me I did not lose nerve, had a good look at them, got down from the bicycle, turned it in the opposite direction and rode looking back. They were still on the same spot. Usually when a herd of elephants come out in the open they spend sometime roaming about, playfully spraying themselves with earth, and snatching at a nearby branch As I cycled back some distance, a sense of fear overcame me and I was worried at the prospect of meeting some other herd of

elephants on the journey back This happily did not happen I met the cart carrying my kit and a subordinate accompanying and together we came back the same way to the camp When we reached the spot where I had seen the elephants, we saw pug-marks on the middle of the road and the distance between these marks and the cycle-tyre prints where it was stopped and turned was only 15 ft In the night in the camp, trumpetting by elephants was heard Fresh droppings were observed every day outside the camp Yet we completed our work in 4 days without let or hindrance and we saw no more elephants in the forest for all the 4 days These encounters develop a sense of lasting courage On one occasion I walked alone to a new plantation area about 5 miles away from my camp After walking through it, seeing the teak plants I was returning to my camp When nearing the camp which was a mile away, my attention was suddenly attracted by something wriggling backwards It was a cobra lying flat on the floor just at the edge of the narrow foot path, I was treading I suddenly stopped, the next step would have been quite close to the hood of the cobra for an easy bite Each of us was taken by surprise The cobra quickly wriggled back and skulked away to a bamboo clump That the day happened to be Nagpnachmi was incidental ! I was grateful to Providence that a fresh lease of life was given to me for another 30 years of forest service and a decade of retirement

From the fourth to the eleventh year of my service I had no opportunity of wandering in the forest, being in charge of a timber depot Later I resumed work in the forest and had an occasion to see wild life in the course of my work Once a batch of friends accompanied me for a trip in a forest boat up the river We had not gone far when we witnessed a scene never to be forgotten A crocodile was chasing a cheetal crossing the river The distance between the two was barely four feet, the crocodile swimming as fast as possible to catch its prey and the cheetal swimming for its life. This went on for a pretty long time and we were wondering which would win the race. The distance was maintained for some time, and at times was reduced, yet finally the cheetal won the race by reaching the opposite bank of the river and got up on a high ground safe enough. The crocodile gave up the chase, dived in the water and disappeared. The cheetal was gasping for breath and one among the party on the boat raised his gun to shoot the cheetal while still recovering from the shock and gasping for breath I at once stopped him from doing so The cheetal was food for the crocodile but not necessarily for the boy with the gun in our boat Thrilled by this scene and its happy finale, we rowed up further up in the hope of witnessing some more thrills More crocodiles were seen in the river and at one spot we saw a crocodile nibbling at the bloated head and neck of a sambhar previously killed by it and all but the head with the neck had been already eaten up There were no further thrills

I can now in my retirement look back upon life in forest as interesting, instructive, invigorating and often thrilling There is plenty of work and equally plenty of recreation—though not of the type of recreation sought after outside the forest We shuttle between forests and towns and derive whatever pleasures are available from both When I was out on duty there were occasions when I met a whole family of cheetal, the male, the doe and the kid a perfect specimen of beauty I would stop my bicycle and go on looking at them with great pleasure and a natural smile for the opportunity of seeing in nature the vigour of their health The family would also go on looking at me and instinctively knowing that I had no gun wait a little longer and continue grazing carefree Often I met herds of sambhar going slowly and crossing the road to graze in another place Herds of bison, young and old and calves were seen grazing unmindful of me They would all stand still for a time and continue grazing Their graceful arched shining horns, beautful eyes and legs covered with white hair in the fashion of leggings, and their sleek black bodies with broad flanks are a fine picture before me Once I met a family of a bison—tae buffalo, tae cow and a calf, not very far from the edge of the road in the forest. On seeing me alight from my bicycle they stopped grazing and started looking at me I in turn also took a good and long view of them and went my way leaving them to continue grazing

Sweet and cheerful chirrupping of birds at break of dawn make our mornings and the rest of the day as cheerful. I happened to hear a bird —I think it is a nightingale or 'Kokila'—singing every morning from a tree in the forest within 15 feet of a Forest Rest House. The singing continued throughout the day at intervals ; when I tried to repeat, it would give an encore ! I suppose this bird is still there.

We often see the flamboyance of the flowering trees in the forest, as the Indian Laburnum --'Kakai' or 'Baya' or 'Amaltas'

draped with beautiful yellow racemes of pendulous flowers, the cluster of gorgeous crimson corolla of the silk-cotton tree attracting a flock of birds chirrupping all day, the " Flame of the Forests " or " Palas " with large silky deep red and orange coloured blossoms making the forest look ablaze, the " Dhadsul " tree with its bunches of flowers pink or mauve, always growing along river banks and many others which form a scintillating panorama in a riot of colour

Immortal therefore are these words of the " Ramayana " on forests :—

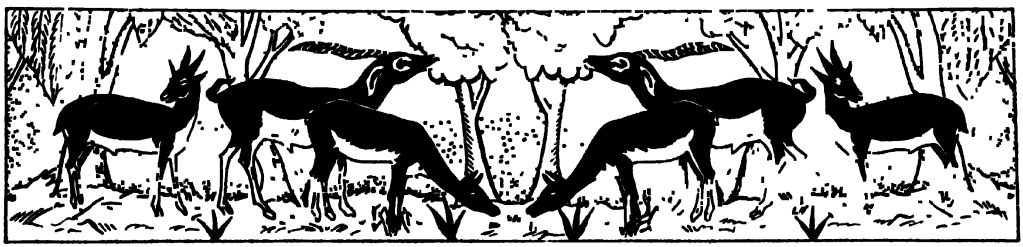
" The works of human artifice soon tire the envious eye the fountain's sparkling rill, and gardens, when adorned by human skill reproach the feeble hand, the vain desire. But oh ! the free and wild magnificence of the FORESTS in her lavish hours doth steel In admiration silent and intense, the soul of him who hath a soul to feel "

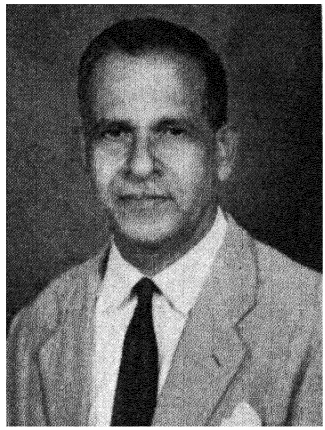
FOREST FIRES

A fire offence case was received by the D F.O a month after the fire offence was detected The R F O recommended " Offender not traceable , hence may be filed " The D F O was perplexed and did not know how to proceed For a good quarter of an hour he pondered and then issued the final order on the offence papers as , " Put out the fire immediately Take precaution in future".

CARTOON QUIPS

Boss to Subordinate Officers on transfer and reporting to duty, " mind you well, either you make *my* name or mar *your* name "





AS I LOOK BACK

BY

J V REGO

Divisional Forest Officer (Retd.)

REFLECTING, over a score and a eleven years of my service in the Forest Department in the erstwhile Bombay State, from the year 1919 to 1950, two incidents in my life, which are so nerve-tingling, strike me as if, of yesterday, which I am narrating below

The first incident took place on the ominous 14th August, 1922, when I was the Range Forest Officer, Virnoli Range in Kanara, Northern Division On that day I was called to Dharwar by the Divisional Forest Officer with certain information required urgently for the Annual Administration Report. It was an extremely squally day and the rain was beating down pitilessly Inspite of such inclement weather, I was determined to proceed as my presence was urgently required at Dharwar. So I set out I trudged nearly six miles, in the thick of rains till I reached the river Kali at Dandeli The river was in spate and the water swirled and eddied I was caught in a dilemma, whether I should brave these seething waters and go across or not to be at Dharwar at the behest of my Divisional Forest Officer. For a good quarter of an hour I pondered Fervour got the better of me and toughened my fibre, and I felt I must get across, even though the boatmen whom I had egged on, to launch the dug-out in the turbulent river to take me across, at the outset, declined to do so, all the while trying to impress on me, how fraught with risk this was, on account of the violent current of the water. Yet nothing would deter me, as the die was cast. I had to go to Dharwar, and was prepared for a derring-do

I prevailed on the boatmen to get the boat which they did much against their will. I advised them to row the boat up the left bank and then gradually to take it across and land me on the opposite bank not necessarily at the quay. They did as they were told and thus far all seemed well But no sooner than we were midstream, the boatmen lost control of the vessel, which came hurtling down the swollen river till fortunately it was intercepted by a tree growing in the riverbed The flood water had risen so high that the trees growing in the river bed were submerged almost to their upper branches. I advised the boatmen to hold on to one of the branches of the tree, so that they could relax, as also to thwart the danger of being swept further down the flood waters. Much to our chagrin, the branch to which the boatmen were holding on literally as if at a straw, gave way, and the boat was washed down by the strong current. We were now in a fray, caught in a vortex Dejection sat heavily upon my brow Being prepared for the worst I flung my rain-coat in the boat and cautioned the boatmen and the other inmates to be on the alert should a further mishap befall The only redeeming feature on this day which was not without an overtone of tragic irony was that all of us knew swimming, which stood us in good stead, when we were hanging almost between life and death

The worst was yet to come. In a welter, the boat capsized all at once, throwing us in the surging waters to our fate. Our nerves were on edge. It was now left to us to go the whole hog to do all in our power if we meant to live. Never say die ! There was to be no straining at the leash But fate was kind enough not to deal us, the doom Our energy seemed to ebb, and yet we fought amain and at long last, managed to swim to the nearest tree, on which we clambered and perched on perilously, marooned as we were, looking forward every moment with bated breath, to a ray of hope—to someone coming to our rescue The precarious time we spent swimming, against the strong current seemed to us like long, weary and troublous hours Time hung heavy upon us and we almost lost count of time.

The news of our mishap created quite a stir It first reached the staff of the Saw Mill at Dandeli and then the people, who flocked to the bank to see our plight We owe a deep debt of gratitude to one Mr S T Narvekar a Forest Contractor, who came to our rescue with the greatest despatch, but for whom we would not have been alive today He tied a rope round his waist and plunged into the river to come to our rescue, asking the persons on the bank to hold on firmly to the other end of the rope and to pull him up in case he was carried down by the current With great difficulty did he swim to reach a tree about twenty feet away from the tree on which we were stranded, but could not make any leeway further I had now to hit upon an artifice to get the rope from Mr Narvekar I untied my putties and fastening them together directed a Forest Guard to get on one of the branches of the tree on which we were perched and lower the putties to Mr Narvekar who succeeded in connecting the rope to the putties and to pull up to our tree With the aid of this towing line Mr Narvekar took each one of us to the bank

As I had lost my all, in the river and as the clothes I wore, were dripping wet, my colleague Shri D S Kaikini (who is Rao Bahadur now) who was then the Depot Officer at Dandeli kindly lent me his clothes, socks and shoes and after a warm lunch put me in the train to Alnavar, which was detained for about half an hour for my sake

This was not all There was more in store for me of cruel fate ! After boarding the train at Dandeli, I thought I would be spared further indignity But to my misfortune the train derailed at Shinghatgeri at a distance of about 9 miles from Alnavar, a station on the main Poona-Bangalore line I had virtually to race against time, along the railway line to catch the train at Alnavar to proceed to Dharwar Here again fortune was not in my favour The train at Alnavar steamed off when I was barely a furlong away from the railway station Disappointed as I was, making my way to the quarters of the Depot Officer at Alnavar to spend the night, as it was quite dark, a snake accosted me on the road ! I said to myself "Nemesis has had its day" with a string of mishaps thus bet ding me Holding the hurricane lantern in my hand I directed the Forest Guard to get a stick to kill the snake The fortunate snake however skulked away in the dark ere the guard could return with the stick

The other incident occurred in 1949 when I was the Divisional Forest Officer, Belgaum I was camping in the Forest Bungalow at Jamboti in Khanapur Range, situated on the outskirts of an evergreen forest After the day's inspection, I went for a bath at about one in the noon When I had almost finished my bath I felt something gripping my feet on the bath-board When I looked down I was horrified to find a viper right across my feet ! Hardly losing any time I gave a quick jerk with my feet when to my relief the reptile landed on a towel rack nearby and coiled itself thereon Gingerly I strode out of the bathroom and presto called out for a servant to fetch a stick, with which the reptile was killed Presumably this snake had taken shelter in the galvanised iron pipe of the bath room with its head towards the room and must have come in when the warm soapwater passed on it, as it could not go out

When I bring to mind these incidents in my life, life seems a delicious art of dangerous living Perhaps one needs the proverbial cat's life to get the better of them !

What I know of the Divine Sciences and Holy Scriptures
I learnt in woods and fields

--ST BERNARD OF CLAIRVAUX

Raise the stone and there,
Thou shalt find me cleave the wood.
and there am I

—CHRIST.



FOREST WEALTH AND ITS DEVELOPMENT IN MAHARASHTRA STATE

BY

D M. HERWATTE

Divisional Forest Officer
(Retd.)

FORESTS are situated far away, generally from the civic population which has no opportunity to know about the work and progress of their intensive development carried out by Government, either from the national or scientific point of view Critics often venture to say that it is a self-praise when the Forest Departments in India celebrate the Centenary by way of bringing to the notice of the Nation their achievements and progress during the last 100 years. In fact, every individual in the country should take pride and appreciate what credit has been gained by the Nation by its own co-ordinative efforts and organising efficiency, and every tax-payer would be much interested to know the exact progress. Forests are a national asset and play an important role in the national economy and physical and aesthetic conditions of life. Rainfall is assured by the existence and preservation of forests which not only promotes agriculture in the country but also controls extremes of heat and cold. The scientific development of forests by the Forest Department has provided various products of utility like timber for house-building, railway sleepers and carriages, boat and ship-building, shuttles and bobbins for the textile mills, matches, tool handles, cabinets, furniture etc, wood pulp for the manufacture of paper and rayon silk, medicinal plants for the manufacture of drugs etc. besides the supply of firewood, hutting material and grazing to the entire village community

We have had our virgin forests extending over the whole of the country from ancient times Our ancestors must have selected the most fertile land and cleared it for cultivation and for raising food crops for their existence Their wants were few and they made use of the neighbouring forests for their bare requirements without interference from the Rulers or the State authorities The fast growing population naturally demanded more and more agricultural land, and along with it not only extended more of grazing grounds for their multiplying herds of cattle but made use of forests more than they had been enjoying hitherto. Conditions of life went on changing year after year, and with industrial development and a higher standard of living, a greater demand grew for forest products viz large timber for factories, ship-building, railways workshops etc Clearing of forest growth was uncontrolled and large areas were subjected to irregular cuttings and honey-combing.

At this stage forest conservancy came to be realised to stop indiscriminate cutting and shifting cultivation, and the Forest Department was inaugurated in 1864 under its first Inspector-General, Dr Brandis. Earlier in Bombay the Superintendent, Botanical Gardens was appointed the first Conservator of Forests in 1847, and later Assistant Conservators were appointed in 1863 to work under the Revenue Collectors of the Districts The Taluka Revenue Officers (Mamlatdars) were looking after forest conservancy and protection with the assistance of Forest Inspectors and Guards. Two posts of Conservators with controlling powers over the forest staff were created in 1871 at the instance of the Inspector-General who had paid a visit to Bombay between 1869-1870. The Divisional

Forest Officers continued to work as Assistants to the Revenue Collectors Government felt the need of introducing legislation for the conservancy and protection of forests and for safe-guarding the interests of Government, and the Indian Forest Act came into effect in 1878 In introducing this piece of legislation, enthusiastic forest officers had naturally to incur displeasure and became unpopular with the people There was always a sort of friction between the forest and the revenue officers, and any scientific development of forests was not possible without the sympathy of the Revenue Collectors and adequate funds for forest works, till 1904

The Department was organised in 1892, constituting three Forest Circles corresponding to the three Revenue Divisions -- each under a Conservator, appointed in 1893 The Senior Conservator out of them was responsible to the Government until 1917 when the post of Chief Conservator was created All the same, the Department was a subservient branch of the Revenue Department at the Secretariat level till 1921, when with the introduction of (Montague-Chelmsford) Reforms, it became a transferred subject under a Minister Sir Chunilal Mehta was the first Forest Minister.

Forest Survey Settlement was being carried out all over At the Forest Settlement enquiry, rights of the forest villagers were recorded, and in addition, Government conceded them what were known as 'Privileges' according to the needs in each of the Districts The right of way to watering places or springs and temples or religious places were those, recorded at the Settlement The privileges included grazing of cattle, removal of firewood for domestic use, leaves, branches, brushwood, thorns etc for agricultural purposes The people were not very happy with the restrictions imposed on them by Government There was a sudden and wide awakening among the people from 1921 onwards, starting with the non-co-operation movement Forest Satyagraha was the turning point The villagers were not content with the privileges conceded to them and demanded more and more till at last the Government appointed in 1928, a Forest Grievance Committee to make on-the-spot enquiries and report on their grievances with its recommendations The concerted voice was heard and more privileges were conceded to the people Printed pamphlets in the regional language containing all the privileges in each of the Districts or corresponding locality were distributed in every village, lest the forest subordinates should interfere with the legitimate rights of the people

With the setting up of the organisation in 1892, trained officers from Nancy Forest School arrived soon after Local foresters were also trained in the Poona Engineering School There were no transport facilities as we have today and officers' camps used to move on bullock carts every five to ten miles at a time. Officers used to camp invariably in tents and move on horseback from place to place They footed out 15 to 20 miles every day on inspection of the forests Food-stuffs had to be carried to their camps from distant towns Their camps were in malarial tracts continuously throughout the fair season and they returned to headquarters just before the monsoons Their whole office with records thus used to move with them to the camps during 7 months of the year

At the time of survey settlement, the boundaries of the forest constituted as such were demarcated, and cairns erected between the forest proper and the revenue land Now started the departmental activities in surveying and demarcating the block and compartment boundaries within the forests for scientific working We have a variety of types of forests from dry deciduous to high forests, with evergreen patches The forest growth, its density and other vegetation varied according to the altitude and rainfall in each locality - from sea level to 3,000' height and from 20" to 300" of rainfall Each type of forest was thoroughly examined, and compact units of similar growth were so constituted as to ensure a consistent silvicultural treatment according to the growth capacity in order to give us a sustained annual yield

With this view, the working plan parties surveyed the areas and collected statistical data by sample plot methods The prescriptions varied in each locality and also the rotation from 40 to 120 years with periodic thinning operations for the promotion of the growing crop The volume of a tree or the standing crop depends on the rate of growth which is not uniform throughout the period and in all species Scientific methods are applied so that we do not remove timber more than what we actually grow Our growing stock is just like a capital investment in a bank from which only the interest can be drawn and utilised to improve the growing concern Any over-drawing is the cause of down-fall

Rich and valuable forests were found in Kanara District, also in the area adjoining Belgaum District, the Dangs, Peint Taluka of Nasik

District, northern and central portion of Thana and Dhulia Districts Where standing crop could not be sold profitably, departmental exploitation of large timber was carried out and its sale held in central depots Saw mills were installed and timber that could not be sold profitably in the round was sawn into scantlings planks, etc Large indents from railways for their teak-wood sleepers were undertaken Dragging and hauling of large timber in difficult localities of Kanara District were carried out with the help of buffaloes and even elephants maintained by Government for some time In Gund huge logs were slid down the Holegadda slides and floated down to the Sales Depot at Kodibag (Karwar) through the Kali river Before the use of coal, railway engines were run on firewood that was supplied in large quantities by the Forest Department at railheads Alnawar-Dandeli Railway was constructed by the Forest Department in the year 1919, and alignment for its extension up to Potoli was made but the project did not materialise for want of funds Road and building programme was carried out extensively according to the urgency in each locality -- the former for the movement of forest produce and the latter for housing the staff.

The staff was very diligent and loyal and looked after the forests in those malarial tracts as true sons of the soil Officers also took keen interest in organising the forests and giving guidance to the working staff They were regular and industrious and maintained strict discipline They had initiative and insight in carrying out scientific research It may not be out of place to mention here that Mr W A Talbot who was D F O in the then S D Kanara in about 1900 made a large collection of botanical specimens from Yellapur and Sirsi evergreen and moist deciduous forests and the adjoining areas, and prepared exhaustive notes on the morphology habitat and distribution together with local names and uses of all identified plants found in the locality, while his sister helped him in his laborious work, and prepared hand sketches of the specimens with their sections He has left behind two volumes of his hard work — Flora by Talbot — which has ever since been a monumental reference book.

The first world war required a large quantity of the best timber and the supplies were made by selection fellings without any silvicultural considerations What was left in the high forests were mostly unsound and defective trees between large gaps created by war fellings Thus improvement fellings were carried out in compartments with appreciable advance growth Other areas had to be clear-felled and planted up The first artificial teak plantation was raised in E D Kanara in 1919 with intercultivation of ragi (nagli) Regeneration areas thus cleared were planted annually thereafter, to make up for the over-exploitation The treatment of teak seed, raising of seedlings in nurseries and the planting of teak stumps were a later development from the year 1922 onwards.

The services of Mr T S Pipe, Executive Engineer, P W D were taken on loan, in about the year 1918, and with the assistance of two more Forest Engineers in 1921, the Forest Engineering Branch was established. In addition to building and road programmes, the Forest Engineer took over the hauling operations by mechanical appliances in Kanara Exploitation Division (now abolished) and the working of the Sawmills soon after 1925 Considerable progress in this direction has been made since then Standard type designs for forest roads and buildings were prepared by Mr Pipe They have proved to be useful and handy Mr T K Mirchandani who worked with the Forest Engineer till 1935 did a lot of improvement in the working of the sawmills

The Second War, just when we were recovering from the after-effects of the First War, took away a large quantity of our growing stock The valuable forests were practically depleted of teak timber In Kanara N D alone, advance growth of about 35 years had to be utilised to meet the large indents for war supplies At the close of the Second War, special efforts have been made to plant up extensive areas to make up for the deficiency caused during the War

At this stage most of the Working Plans came again for revision from 1946 onwards Teak wood became rare and costly and suitable junglewoods were put to use in its place A seasoning kiln was set up at Dandeli for seasoning the junglewood planks and scantlings The Indian Plywood and the Karnatak Plywood Companies came into existence at Dandeli The former has made appreciable progress in manufacturing attractive plywood The latter Company has since gone into liquidation evidentely due to bad management Bamboo growth was abundant in N D Kanara and E D Kanara and it was found they had a rich patential to sustain a paper and pulp industry The West Coast Paper & Pulp Factory was started at Dandeli in

1957 (after 10 years of survey), and has been running satisfactorily Bamboo had seeded and died in the year 1899 and seeded again after 60 years Seeding is now said to be in progress Manganese ore is being kuarried on a large scale, and a Ferro-Managanese Factory is also established at Dandeli Thus small village with a few hamlets which before 1919 had hardly one or two shops and a few subordinates quarters, has now developed fast into an industrial estate with a growing population.

Sandalwood is a valuable tree, and is exploited departmentally and sold at Central Depots like Dharwar, Khanapur and Belgaum It has a good market for wood carving, oil and in medicine

A large number of medicinal plants growing mostly in the under-storey, in the moist deciduous and the evergreen forests of Kanara District and other localities, hold great promise in the pharmaceutical field Rauwolfia serpentina (Sarpagandha) till lately locally used for serpent bites, is now in great demand within the country and abroad due to the high precentage of alkaloid contents, as a valuable drug for blood-pressure cure The number of such medicinal plants used in Indian medicine is not less than 500, and Government have already taken steps to raise these plants artificially in forest nurseries Our forests are therefore a great treasure and we owe it to ourselves to preserve them jealously

The right of collection of minor forest produce such as honey, wax, rosha grass, gums and resins, apta, temphurni leaves, chilhar bark, hirda and ghatbior fruits and mohoti seeds etc is sold out by public auction annually mohoti, neem, pisa, karanj and other non-edible oil containing seeds are now being utilised for soap-making under the Village Industries Scheme (Govt. of India) Lac cultivation has also been started.

Landless people were suffering from land hunger Agri-Silvi system (similar to taungya in Burma) was introduced to enable such people to raise food crops and in return to raise forest plants, 6′ apart in every alternate line 12′ to 18′ apart This intercultivation was of great assistance to the people This system was however, not popular in some localities One of the successful localities is in Khanapur Range of Belgaum District where teak plants raised under this system attained a favourable height of 6′ to 8′ in the first year

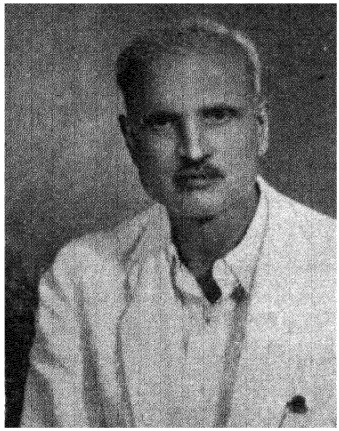
Schemes on afforestation of barren hills have also been undertaken Contour-trenching and bunding are carried out and suitable species are raised on mounds along the lower edges of the trenches Planting under this Scheme, of barren hillsides in the catchment areas of rivers should stop erosion of soil and reduce the runoff so as to minimise the floods now found wiping off life and property in the villages lying in the vicinity and near the banks of such rivers

Scientific Research work has been organised by the Silviculturist by establishing permanent research plots in various localities in the State for recording statistical data regarding the growth of the various species under different local conditions The result of these experiments carried out under the able guidance of the Silviculturist gave a considerable lead to the executive staff The Forest Utilisation Officer has also contributed to the development and marketing of the various forest products

With steady development of forests on the one hand, poaching, illicit cutting and looting of forests on the other, became rampant in latter years The Wild Life Preservation Act came into effect from about 1953 This Act gave powers to Forest, Police and Revenue Officials to take action against the violation of its provisions in order to preserve wild life Special Flying squads equipped with jeeps have been organised for the detection and checking of illicit cutting and removal of forest produce all over the State

If one studies human psychology, the problem facing us is not difficult to solve What we need today, is not merely our co-operative strength not merely our intellectual ability, but character and cultural unity in the country Then alone it will be possible to organise ourselves with determination to see that our country progresses Concerted efforts in the right direction are therefore necessary by way of imparting moral and cultural education and improving the standard of living among forest dwellers, backward people and agriculturists Efforts are also needed to keep them occupied usefully in and out of agricultural season Small-scale and Cottage Industries in the village would improve the prevailing rural conditions, and help in this regard and make our forests grow and flourish

A skunk stood on a stump. The stump thunk the skunk stunk, but the skunk thunk the stump stunk.



REMINISCENCES OF A FORESTER

BY

S. V GULVADI

Divisional Forest Officer, Gokak, Mysore State

I WAS born and brought up in an arid and hot dry district of the erstwhile Bombay Presidency in a practically treeless tract, and had no contact whatsoever with forest The only forests I had seen with a sense of awe were, while travelling in my boyhood with my parents by train to Belgaum, Goa and Bombay

In the year 1930, when economic malaise was at its worst and when any employ and especially Government service was considered a good career, force of circumstances made me apply for a Forest Rangers' post As luck would have it I duly got selected and was posted to Nagargali Range in Belgaum District for practical training, in December, 1930. After completing six months in the various Ranges of Belgaum and Kanara Northern Divisions on such training I joined the Madras Forest College at Coimbatore in July, 1931. At that time the Bombay Presidency included the 4 Districts of North Karnatak (now included in Mysore State) and also Sindh. The higher echelons of the forest service right from the rank of the Divisional Forest Officer onwards by and large, were filled in by European Officers belonging to the Indian Forest Service, with the exception of a sprinkling of Indian Officers The first six months on practical training in the forests gave me a fair fore-taste of a forester's life, with all its privations, such as a life sequestered from society, hazardous on account of the wild animals, leeches, reptiles and ticks, and arduous due to the rugged terrain, unwholesome water, and malarial infection. At times I almost felt like resigning the job, but better counsel from my well-wishers however, prevailed which kept me going

The two years 1931 to 1933 spent at the Madras Forest College at Coimbatore were the happiest though at that time the rigid discipline and the near military type of training they put us through, nearly got on my nerves to a breaking point Everything at this College (i e. from physical training in the morning to Games in the evening) including journeys on tours and putting out lights at night, at certain hours, was compulsory Yet this did not detract from cheer and abiding satisfaction, as life so well regulated and disciplined was not without meaning, not without content Over the years now, it has made me what I am today, that I feel beholden for this sound training Now after several years of service, I feel and realise that the training I got there, was really comprehensive and good, giving a balanced perspective on life. Those two years were really memorable, happy and pleasant. I still recall the pet statement of Mr Wrench, the Principal that we " live and learn ".

My official contact with forests began in the year 1930, but my regular service as a Ranger started in 1933 July, i e, well over a quarter of a century ago in Kulgi Range of Kanara Northern Division in North Kanara District This District has some of the luxuriant forests, including tropical evergreens and the rich teak forests Over 75 per cent of the land area in this District is under forests, and naturally it attracted the attention of the then Rulers who acquired them long back in 1876-77 In fact, the Forest Department started functioning first in Sourthern Circle (the present Belgaum Circle) in the then Bombay Presidency and that too in Kanara District To begin with, one Col Peyton an Army Officer and then Conservator of Forests laid the foundations of the Forest Department in Kanara, and is regarded as the grand old man of the Forest Department As far as I could gather from the senior and retired Forest Officers I came in contact with, when I was pottering about as an understudy to some

senior Rangers from Range to Range on special duty, I could make out that till the close of the XIXth century, most of the forest staff barring the Indian Forest Service, was untrained and identified the forest species either as "Bada Pattaka Zad" or "Chota Pattaka Zad" and the work of the Forest Officers then mainly consisted of rigid protection of the existing forest and selective exploitation of valuable species like, teak, sissum, matti, nandi etc. from the denser areas and sandalwood, teak poles and fire-wood from the drier zones. In short, it was pure protection and exploitation without any silvicultural treatment, often wasteful and time-taking because the method of felling and transport was primitive The greatest waste that occurred was due to the girdling of trees and the sliding of timber down the steep slopes in Gund Range in Kanara Northern Division and Nersol slopes in Kanara Eastern Division for onward river floating whereby not only the valuable timber particularly teak was damaged on account of splitting and cracking against the intercepting rocks but much more was lost in transit by sinking and theft. The root-stock besides perished on account of girdling However those were the days of pioneering, when the forest estate had to be surveyed and its scientific management initiated Later the Department started sending the young recruits for Forestry training to Poona in conjuntion with the Engineering College Thereafter the Bombay Government started sending further batches to Dehra Dun for Forestry training This went on till the year 1922. Again the Bombay Government attempted to start a Forestry College at Dharwar under one of the I F. S Officers Mr Metland Carvan; but some how they found it uneconomical and started sending further batches to Madras Forest College till 1939 When another attempt was made to start a Forestry College at Poona, which was also closed after 2 or 3 batches were trained, and again a trek began to Dehra Dun A last attempt was again made to start a Forestry College at Dharwar in conjunction with the newly started Agricultural College in 1949, but this also met the same fate as the previous two attempts, after two batches were trained.

My long service of about 28 years, falls into three phases the last of which is from 1957-61 in the Mysore State where I am now serving The first one is from 1933 to 1947—the near legendary 14 years of "VANAVAS" in Kanara Northern and Eastern Divisions during the British Raj. At that time one Khan Bahadur Ratnagar an able Indian Forest Officer was Divisional Forest Officer, Kanara Northern Division, who brought to his work efficiency and great professional competence, that has left his mark even today. In fact he held the reins of this Division for nearly a decade of years from 1927 to 1937 and greatly helped in enhancing the value of the forests of this Division. In his time Dandeli which now is one of the renowned timber depots in the country became a by-word for timber I spent about seven years in Kanara Northern Division and another seven years in Kanara Eastern Division The latter ranked next in importance to the former in point of revenue. In this Division, I met the doyen of the Forest Department Mr J Walker, an Englishman, who gave his best to our forests He was an officer who to whatever he did brought a sense of dedicated duty and service, and hard toil The forests of the Kanara Eastern Division flourished under his benevolent care, over the years, nearly a decade—he was in charge of this Division He still lives in the hearts of many for the yeoman service he has rendered

I have a pleasant recollection of these years, when works went off with a flying start when speed and efficiency were their hallmark interference from outside was scarcely seen, and timely appreciation of work done well, was more a rule than an exception This tradition was built up by the personal example of the Officers as well as of the good and efficient staff both out-door and in the offices that must have contributed a good deal to it. Plaudits for good work came through actual inspection of the work in the field The Superior Officers used to spend a great deal of time going round the forest to make sure that all the works were proceeding on an even keel Office work did not keep them tied down to their desks As a result, the officer was readily available for frequent guidance and help in the field, to set right any flaw or omission in work no sooner than it occurred. This instilled a sense of confidence and enthusiasm amongst the lower staff and the works were executed accordingly. In short the Divisional Forest Officer was a protecting angel, spanking like a loving Father, without personal rancour There was very much more detachment in administration and each unit either small or big from Range to Circle enjoyed considerable freedom of action with minimum interference from official or non-official sources, but with due share of responsibility. At least in the two Divisions referred to by me the Divisional Forest Officers were

fully conversant with the budget as well as works programme and disposed off 3/4th of the correspondences including payment for works by cheque, in camps, without reference to Headquarters As for the field works, such as markings, fellings, plantations, and silvicultural operations they were satisfying themselves personally or sometimes through their Gazetted Assistants; but definitely not by certificates and proformas As a result every one from the lowest Guard not only knew and understood the Divisional Forest Officer but also did their job Everything used to be in its right place, the Bungalows and Rest houses, Offices etc used to be spick and span, and the staff properly dressed and fully equipped with maps, toposheets, plantation journals, tapes, billhooks and reference books etc, on duty Unfortunately during the 2nd World War everything went to pieces on the one hand, the British Raj was in mortal peril due to the war in both East and West and due to terrific nationalistic upsurge for political freedom in India epitomised by the Quit India Resolution of 1942. Thus the British Officers lost all interest and were bent on only exploiting the forest resources to the utmost, to safeguard their war effort and all the rules framed under various Working Plans for proper exploitation and improvement of forests were thrown to the winds and the rigid controls and discipline insisted upon previously was given a wide berth.

Forest life is not without its fill of adventure, and the thrills I have witnessed in some of the shikar expeditions are still vivid before me. The most interesting of these, used to be the shooting camp of His Excellency the Governor of Bombay at Yellapur in Kanara Eastern Division The whole thing used to be worked out to the minutest detail often by the Chief Conservator of Forests himself. Mr Hiley, the Chief Conservator of Forests then who was himself used to camp with the Conservator and the Divisional Forest Officer in Yellapur months in advance, supervising the preparations such as the putting out of ties, making of paths, setting up of "machans", bringing of "khabar", carrying out the beats, etc. Each work was assigned to the forest staff with a meticulous plan. Even rehearsals with dummy tigers were carried out to ensure that everything proceeded without the slightest hitch on the appointed day. The actual camp used to be of a duration of about 8 to 10 days and this period used to be of extreme tension and anxiety to the staff entrusted with the work.

Another interesting episode which I recount, is that, when I accompanied a Deccan Raja for a tiger shoot in Yellapur Range A tie had been put out the previous night and "khabar" came that it was killed by the tiger. Hastily a beat was arranged and over a hundred villagers were sent with drums, gongs, and canisters to rouse and drive the tiger to the "machan". In every beat though a large number of people are made to surround a good bit of the forest while driving, only a dozen or so sit on the trees to direct the quarry by clapping, towards the "machan" The Rajasaheb had a revolving green "machan" on which we both sat, he with his superb double-barrelled midland rifle, and I as his guide and friend. I had earlier seen this Rajasaheb a perfect shot, even in Yellapur a year before but on this particular occasion strange enough, his venture turned out to be a flop At the stroke of twelve in the noon the drive began and shortly thereafter, the watchman on the tree lightly clapped. I pointed out to the Raja that something was coming up through the shrubs in front but before he could raise his gun a fine specimen of a tiger in fury sprang through and ran past the "machan" There was clapping again and before I could draw his attention another tiger rushed past on the left side With a short break, the watchers gave a third warning and the third tiger came just below the "machan" and bang went the double-barrelled rifle, but to our consternation the tiger just ducked and sneaked through under our very nose beneath the "machan", into the forest The fourth warning was duly given by the watchers and before I could draw the attention of the Rajasaheb there was a mighty roar from a few yards right ahead of us, and a huge tiger broke through the ring backwards. The Rajasaheb was greatly disappointed, but he consoled himself through a philosophical turn of mind and told me that it must have been the breeding season of tigers and the one that slunk beneath, might be a "Madi" (female) and the two that roared past and escaped left and right, and the third that roared and broke the ring might be the suitors God therefore he said did not wish such a romance to be broken by slaying any one of them by his gun and that in all his long career of shikar he had never seen four full grown tigers in one beat coming one after another !

From 1933 to 1937, there was keen rivalry among the Rangers and each one believed, that he could achieve more by his own effort than by

combined bargaining. As a result, the higher-ups could always set one against the other and get the best out of each ; but there was no regard in the higher quarters for the Rangers' cadre But in 1937 three very able Rangers namely Mr D S Kaikini (later Rao Bahadur), Mr. J V Rego and Mr B F Brito revived the old defunct Rangers' Association, started long back in 1927 and created a sense of brotherhood and fellow-feeling and mustered solidarity for this Association They urged their colleagues in the Northern and Central Circles also, to form Associations of the like in their respective Circles, which finally emerged as a Provincial Body and got the recognition of the Government. Thus what was desired before, became easy of achievement through the combined strength of all and many of the grievances which the Rangers' cadre had suffered in the past few years, were redressed and it came to be increasingly recognised that the Range Forest Officers too were an equally useful limb of the Department

Here the first phase of my service closes and the second begins In the year 1947 India became independent and on the 15th August at midnight the Indian tricolour was unfurled There was heavy rain that night and we had all gathered at the District Collector's Office in Dharwar (by this time I had been transferred to Dharwar) and news came through that Mr F T C Vas, the Senior-most Indian Officer belonging to the I F S became the Chief Conservator of Forests A new era was therefore ushered in when the Department came into its own

In 1949 I was entrusted with the task of starting the Forest College at Dharwar in association with the Agriculture College there, and in this assignment, it was given to me to revive the student days I had spent at the Forest College, on training years ago This also gave me an opportunity to come into more intimate contact with the various forests which I had either seen or were new to me In 1951 I reverted back to my cherished Kanara Northern Division as a Ranger and after some time became the Depot Officer at Dandeli, considered then to be a responsible post, held by an Officer of the Rangers' grade But before 15th months rolled by, I was transferred to the Range Badami, once the capital of the "Chalukyas" Within a year thereafter, I again got back to Dharwar and after two years was promoted to the gazetted rank In 1956 the districts of Belgaum, Dharwar, Bijapur and North Kanara went over to Mysore State consequent to the reorganisation of States

When I have now almost completed the race and look back to those yester years in the Department, I feel that despite its vicissitudes, life has been to me a refreshing experience I may quote here the great words of Sant Ramdas as a finale

"जगी सर्व सुखी असा कोण आहे ।
विचारी मना तूंचि शोधूनि पाहे ॥
मना त्वांचिं रे पूर्व संचित केलें ।
तया सारिखें भोगणे प्राप्त झालें ॥"

And soft sun shines and the sound,
of old forests echoing round,
And the light and smell divine,
Of all flowers that breathe and shine.

Boss while discussing with Subordinate Officer who is seeking orders,
. . ..but you may not refer this matter to me officially. If you do, I will have to refer it to higher authorities "

PART III

ARTICLES FROM SOME OF THE PRESENT OFFICERS

WHAT DO WE PLANT WHEN WE PLANT A TREE ?

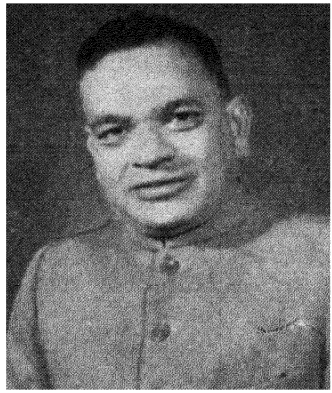
What do we plant when we plant a tree ?
We plant the ship which will cross the sea,
We plant the mast which will carry the sails ;
We plant the plant to withstand the gales,
The keel, keelson, the beam the three,
We plant the ship when we plant a tree.

What do we plant when we plant a tree ?
We plant the houses for you and me,
We plant the rafters, the shingles, the floors,
We plant the studding, the butts, the doors ;
the beams, the siding, all parts that be,
We plant the house when we plant the tree.

What do we plant when we plant the tree ?
A thousand things that we daily see,
We plant the spire that towers the crag,
We plant the shade from the hot sun free,
We plant all those when we plant the tree.

—HENRY ABBEY.





TRENDS IN FORESTRY IN THE MAHARASHTRA STATE DURING THE LAST CENTURY

BY

R. R. CHAUDHARI

Chief Conservator of Forests
Maharashtra State

Introductory

The present Maharashtra State is constituted of the parts of the erstwhile Bombay State, the Central Provinces and Berar and the Hyderabad State With the reorganisation of the States on 1st November, 1956, the Bombay State lost about 4,619 38 sq miles of the valuable forests of Kanara along with those of Belgaum, Dharwar and Bijapur which went over to the Mysore State, but fairly rich stretches of about 15,529·35 sq miles of forests from Vidarbha region were added to it along with the Saurashtra forests. As a result of the bifurcation of the bilingual Bombay State in May, 1960, about 5,963·35 sq. miles of forests, consisting of the very valuable areas of Dangs, Vyara and Rajpipla Divisions and the home of the king of beasts — the lion — the Gir forests was transferred to the new Gujarat State. The history of the forests of the Maharashtra State is thus inextricably bound up with the history of all these components and as such it cannot be treated in isolation at all

Beginning of Forest Conservancy in the ex-Bombay State

Since the deficiency of oak in England for ship-building industry was being felt more and more acutely round about the end of the eighteenth century, the Court of Directors in London enquired in 1805 from the Government of Bombay as to what extent this deficiency could be made good by teak from the Indian forests The Government of Bombay thereupon appointed a Commission of Survey to report on the composition of the forests and the proprietary rights in them, distinguishing between what could be regarded as public forests and groves and plantations forming private estates This enquiry resulted in a proclamation that the royalty rights in teak claimed by the former Government vested in the East India Company and that all unauthorised felling of teak by individuals was prohibited The forests of Thana and Kolaba Divisions supplied small teak spars, while those of Kanara and Dangs (which now form part of Mysore and Gujarat States respectively consequent to the reorganization of States) provided large-sized timber for the ship-building Beyond charging a tax on all teak felled, nothing further was done until about 1837 As a result, the forests of Kanara from which the main supplies of timber were undertaken were dwindling fast and in 1839 Government forbade the felling of teak without permission.

In 1840, Dr Gibson, Superintendent of the Botanical Gardens, Bombay Presidency, was asked to inspect the northern forests of the Presidency in order to see to what extent they could supplement those of Kanara. At that time, Government concentrated only on the exploitation of teak which was primarily required for ship-building. As a result of Dr. Gibson's inspection, Colonel Jervis, Chief Engineer at Bombay wrote a Minute in 1843 for the Military Board narrating succinctly the situation, extent and the condition of all the teak-bearing forests in the Bombay Presidency. It was the Military Board which urged the Government to organise an establishment for the conservation of all forests, and in 1845 the Government of Bombay asked the Government of India to sanction the appointment of a Conservator and a small staff. Gibson was appointed as the first Conservator in 1847. He had however acted as "Interim" Conservator from about 1841-42. Gibson applied himself to



the work in great earnest and wherever he went, he endeavoured to bring the forest growth into a better state, by arranging for protection and improvement fellings wherever this was possible with his limited staff The improvement fellings were carried out, to produce mature timber for the needs of the Military and the Naval Departments, as also to improve the crop by the removal of the malformed or suppressed trees, thereby supplying small timber for domestic needs of the local populace for house-building, carts, agricultural implements etc He also enjoined that wherever such felling took place, the side-branches of the tree were trimmed, which operation, strangely enough, he considered would encourage the growth of the leading shoot and lead to a well-grown straight pole This was a modest beginning, when the scientific management of forests made its debut not only in Bombay but in India as a whole, a matter that fills us with legitimate pride Forestry began to take shape from these rudiments, from the grass-roots so to say, and has since followed a chequered course of events, each featured by gradual advance and progress that have given it a significant share in the economy and welfare of this State

A charter for the protection and preservation of the forests came to be drawn up first in 1865 when the Indian Forest Act was enacted This Act did not permit interference with the existing rights and privileges and hence it necessitated modification A new Forest Act was, therefore, promulgated in 1878, which was in existence in this State till 1927, when the present Act dealing more comprehensively with all the aspects relating to forests was passed and is in force since then, as amended by the local Government from time to time, the latest important amendment being the unification of the Forest Act and its application for the three components uniformly in February 1961.

The first Working Plan came to be drawn up, in the year 1879 for the teak forests of Akola and Sangamner by Mr Hight which prescribed control of yield by volume

In 1892, the Department was reorganised and in 1893, three Circles were formed more or less corresponding with the Revenue Divisions. For the first time, a Chief Conservator of Forests was appointed in 1917. In 1921, the Department ceased to be ancillary to the Revenue Department These changes, both administrative and organizational, augured well for the future, and paved the way for rapid development of the forests

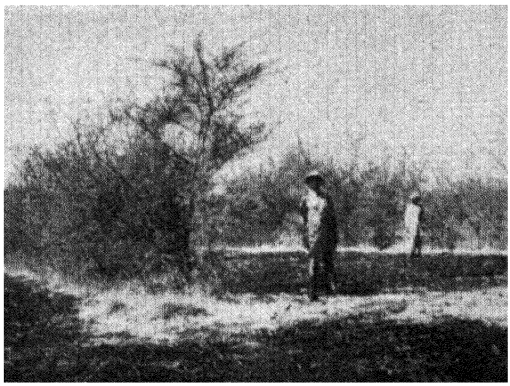


Ten year old Casuarina plantation at Bordi, North Thana Division

Beginning of Forest Conservancy in Berar Forests

The Melghat Taluka along with the rest of Berar comprising the present Amravati, Yeotmal and West Berar Divisions came under British rule in 1853 by assignation from the Nizam of Hyderabad At that time there was no forest administration in this tract In 1855, the Deputy Commissioner of North Berar reported the existence of teak in the hills within his district and recommended that felling should be prohibited for some years In 1858, the Commissioner of Berar ordered that certain teak trees be selected and conserved for Government purposes in Melghat forests The Government of India called the attention of the Resident at Hyderabad to the importance of preservation of the teak forests in Berar in 1860 and directed that rules be framed to this effect The forests were inspected by Colonel Pearson who was, at that time, the Conservator of Forests of the Central Provinces As a result of Colonel Pearson's recommendations, an Assistant Conservator of Forests, with an establishment of his own was appointed for Berar, subject to the Conservator of Forests of the Central

Provinces in 1865. This appointment marks the commencement of regular forest administration in Berar and Melghat Sir Dietrich Brandis visited Berar in 1869 and his visit bore speedy fruit Fire protection was introduced in 1870 and in 1872 The first attempt to introduce regular fellings in Melghat was made by Mr Drysdale who was then the Deputy Conservator of Forests, Berar The Berar Forest Law was passed in 1886 The first Working Plan for Melghat was prepared by Col V Somerson in 1886 In 1903,



the Nizam of Hyderabad leased Berar to the Government of India in perpetuity in return for annual rent In consequence, Berar ceased to be under the Administration of the Resident at Hyderabad

Beginning of Forest Conservancy in Vidarbha Forests

The forests of Vidarbha were declared as Reserved Forests at various periods, in the latter half of the nineteenth century and were brought under systematic working during that period. The extremely valuable forests of Allapalli and Pedigundam Ranges, about 323 sq miles in extent were purchased from the Zamindars of Aheri, in the last quarter of the nineteenth century. These were legally constituted and brought within the purview of Working Plans for the first time in 1895. The forests were gone over, under two cycles under Selection-*cum*-Improvement by 1930, when the Plan was revised and the Conversion-to-Uniform system introduced for these forests in the plains, while the forests on the steep terrain continued to be under Selection-*cum*-Improvement fellings This, in short, is the history of the development of the primeval forests in this State.

The forests—their present extent and composition

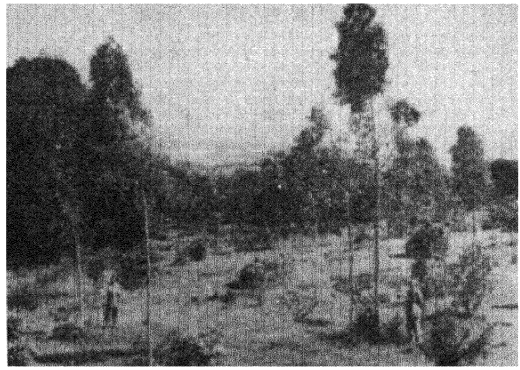
The total forest area of the State is 25,933 sq. miles Of this area, 21,966 sq miles are administered by the Forest Department, 2,550 sq miles are under the Revenue Department and 1,417 sq miles vest in private individuals. The forest area on the whole in this State constitutes about 21 8 per cent of the aggregate land area as against 18 5 per cent formed by the forests administered by the Forest Department The area under pasture in charge of the Forest Department comes to 1,504 sq miles and out of the entire forest area about 80 per cent or 16,000 sq miles are kept open to grazing

On account of the wide range of physiographic and geological features, the floristic wealth of the forests of this State is rich and varied both in composition and value There are about 1,500 different species of which roughly 225 are tree species Out of these only about 40 species consisting of 21 major and about 19 subsidiary timber species are of economic importance and form the real tree-wealth of this State They may be broadly classified as hardwoods, softwoods, fruit trees, trees yielding economic produce such as oil-seeds, gums, tans, katha, bidi-leaves, etc As a commercial timber, teak stands out unique on account of its durability, all-round dimensional stability and superiority of its other physical properties The other well-known hardwoods are ain, shisham, haldu, kalam, khair, bija, etc Among the softwoods, only sawar is a valuable species occurring in small quantity and that too scattered throughout the State forests.

The present forest output vis-a-vis our needs

Considering that our total annual outturn of timber in the State is about 12 8 million c ft., our consumption per capita works to about 0 39 c ft The total annual outturn of firewood is 53 4 million c ft, which per capita works out to 1 66 c ft. Reckoning all wood, our total consumption per capita comes to 2 05 c. ft. As compared to some of the progressive countries in the world, our wood consumption per capita is among the lowest. In the U. S. A, it is 63·5 c. ft., while in the U. S. S. R., it is 37 00 c. ft. May be, these figures are not truly comparable considering that these countries are sparsely populated. The present average out-put from our forests as a whole is estimated at just 5 00 c ft per acre per year, whereas annual outturns of over 25 c ft per acre are not uncommon in other countries In the case of

France, it is as high as 56 8 c. ft. and Japan too is well up in the list with 37 3 c ft. Sweden gives a yield of 26 9 c. ft. per acre while Finland is very near with 26 5 c ft. All this goes to prove how understocked our forests are and how low their productivity is and therefore points to the urgent necessity to remedy this situation without delay, considering especially that with the phenomenal rise in population and the upward trend in the standards of living as a result of our growing economy, the demand on wood is bound to increase more and more As a result of the Timber Trend Survey carried out by the F. A O in the Asia-Pacific Region during 1956, the increasing gap between demand and supply of the basic forest products, has been brought out and the urgent need to remedy matters has been brought home to the Governments concerned In this respect as far as this State is concerned, we are already short of the prescribed minimum of 33-1/3 per cent Moreover, some of the forests occur in scattered bits, situated in hilly portions Nor are all forest areas uniformly stocked with useful species In view of the recent advances made by our State in the industrial sector, the existing forests cannot meet all the requirements of the State Moreover, it is estimated that there are about 80 lakhs of families in our State, of which about 20 per cent are urban and 80 per cent rural Estimating that only about 50 per cent of the urban and 25 per cent of the rural population, depend on Government forests and further basing the requirement of each family at 4 mds per month, the quantity of firewood required for the whole State would be about one crore of cartloads Since an acre of forests may yield 1 to 5 tons of timber and 5 to 20 tons of firewood, it is necessary to exploit about 5 to 10 lakhs of acres annually, as against the present annual exploitation of 3 lakh acres This shows very clearly the shortage in this State even for the hearth of its own inhabitants This leaves practically no scope, for the utilization of wood by the present expanding industries However, to get a more accurate picture, it is necessary to have a comprehensive survey of the rural and urban domestic needs, and the industrial requirements



Seven year old plantation of Eucalyptus citriodora in the afforestation in Panhala Range—Kolhapur Division

Revenue and Expenditure

The financial returns from the forests and the money invested in them each year reflect on the efficiency of the forest management The following figures of revenue and expenditure for the past nine decades for Bombay State make a revealing study.

Statement showing Revenue and Expenditure, etc.

Year	Revenue	Expenditure	Surplus	Percentage of surplus to the total revenue.	Percentage of expenditure.
	(Figures in lakhs of rupees)				
1870-71	12·00	7 50	4 50	37 50	62 50
1880-81	30 00	17 00	13·00	43 33	50 66
1990-91 .. .	26 00	14 41	11·67	44 75	55 75
1909-10	32·42	18 80	13·62	42 01	57 99
1920-21	63·37	46·31	17 06	26 92	73 08
1930-31	46·56	38 88	7 68	16 49	83 51
1940-41	44·54	28·09	16 45	36 93	63 07
1950-51 ..	406·62	131 05	275·57	67 77	32 23
1959-60	577 06	209·63	367·43	63 67	36 33
1960-61 ..	479·50	229 82	249 68	52 07	47 92



Five Year old Prosopis juliflora (Vilayati babul) Plantation—Shrigonda Range- Poona Division

While the forest revenue has registered a significant rise over each decade, the expenditure however though showing an increase, has not been commensurate with the revenue realised. In the last two years, particularly, the percentage of expenditure on forests as compared to the revenue shows a significant decrease If our forests are to maintain a high level of productivity in perpetuity, it is needless to emphasise that we must plough back the essential minimum of money into our forests We would otherwise 'et a treasure with all its productive and protective benefits taper away into an infructuous estate

Forest grazing

Forests constitute the major source of pasture to cattle in this State The year 1959-60, fetched a revenue to the tune of Rs 10,20,000 by way of grazing fee The grazing policy adopted at present in this State however, is not uniform and varies with each of the three different regions of the State, viz. the Western Maharashtra region consisting of the residual area of the ex-Bombay State, the Vidarbh and the Marathwada regions Pending evolution of a uniform grazing policy, the existing policy in each of these regions is allowed to continue.

(*a*) *Regulation of grazing in the Western Maharashtra region* - -So far as the ex-Bombay State region is concerned, up to 1st July, 1937, a definite scale of grazing fee was laid down, distinguishing between cattle of forest and non-forest villages and those from the then Indian States. A grazing fee of annas four per buffalo, cow, oxen, horses, donkeys and mules was charged in the case of forest village cattle and annas two for sheep and goats if allowed. Twice this rate was charged for non-forest village cattle and four times this rate was charged for cattle from outside the State limits Since July 1937 however, the grazing fee was abolished except in the case of the cattle coming from outside the State The standard acreage for grazing, though defined arbitrarily at 2 units of adult cow per acre, has not been actually determined in relation to the carrying capacity and nutritional needs of the cattle A set of draft grazing rules drawn up for the then Provinces of Bombay in 1938 dealing with the preference for cattle for economic agriculture, distribution of ranches, determination of the carrying capacity of each ranch, distribution of permits, public ranches, free and unrestricted grazing in the open forests, etc, did not however evoke the desired response and co-operation from the public Various conditions existing for the imposition of some sort of control and regulation, such as the admission of cattle to grazing, the requirement of a free permit for grazing, closure of areas to allow periodic rest for the amelioration of pasture, etc, have all proved vapid and ineffectual on account of the far too inadequate extent and poor quality of the available grazing resources

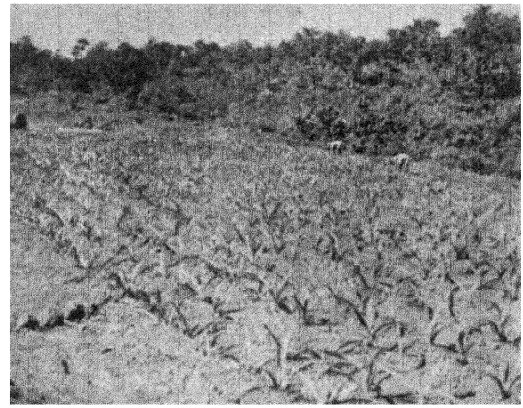
As an additional facility of improved pasture, grazing and cutting kurans are farmed out in some divisions with a total area of about 200 sq. miles and in times of drought and famine, they act as a bulwark These are very much appreciated by the villagers and there is actually a scramble to avail of them They are first offered to the Village Panchayats and the other local bodies according to the existing Government orders

(*b*) *Regulation of grazing in Vidarbh region.*— A more elaborate system of grazing exists in the Vidarbh region where it is regulated in the reserved, protected and unclassed forests according to the Madhya Pradesh Forest Policy Free grazing here is limited All villages having four or less than four cattle units are allowed free grazing while cattle in excess of this limit are charged at stipulated, privilege or commercial rates At the time of framing a new Working Plan or revising the old one, the Working Plan Officer has to distinguish the forest into the various classes such as Protection forests, Tree forests, Minor forests, Pasture forests and Grass Reserves for the purpose of enforcing the grazing policy The incidence of grazing allowed varies from one cattle unit for every three acres in the Tree forests to 1 cattle unit per acre in Pasture forests whereas in the Protection

forests and the Grass Reserves, grazing is entirely prohibited

(c) *Regulation of grazing in the Marathwada region.*—In the Marathwada region, grazing is regulated according to the erstwhile Hyderabad State Grazing Rules The incidence of grazing is prescribed for each Block and varies from 1 5 to 4 4 acres per cow-unit Grazing fee is recovered at different rates for agricultural and non-agricultural cattle

(d) *Proposals for the future* ---Reviewing the various systems of grazing prevalent in the three different regions of the State, it is seen that while a fairly sound policy exists in the Vidarbh region, that in the ex-Bombay State needs reorientation with due regard to the conservation of forests and the availability of grazing resources A sound grazing policy is a *sine-qua-non* to forest conservancy apart from ensuring pastoral and agricultural welfare The abolition of the grazing fee in the ex-Bombay State has resulted in numberless herds, far in excess of the carrying capacity, grazing on limited pasture, and the concomitant has been rapid deterioration of the forests To arrest this process and to restore the denuded areas to their productivity, an amount of Rs. 10 59 lakhs was spent on the development of pastures under the Second Five-Year Plan and a financial allocation of Rs 5 30 lakhs is made for this purpose under the Third Five-Year Plan. For the aforestated reasons, it is necessary to evolve a uniform Grazing Policy for the entire Maharashtra State and a proposal made in this regard on more or less the pattern of policy followed in the Vidarbha region is under the consideration of Government This policy envisages in main, the levy of grazing fee for the various categories of cattle, prescription of incidence of grazing according to the types of forests, effective distinction between agricultural and non-agricultural and essential and non-essential cattle, rotational closures and rehabilitation of pastures wherever necessary, improvement of the cattle breeds, enforcement of a permit, etc. It has also been proposed to open a special section called Fodder and Grazing Section in charge of a trained agrostologist under the Forest Department with a view to determine the carrying capacity of the different types of forests and pasture lands to evolve a suitable technique for assessing the productivity of grazing lands, to initiate experiments to ascertain the optimum cycle of periodic closures, regulation, control and improvement of grass and grazing, etc More than anything else, success could be achieved in this regard

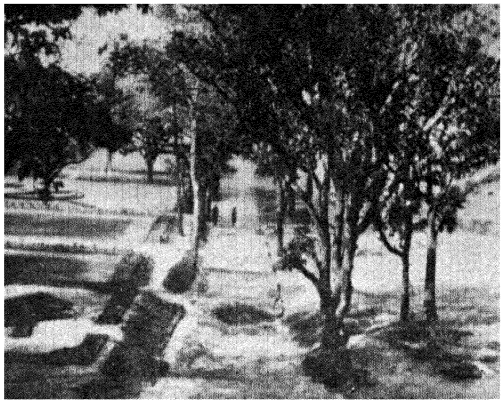


Agave nursery--Ajra Range Kolhapur Division

if only the villager learns to subordinate his individual selfish interest to that of the village community as a whole This could be achieved by intensifying the necessary propaganda of educating the villagers to this effect

Privileges and Concessions

With a view to provide the elementary needs and some basic amenities, particularly to the forest dwellers, certain privileges and concessions are sanctioned by Government with due regard to the capacity of the forests to meet them This provision goes a long way in insuring the forests against depredation to which a villager might develop a propensity out of sheer economic distress It is these privileges and concessions that are aimed at satisfying his basic wants and thereby in getting a return from him by way of vigilance over forest protection and incentive to labour in the various forest operations Among such privileges and concessions granted, are the removal of earth, stones, fallen leaves, grass and deadwood, right of way to water, free grazing in open forests, removal of branchwood of a particular size from the felled coupes, digging wells or channels for agricultural purposes, etc Incidentally, all these privileges and concessions are granted as a favour and cannot be claimed by way of a right and though they are liable to be modified, curtailed or discontinued at any time according to the pleasure of Government, no action has so far been taken to this effect in spite of their present gross abuses and the consequent grave deterioration and depletion of the forests. In view of all these and the growing onslaughts on the forests for large-scale clearances for cultivation hydel projects, rehabilitation of the displaced persons, industries, etc , the whole question of the



View of Tabak " Van Udyan " at Panhala— Kolhapur Division

privileges and concessions needs to be thoroughly reviewed and regulated according to the capacity of the forests, in the respective regions

With the abolition of the proprietary rights in the Vidharbh forests, the ex-proprietary forests in this region to the extent of about 7,000 square miles came to be vested in the State and the onus of meeting the requirement of small timber and other forest produce like firewood, thorns, grass, bamboos, etc., known as 'Nistar', of the local populace, devolved on Government 'Nistar' is made available by Government to the people to the extent the forests can meet this demand

In the event of damage by fire and of natural calamities like floods, cyclones, drought, etc, Government comes to the aid of the stricken by way of free grants. The approximate value of the forest produce availed of annually by the free grantees and the right and privilege holders is to the tune of Rs 12 lakhs.

The National Forest Policy

To India goes the distinction of having been the first country to enunciate its forest policy way back in the nineties of the last century As early as in 1894, Government of India formulated a policy which principally aimed at the promotion of the general well-being of the country, the preservation of the climatic and physical conditions of the terrain and subject to this, to satisfy the basic needs of the local populace However in practice, the emphasis lay on the satisfaction of the agricultural and domestic needs of the local inhabitants and forestry was treated virtually as the hand-maid of agriculture, with the result that large-scale clearances came to be made in favour of agriculture and habitation. In addition, with the flux and change of the times, many a force came to play which seriously affected forest conservancy The most potent among them was the acute land hunger which craved for more and more land from the forests. To add to this constant scourge, the expansion of the railways and their requirement of firewood, timber, etc, also took a heavy toll by very large clearances and depletion of the forests. The two World Wars had also their repercussions. The emergent fellings carried out during the Second World War, made raids on the growing stock, heedless of the limits of the annual cut, specified by the Working Plans. The result was advance and excessive fellings which threw the scientific management of the forests out of gear The abolition of the grazing fee in 1937 as discussed earlier led to uncontrolled grazing by limitless herds of cattle and the pressure upon the available grazing grounds was so great that not only the quality of pasture deteriorated but serious depletion of soil fertility and even incipient erosion threatened their denudation beyond retrieve Fortunately, Government was seized of this situation although too late But since it is better late than never, it had to undertake large-scale afforestation and other improvement schemes in this respect under the periodic national development plans.

Control of Private Forests

The tree-growth in the forests vesting in the private individual was getting fast annihilated at an alarming rate on account of the selfish interest for quick money returns without the least concern for the perpetuation of this growth in a wider interest Government sought to arrest this pernicious trend by regulating felling in such forests by amending in 1948, Section 35 of the Indian Forest Act, 1927, suitably Although certain restrictions have been imposed under these provisions, there has not been the desired degree of improvement in their general condition in view of the very elaborate and dilatory procedure and other defects in them These have been recommended to be remedied speedily by the adoption of the most effective steps taken by the ex-M P. Government in taking over about 7,000 sq miles of ex-proprietary forests, if these private forests extending over 1,500 sq. miles in the State are to be saved from ultimate ruin.

Revised National Forest Policy

With the advent of freedom, the important role of the forests in the national economic develop-

ment came to be progressively realised, ultimately leading to the re-enunciation of the National Forest Policy in 1952 It took into account the relentless pressure on forests to meet the needs of an ever-increasing population for food, fuel and fodder No longer were forests to be regarded as an inexhaustible reserve for the extension of agriculture in quest of food as hithertofore, as it was necessary to take into account the need (i) to evolve a system of rational land use, (ii) to check denudation of mountainous regions, (iii) to preserve the water-regime, (iv) to prevent soil run-off, (v) to provide progressively increasing supplies of timber, fuel and pasture and lastly, (vi) to ensure in perpetuity the realisation of the maximum possible annual revenue, compatible with the above The significance of this Policy was, the new emphasis being put on forestry as the foster mother of agriculture, instead as its handmaid as in the past Accordingly, the intrinsic right of forests to occupy land permanently for their protective and productive functions was accorded due recognition in the national economy to ensure vital supplies of forest products for essential industries and national needs like Defence Railways, etc It further stipulated that for optimum land use, at least 20 per cent of the total land area in the plains and as much as 66 per cent in hilly and mountainous terrain, should be under vegetal cover and that the overall limit should be 33-1/3 per cent

The Land problem

As said in the foregoing, the growing clamour for land has placed forest conservancy in serious jeopardy It has already spread its menacing tentacles During the War and later under the "Grow More Food" Campaign, substantial area from the forests was leased for temporary cultivation By 1951 as many as 1,48,846 acres and 39,598 acres came under pure and agri-silvi cultivation respectively The resumption of these lands later, in the interest of forest conservancy became a thorny problem and still continues to be so.

The phenomenal increase in population has further brought about unyielding pressure on forest lands for cultivation In 1959 Government, therefore, appointed a High Power Committee to examine this problem and to submit its findings It is estimated that according to the recommendations of this Committee, about 3,78,783 acres of precious forest land is in the process of being excised in favour of pure cultivation in spite of the Department's appeals to the contrary.

It must be mentioned here, that we are drifting away from the National Forest Policy The boundaries of our forests, which are far short of the optimum extent, being only 21 6 per cent of the total land area, are fast receding and are showing a portentous front The mere fact that a parcel of forest land exists without tree-cover should not lead to infer, that it is not fit enough to be brought under vegetal cover These denuded areas are largely the legacy of an indifferent generation over the aeons of time and the process of restoration cannot be complete overnight Of necessity, it follows a steady path, circumscribed by the limited availability of resources and technical personnel What is needed in the meanwhile is patience and a firm adherence to the tenets of the National Forest Policy and requisite facilities for the unhindered practice of systematic forestry In this respect it is further stressed, that Government lay down a definite Policy in respect of afforestation and follow it firmly and rigidly in view of the growing onslaughts on the forest areas Especially in the hydel areas, compensatory lands need to be given to the Forest Department either within the catchment area or elsewhere for afforestation to be scrupulously done or intensified under the Forest Department

The normal activities of the Department

The normal activities of the Department centre round regeneration, tending, felling, protection and the management of the forests as a whole Forests are propagated both naturally as well as by artificial means Natural regeneration is generally not adequate throughout the forest and is found to come up well only in a few areas where conditions are conducive to it, e g, the natural regeneration of teak by seed is conspicuous in the south-eastern forests of the State Artificial regeneration has therefore to be resorted to, in major parts to enrich the growing stock with economic species The normal regeneration operations are carried out according to the programme laid down in the sanctioned Working Plans, and form an engrossing activity of a forester It is a matter for pride, that in this sphere, this State is second to none in the country During the year 1959-60, as many as 23,590 acres of forests were artificially regenerated This figure also includes the area, reboised under the special afforestation schemes Much importance is attached to the raising of teak, which on account of its durability and other superior physical properties, is still the prized commer-

cial timber in the State Nearly, 45,500 acres of teak plantations have been raised during the past decade in this State, over which a sum of Rs 22,45,456 has been spent, bringing the cost per acre to a little below Rs 50 At maturity, plantations of teak are estimated to yield a pretty high monetary return as much as Rs 15,000 per acre in the exceptionally good quality areas exclusive of the quite handsome intermediate returns by way of periodical thinnings and cleanings

Forest Protection

The total forest area exploited under the various silvicultural systems during the year 1959-60 was 1,45,055 acres from which about 2,56,000 tons of timber and 5,34,000 tons of firewood were derived. Forests need delicate care and constant attention right from the seedling stage to that when they are ripe for the axe They have to be carefully tended now and then to promote their efficient growth so as to ensure higher output and consequent higher revenues to the State A systematic programme of cultural and tending operations drawn up under the Working Plans has thus to be meticulously adhered to The forests are also vulnerable to damage by fire, grazing, illicit cutting, insects and other plant pests, which call for continuous vigilance Efficient fire-protection through prevention and control is brought about by an efficient system of fire-lines, fire-traces, watch-towers and fire-watchmen Protection of the valuable forest treasure against surreptitious cutting, encroachment for cultivation, grazing, etc, calls for extreme vigilance and alertness on the part of the forest staff The mobile squads and motor launches introduced lately have proved to be very effective in this respect

Roads and Buildings

(*a*) *Roads*—To render possible the exploitation of forests to their fullest capacity, a good network of roads and communications is a desideratum The Forest Engineering Branch which was inaugurated in 1918 sees to this work. The total length of the forest roads in this State to-date is 3,583 miles The cost on their construction and maintenance is more than recouped by the higher prices realised for the forest produce removed along them cheaply and speedily

(*b*) *Buildings*.—To facilitate effective protection of the forests and efficient execution of the various operations, buildings both for residential accommodation as well as for inspection purposes become a *sine-qua-non* in the secluded forest tracts Accordingly, a number of rest houses, residential quarters, forest nakas, etc, require to be built for the convenience of the Inspecting Officers and the residence of the subordinates and forest labour at suitable places These are being carried out according to the prescribed programme in the Working Plans as far as possible Although a number of buildings have been so constructed, much more still remains to be done This is proposed to be done during the periodic Development Plans.

Forest Research

Forest Research forms an important activity of the Department as knowledge gained by research is the key to more complete use of the forest crop and opens new vistas for their development The object of forest research is to solve the technical problems connected with the forests, namely their proper growth, effective protection and economic utilization, for which well-planned programmes, able technicians and competent research workers are essential Research conducted on right lines offers a powerful tool for the speedy development of our forests Accordingly, Silviculture Utilization and the Statistical Branches established in the Department pursue this aspect of work with great application and vigour The improved techniques relating to growth, tending, improvement, management and utilization of the forests owe not a little to the work carried out by these Sections

(*a*) *Silvicultural Research*- The Silviculture Branch was inaugurated in 1939 and since its creation it has done much valuable work It has a rich ledger consisting of 700 Specific and 300 General files which provide a wealth of information on the various silvicultural aspects Silvicultural Research has been divided into three main categories, (i) Experimental Research, (ii) Statistical Research, and (iii) Miscellaneous In the field of Experimental Research, fundamental information on the plantation and regeneration technique of various species both indigenous, non-indigenous and exotics has been collected for over 125 species The outstanding achievements are the successful artificial regeneration techniques developed for the important evergreen species of the Kanara forests, the inter-planting of camphor 'tulsi' with teak, the cultivation of various medicinal plants and others of economic importance, the cultivation of black, wattle (*Acacia mollissima*) in Londa in Belgaum Division, the introduction

of a number of *Eucalyptus* species in the various localities conducive to them, as also of the nutritive grasses and legumes, the cultivation of Rosha grass, the utilisation of *Hitchenia caulina* for the manufacture of arrowroot and the experiments undertaken to find out species suitable for the afforestation of denuded and arid tracts, and for the conservation of soil and moisture Plantation techniques for the various soft-wood species required for the wood-based industries were also developed

In the field of Statistical Research, a number of sample, experimental, tree-increment and preservation plots were established from time to time In 1939-40, 4 Linear Tree Increment Plots were laid for the evergreen species of Eastern and Western Divisions, Kanara (now in Mysore State) and a number of species were identified In 1949-51, 47 Teak Sample Plots were laid out in the Kanara Division in collaboration with the Forest Research Institute, Dehra Dun, for the compilation of data for the All-India Teak Yield Tables In the same year, Tree Increment Plots of *Santalum album* were laid out in Belgaum and Dharwar Divisions to correlate the formation of scented heartwood with the girth increment of sandal trees

The first Triennial Programme of Silvicultural Research was drawn up in 1943-44 with the approval of the F R I, Dehra Dun In collaboration with the F R I, Dehra Dun, data for the compilation of volume tables was collected for 9 species, viz, *Terminalia tomentosa, Salmalia malabarica, Albizzia procera, Pterocarpus marsupium, Dalbergia latifolia, Anogeissus latifolia, Boswellia serrata, Albizzia lebbek* and *Acacia arabica* The position at present is that there are 96 Sample Plots, 14 Experimental Plots, 12 Linear Tree Increment Plots and 13 Preservation Plots in the State The Quinquennial Programme for Silvicultural Research in the State was drawn up in 1951-52 in consultation with the F R I, Dehra Dun This was completed in 1957-58 and was succeeded by the 2nd Quinquennial Programme drawn in 1958 after the conclusion of the IXth All-India Silvicultural Conference in 1956 In the field of miscellaneous duties, the Silvicultural Branch has attended to various items like the supply of seeds and seedlings of both indigenous and exotic species to individuals, forest publicity, forest education, etc A number of pamphlets, leaflets, treatises on various aspects of forestry were published in popular language for the benefit of the public with particular accent on the role of forests in the welfare of the rural communities

(b) Research and Working Plans Circle - A separate Research and Working Plans Circle was constituted under the Post-War Reconstruction Scheme on 1st January, 1948 It was however abolished on 1st November, 1956 During this period, the State made commendable progress in the furtherance of research It took a lead in the appointment of the three much-needed specialists, viz, the Forest Botanist, the Forest Chemist and the Forest Statistician, while the proposal to appoint an Agrostologist was under way Though the posts of Forest Botanist and the Forest Chemist were abolished in 1956 that of the Forest Statistician is continuing usefully and is of great help in the designing of and the lay-out of experiments and in the proper assessment of the results achieved as are so essential in the scientific development of the forests It is hoped that not only the posts of the Forest Botanist and Forest Chemist will be revived but supplemented by the other specialists like the Agrostologist, the Geneticist and the Physiologist to enable the conduct of forest research in the State in a more thorough and efficient manner

(c) Forest Utilization Branch —The Forest Utilization Branch was created in the year 1939 The research and the investigational activities undertaken by this Branch are generally aimed at finding a solution to the urgent problems relating to the effective utilization of forest products of various kinds and to the popularisation of the various indigenous forest products as substitutes to those imported A large volume of research work, tests and trials has been carried out through a number of extra-departmental agencies both within the State and outside The Utilization Branch has also taken active steps in devising ways and means for the improvement of the present outmoded, inefficient and wasteful logging techniques and tools to save the substantial loss in timber during conversion

The second World War entailed heavy fellings to meet its enormous timber needs and not only progressively increased the tempo of logging activity but also opened up fresh avenues for the utilization of forests A Circle known as the Utilization and Engineering Circle came to be created in 1947, mostly for the purpose of coping with these increasing timber supplies and engineering activities on account of the War itself and thereafter the post-war reconstruction works This Circle was later on abolished in the year 1951 when the work returned to normalcy

Preparation and revision of Working Plans

The first series of Working Plans came to be prepared near about the beginning of this century for the accessible forests The first Working Plan however was drawn up in the year 1879 for the Teak forests of Akola and Sangamner by Mr Hight which prescribed control of yield by volume The prescriptions of all these Plans were not sufficiently elaborate as the knowledge of the characteristics and the silvicultural requirement of the various species was meagre In course of time improved artificial regeneration techniques for the various species particularly teak were evolved and these details figured prominently in the Working Plans that were drawn up or revised between 1925 to 1935 The effect was, that the management of the forests was gradually brought on scientific lines

The Second World War however came as a setback and the excessive and advanced fellings undertaken to meet the exigency of war threw the prescriptions of the Plans out of gear

A Research and Working Plans Circle was opened in the year 1948 which among other aspects of research, served to co-ordinate with efficiency, the work of preparation of the Working Plans This Circle, however, was abolished in 1956 The Working Plans Divisions are at present attached to the various territorial Circles

Of the total forest area, an area of 15,392 sq miles is under the sanctioned Working Plans and an area of about 1,194 sq miles is in the process of being covered by such Plans

Training of Forest Personnel

Since Forestry is an intricate Science and a long term enterprise, sound training in it is essential to ensure efficient management of the forest estate

The Indian Forest Service Officers were trained at Nance and Oxford till 1923, while the Bombay Forest Service Officers were trained at the Indian Forest College, Dehra Dun or at Coimbatore and some even at Edinburgh At present all the officers of the Maharashtra Forest Service are being trained at the Indian Forest College, Dehra Dun

Attempts were made in the past for providing suitable facilities for the training of Range Forest Officers within the State In the years 1891-1902 and 1919-20, the Rangers were trained at Poona and Dharwar respectively These facilities were discontinued for some time and revived from 1938-44 at Poona and from 1949 to 1952 at Dharwar Thereafter the Ranger candidates are being sent to the Southern Forest Rangers' College, Coimbatore or the Northern Forest Rangers' College, Dehra Dun depending on the allocation of seats.

Training facilities for the Foresters in the State are fairly adequate A School was opened at Vada in 1925-26 which was shifted to Mandvi in 1929-30 This continued up to 1948 when it was again shifted to Bordi This School provided training to 30 Foresters and Guards From 1st February 1961 this School solely imparts training to 30 Forests Guards for a term of 6 months

In the Gujarat region of the composite Bombay State, a Foresters' School at Chhota-Udepur catered to the training of Foresters from 1956 for a batch of 30 trainees each year Training to the Forest Guards was being imparted at the School at Junagadh from 1956 onwards

Consequent to the reorganization of the States, the Foresters and Forest Guards of Vidarbha Region were continued to be trained at Balaghat and Betul respectively till 1959 With the establishment of the Foresters' School at Chanda with effect from 1st February 1960, this was discontinued The Chanda School catered to the training of 30 Foresters and 30 Guards each term From 1st February 1961 facilities at this School have been expanded to provide training for 64 Foresters each term from the entire State

Five-Year Plans

The Five-Year Plans set the pace of development of the forests, in a growing economy The First Five-Year Plan saw the continuation and the completion of the developmental works sponsored under the Post-War Reconstruction Programme It was a modest beginning with a financial outlay of Rs 22 90 lakhs Yet it served to blaze the trail for the vast horizons ahead The Second Five-Year Plan therefore was a greater achievement which aimed at all-round development of the forests, and covered a financial outlay of Rs 161 75 lakhs Features like afforestation of the denuded areas, rehabilitation of the pasture lands, development of minor forest produce, training of forest personnel, amenities for forest labour, extension forestry, etc., received a fillip under this Plan The fruitful results achieved under these Plans and the experience gained provided a perspective for the future plans The Third Five-Year Plan has still a more comprehensive programme that has given a spurt to developmental activity and covers a financial allocation of Rs 320 96 lakhs These Plans will gradually restore our forests to their productivity and make

this great, versatile and renewable resource serve man to its fullness, for economic expansion, increasing population and rising living standards will make huge demands on forest goods, which cannot be met from forests producing only a fraction of their potentiality The more abundant production of goods from the forest soil as a basis for improved standards of living is therefore the goal that these Plans will seek to achieve For this purpose, the need for zealously preserving the present extent of forests and to prevent any reduction by diversion to uses other than forests, can hardly be over-emphasised Furthermore, it has a ready been stressed that the existing forests cannot meet all the requirements of the rural population of the State and of the expanding industries in the growing economy of the State The situation, therefore, urgently calls for a comprehensive programme of forest conservation and development In spite of such a serious crisis, it is noted with regret that every year Forest Plans are being drastically pruned The most effective remedy to ensure continuity and steady development in this sector is the formation of a Special Forest Development Fund by provision of a minimum of 10 per cent of the annual gross revenue with immediate effect

Forest industries

Wood in many senses is a versatile raw material with unlimited potentialities for building up both primary and secondary industries Forestry is not merely a way of harvesting crops but an enterprise providing raw material to these industries in a sustained manner Modern technological research has changed the wood products both in degree and kind and has enabled wood to be plasticised, moulded, laminated, impregnated and turned into a bewildering number of products The forests of this State provide a variety of raw material for a host of industries such as semal for matches, haldu and kalam for bobbins, bamboos for paper and pulp, etc The minor forest products such as tans, gums, drugs, non-edible oil-seeds, bidi-leaves, kath, lac among many others, form not only a great source of revenue to the State but also as avenues for forest-based industries of both large and small scale, to enterpreneurs and for employment to the inhabitants.

The State is supplying about 25,000 tons of bamboos annually to Messrs Ballarpur Paper and Straw Board Mills, Ballarpur in Chanda District from the forests of Chanda. The annual requirement of Messrs Anil Hardboards, Bhandup, is about 15,000 tons of hardwoods suitable for the manufacture of hardboards At present there are only two such fibreboard units within the country The Amba Tannin and Pharmaceuticals Ltd , Amba in Kolhapur District consumes about 6,000 tons of hirda for the manufacture of tan extract for which purpose Government have granted them concession for its collection at a fixed rate of royalty from the forests of Kolhapur District, Messrs Swastik Kath Manufacture Ltd , Dahanu Road, who have recently opened a factory for the manufacture of kath, have entered into an agreement with the State for the supply of 1 200 Khair trees annually

Forest Co-operatives

The Adivasis constitute 6 8 per cent of the total population of the Maharashtra State With the advent of civilization, the ignorant and illiterate Adivasis were pushed back to the forests which have been their permanent abode and a supplementary means of occupation next to erratic cultivation of their meagre holdings Continuous exploitation by unsocial elements reduced the ignorant and illiterate Adivasis to mere serfdom As a result of the gradual political awakening the struggle for freedom was getting progressively intensified and various political parties in the State were participating in it in pursuance of their respective creeds In this struggle, the uplift of the Adivasis was also made a plank by some of them and agitation to that effect also continued to grow progressively bringing forth the urgent need to stop the oppression and exploitation of these poor, ignorant, illiterate, gullible and helpless sections of the population To meet with this situation, the Government appointed in 1937 a Special Officer, by name Mr. Symington, to investigate into the plight of these Adivasis and to report ways and means to ameliorate their condition Thereupon, the Government took steps to give effect to some of his recommendations particularly that of fixat on of minimum daily wage rates for forest works, by suitably modifying the clauses of agreement and appointed wherever necessary Adivasi Welfare Officers to supervise the same

This did not, however, fully solve the problem of uplift, economical, social and cultural, of the Adivasis and the struggle to this effect continued with renewed vigour soon after independence Consequently, Shri B G Kher, the then Chief Minister of Bombay State, who had himself devoted a major part of his life to the service and uplift of the Adivasis as a pioneer in the field, announced the Government policy of organising co-operatives of Adivasis and other

forest folk with the help of social workers and handing over forest coupes to them on reasonable terms as part of a comprehensive programme for the all-round advancement of the Adivasis The objective underlying the policy was that the Adivasis and forest labourers should not only get their fair wages but also share the profits out of the coupe contract and further that these co-operatives should progressively eliminate the middleman, i e the forest contractor and develop into other co-operative fields like farming co-operatives, housing co-operatives, etc

The various social service organizations are recognised as sponsoring agencies for the promotion and guidance of the Societies After their registration as per rules, the Societies are allotted coupes, minor forest produce farms and minor works such as road repairs, construction of buildings, etc according to certain formulae which are being evolved in the light of experience and progress of the movement They ensure to the Societies operational cost plus a reasonable margin of profit and certain amounts for carrying out welfare activities for the benefit of the labour Government considers that as a long term policy, 10 per cent of the net realisations is a fair return to the Societies and additional share in the profit varying from 10 per cent to 25 per cent according to age of the Society, is granted to new Societies so as to enable them to meet with the development expenses in the initial stage The extra amount of profit is treated as grant-in-aid to the Societies In addition to this, the Government with the help of grants allocated by the Government of India, grants financial assistance to new Societies at the following rates as an incentive to them to meet their initial expenditure in the formation stage —

Rs. 3,000 for the first year only, towards share capital

Rs 1,200 for the first 2 years for management expenses

Rs. 1,500 for the first 3 years for welfare activities.

The Working Funds required for the exploitation of coupes, etc, are provided to the Societies on easy terms such as 2½ per cent of rate of interest and reasonable period for the repayment of loan through the Central Financing Agencies on the recommendation of the Co-operative Department.

In cases where the Societies' financial position was weak and the coupes being valuable were beyond their working capacity, a system of working of coupes on logging contract basis was introduced The salient features of the logging contract system, which has been successful in some parts of the State are that the responsibility of a Society is limited to felling, extraction, conversion and delivery of the material at a specified depot, to the Department The sale of material and subsequent recovery of sale proceeds is the responsibility of the Forest Department The main advantages of the system are that funds of the Societies are not locked up indefinitely and their responsibility is limited The Societies are paid for the material delivered to the Department at logging rates per ton, inclusive of operational cost plus 10 per cent thereof as profit, in addition to a substantial advance of Rs 5,000 to Rs 10,000 per coupe New Societies take to this system very readily as it sloves some of their problems The Department is able to undertake large quantities of timber supplies to the Railways, various other Departments and Public Institutions through working more and more coupes on logging basis

As a result of the above-mentioned facilities, the movement of Forest Labourers' Societies has become very popular and progressed steadily since its inception, as will be evident from the fact that as against 10 Societies which were allotted 20 coupes in 1947-48, there were as many as 204 Societies which were allotted 417 coupes in 1960-61 with an upset price of about Rs 60 lakhs to Rs 70 lakhs, involving a total outlay of about Re 1 5 crores in the whole transaction During the initial stages of the movement, a 15-year programme was framed to cover the total area of forests but after a period of the first five years, it was found necessary to slacken the pace so as to consolidate the position of the existing societies by giving them necessary training, experience and financial stability. During the Second Five-Year Plan period also, a steady progress was maintained under the scheme and in 1958 an Evaluation Committee was appointed to suggest ways and means for further improvement and expansion of the movement and its recommendations are being given effect to, wherever necessary

During the Third Five-Year Plan period, it is contemplated to organise 165 new Societies at the rate of 33 Societies per year. For the planned development of the movement, the Societies are allotted fixed areas of operation determined in terms of 1 or 2 felling series and on this basis, about 500 Societies would cover the entire forest area in the fold of the co-operative movement.

At the above envisaged rate of development it is expected that the movement would cover

the whole forest area in the State by the end of the Fourth Five-Year Plan There is also good scope for the development of cottage and small-scale forest-based industries such as manufacture of Rosha-oil, kath, sandalwood-oil, collection of hirda fruit, Apta, temburni leaves, medicinal plants, gums, tannin extraction, strawboards, saw-milling, wood working, toys, matches, resins, etc under this very movements to further augment the earnings of these Adivasis

Wild Life Preservation

The preservation and the management of Wil Life in this State is regulated under the Bombay Wild Animals and Wild Birds Protection Act, 1951, and the Rules (1952) made thereunder The Act in itself is a pioneering legislative enactment in the field of wild life preservation and management and a lead to other States in this respect With the increase in population, spread of cultivation, depletion of forest areas, inventions of high velocity rifles, jeeps, destruction of wild life, both animals and birds, increased in the period immediately following the second World War The Indian Forest Act 1927 was found to be inadequate to put an effective check on such depredations as this Act was not applicable to the non-forest areas the areas which were not declared as Reserved or Protected Forests under the Act Provisions of the above Act of 1951, suitably amended wherever necessary as a result of past experience have now been extended to Vidarbha and Marathwada regions by an enactment of the Bombay Wild Animals and Wild Birds Protection (Extension and Amendment) Act, 1960 Under this amended Act, the Chief Conservator of Forests is the Wild Life Preservation Officer, who is assisted by the necessary administrative machinery consisting of Game Wardens, Assistant Game Wardens and Honorary Game Wardens The Act provides for the formation of the State Wild Life Advisory Board to advise Government in the matters of policy, establishment of game sanctuaries, etc During the Third Five-Year Plan, it is proposed to create three new Sanctuaries, at Mala-kolana in Satara district Tansa Lake Catchment area in Thana district and Radhanagari in Kolhapur district. The Radhanagari Sanctuary is meant for the preservation of bisons and has already made substantial progress. In addition, the beautiful National Park at Taroba in Chanda district which was constituted as such in the year 1955 under the M P National Parks Act and further developed under the Second Five-Year Plan, will be maintained.

Forest Parks

There has been a growing demand for the formation of Forest Parks apparently as a result of the consciousness generated by the Vanamahotsava and Wild Life Weeks and other propaganda Accordingly, a Forest Park at Mahableshwar called the Pratapsinh Park, Himayatbaug at Aurangabad and Tabak at Panhala have been formed during the Second Five-Year Plan period, while some more, viz at Toranmal, Matheran, and Buldana are planned to be built during the Third Five Year Plan period

Farm Forestry and Village Forests

Farm forestry holds great promise in raising the tree potential and in making good the deficiency of our forests, which barely offer any scope for extension, on account of the limited area, the prevailing acute land hunger and the ever increasing pressure of the growing population The farm forests are of immense value in making the farmer self-sufficient on his farm in regard to his domestic and agricultural needs of timber and fuel They will protect his crops from the desiccating effects of winds Through adequate supplies of cheap fuelwood, the valuable cow-dung which is still being burnt on a large-scale in the villager's hearths will be diverted to the fields

The State has introduced this scheme of late both within and outside the Block areas under the Community Development Programme Outside the Block areas, Government, with a view to provide an incentive, offers a subsidy equal to 50 per cent of the cost of the woodlands development, subject to the maximum of Rs 187 50 per acre or Rs 1,875 per village for 10 acres 12 Village Panchayats have so far come forward to undertake this Scheme over 80 acres

This Scheme is introduced with a little variation in the Block areas Here only technical assistance is offered by the Forest Department while a subsidy of Rs 250 per acre subject to a maximum of Rs 2,500 per village for 10 acres is offered by the Block Development authorities 50 per cent of the cost of the works exclusive of the staff appointed by the Forest Department is to be borne by the villagers themselves either in the form of "Shramadan" or in cash and the remaining 50 per cent is to be paid as subsidy from the Block Development Fund, subject to the above limits Nearly 68 villages have taken advantage of this scheme and the area covered is 1,855 acres

Under the Third Five-Year Plan, this scheme has been made more attractive in that financial assistance in the form of grants to the extent of two-third and loan to the extent of one-third of the cost of the plantation and rearing the trees and grasses and fencing at Rs 375 per acre is proposed A provision of Rs 5 lakhs has been made for this scheme in the Plan The people have begun appreciating the advantages of this scheme and it is hoped that they will take to it wholeheartedly all over the State

From the above, it will be seen that the wheels of Forest Administration have moved well to complete a glorious hundred, with a record of distinction We have yet much more to achieve to make our forests play a fuller role in the economy of our State Let us, therefore, dedicate ourselves anew today when we are on the threshold of another contennial, to make our forests prosper and flourish, for the greatest good of the greatest number for ever.

RIDDLE ON A TREE

I have only one foot, but thousands of toes,
My one foot stands well, but never goes;
I have a good many arms, if you could count them all,
And hundreds of fingers, large and small,
From the ends of my fingers my beauty grows,
I breathe with my hair and I drink with my toes;
I grow bigger and bigger about the waist.
Although I am always, very thick-laced,
What am I?

—FEMINA.



THE HISTORY OF THE FOREST DEPARTMENT

BY

S. A HEJMADI

Conservator of Forests, Chanda

THE early history of the Forest Department is closely associated with the history of the forest inhabitants Tradition as embodied in the great epics Ramayana and Mahabharat tells us in obscure and legendary fashion, of invasions forcing the local inhabitants to go southwards The invasion by Alexander the Great in 327 B C gave the western countries the first idea of the physiography of India and the wealth of the forests that lay in store along the coast line The British in due course had ascendancy over the trade routes The valuable sandalwood had found its way to the Western markets along with satinwood ebony and blackwood Attention was steadily switched on to teak wood which was found to be the perfect substitute for the steadily depleting stocks of oak-wood for the vessels of the fleet of the British Admiralty Fellings were done by timber merchants who obtained short leases from local officials or from those who claimed ownership of these forests

It was Tipu Sultan who first created a monopoly in teak and constituted it as a "Royal" tree, the sale of which he kept in his hands But this gave no protection to the forest wealth The rulers sold blocks of forests on a lumpsum or per tree basis

The coastal forests were inexhaustible and survey was unnecessary The main aims were building up an Emp re and resources were handy The early administrators were perhaps convinced that they could obtain their requirement of timber for an unlimited period Enormous destruction of forests was the outcome

The first steps at forest protection by systematic extraction of teak from Malabar, then with Bombay, were taken in 1800 by the appointment of the Bombay-Bengal Joint Commission which made regulations prohibiting felling of teak below 21" girth The Court of Directors desired supply of teak for the Kings' Navy as a substitute for oak, being aware that the Arabs used teak from Bombay for their fleet The Commission further reported shortage of large-sized teak which led to the declaration of teak as a Royalty tree for the East India Company, thus stopping all unauthorised fellings The work of felling of teak for the Kings' Navy was taken up by a Special Officer His duties were to preserve and increase production of teak for ship-building Captain Watson of the Police was thus the first Conservator of Forests, appointed in Bombay and incidentally the first in India on 10th November, 1806, with his headquarters at Sadashivgad (Karwar), because by then Malabar District was transferred to Madras Presidency He established a timber monopoly throughout Malabar and supplied Government with plenty of cheap timber His posting created discontentment both among the proprietors and the merchants and this post was, therefore abolished in 1823 In 1831 the Indian Navy Board tried to re-establish this post but the Board of Revenue was not in favour It was constantly urged that scientific advice on the management of these forests was an immediate need but no steps were taken till 22nd August 1847 when Dr Gibson was appointed as interim ' Conservator in addition to his duties as Superintendent of the Botanical gardens

During the early years forests were merely regarded as a timber yielding agency" The principal forest Districts were Malabar, Canara and Guzarat Teak timber found predominant demand by the Government for ship-building and military purposes About 3,000 teak trees were annually procured from Malabar and brought to Beypore on the coast and were sold at Rs 10 per khandy (12 5 c ft) This depot was considered as the store-house for Bombay In course of time the teak forests were considered as the property of Government and no trees could be felled without permission Mr H M Blair, the Collector of Kanara gave an exhaustive report in 1838 on these forests They were considered sufficiently valuable to be placed under the charge of a Conservator (Cap Watson and his successors) After this Conservatorship was abolished and till Dr Gibson took over, these forests were left in charge of the revenue authorities. They were estimated to contain 1,54,000 trees and so considerable number of trees were felled annually and conveyed to the "Maratha Country" for building purposes on payment of a duty at 5 per cent of the value of wood estimated at Rs. 9 per khandy It is

interesting to note that the annual revenue on this account was Rs 5,400

The improvement of the forests was admitted to be difficult by Mr Blair Colonel Gilbert who succeeded Captain Watson as Conservator, tried teak plantations both on the coast and under the Ghats but they were failures In 1839 Dr Gibson, Superintendent of the Botanical Gardens was sent to inspect the Canara Forests and he confirmed that rapid destruction of trees in accessible forests was taking place Mr Farish, the Governor of Bombay in 1839, stressed on the rigid control over exploitation and the necessity for staff having some technical knowledge, to be placed under the Collector and supported the plea of Mr Conolly, Collector of Malabar to appoint a Sub-Conservator under him This Sub-Conservator was to obtain complete knowledge of the quantity of timber in each forest and to improve the forests by planting and fostering the growth of young trees Mr Blair appointed the Sub-Conservator and from his survey it appeared that instead of the 40,000 trees in the Ghat forests, there were 64,140 trees of all age-classes of which 5,367 were estimated fit for felling, yielding 20,000 khandies

In March 1840, the Government of Bombay again asked Dr Gibson to visit the various forests of Bombay to report on their resources and the best means for their preservation and improvement On the eastern skirts of Guzarat, broad stretches of forests existed bearing mostly palas, tanuas and mahua After crossing the Narbada, were the Rajpipla jungles Teak was found here in addition to the above species. Above the Ghats leading to Khandesh were again the teak forests, becoming more extensive in the lower portions skirting the Surat District. South of this was Surgana containing a good deal of teak Proceeding further southward and eastward the Peth and Harsool country had extensive teak forests In Thana District teak forests were smaller in size and spread in patches Teak existed also in Kolwan jungles and in Rayghur talook and Vengoorla. In the South Maratha country, Belgaum and Dharwar forests were also extensive

The measures proposed by Dr. Gibson failed because the forests were under the triple control of the Military Department, Political Department and also the Revenue Department. In 1843 due to fast deterioration of the forests, the Military Board proposed to organise an establishment for conservation of the forests and sound exploitation thereof On 19th December, 1846, the Government of India authorised the employment of the establishment for the management of the forests in Bombay Presidency on a monthly charge of Rs 293 and thus on 22nd March, 1847 Dr Gibson who undertook the initial inspection of the Bombay Forests came to be appointed as the Conservator of Forests in addition to his own duties

This modest beginning was the first step in the inauguration of efficient management of the forests not only in Bombay but in India This was the fore-runner of a great service in India which was to follow It took nearly half-a-century to come to this stage, a period which could not be rapidly brushed aside for subsequent events to follow but a period which formed the very basis of the history of the Forest Department in Bombay Presidency.

Dr. Gibson's control as Conservator of Forests extended over Northern and Southern Concans, Collectorate of the Deccan and Southern Maratha Country as also over the forests of Surat and the Dangs In 1847, the Satara forests were also placed under his management No measures were taken to realise revenue from the forests as in the past except from the sale of thinnings of teak reserves for quite some time His work was of a varied nature He toured extensively and drew up valuable reports paying particular attention to the destruction by 'Kumri" cultivation resulting in the drying up of springs and streams and silting up of rivers and creeks thereby destroying the important natural harbours which indirectly affected the trade of the British He followed Collector Conolly's example in Malabar and devoted much attention to "raising young teak plants" to form plantations The forests extended over a 550 miles long stretch and his staff was very meagre He disbursed only Rs 358 on all his staff Fellings went on unchecked and gross abuses were prevailing among the low-paid officials

The Indian Mutiny burst like a bomb-shell over India in May, 1857. This saw the end of the East India Company and the Court of Directors. Queen Victoria was declared as the Empress of India. The Mutiny taught the British the dangers of isolation for want of rapid communications. Thus came the advent of Railways and with it further drain on the timber resources for the coaches and also the permanent-way sleepers.

Dr. Gibson found considerable opposition to the introduction of forest conservancy from

the Collectors of all the districts who strongly opposed the advent of a new Department, which would take over management of the forest portions and with that the revenue of their districts The divided control with 3 departments as stated previously resulted in confusion The Collecter of Dharwar in 1860 gave a melancholy account of the denudation of the forests during the past 8 years As a result of this, Government appointed Mr Dalzell (previously in charge of Sind Forests) to submit a set of rules, which proposed that each Collector should be assisted by an Assistant Conservator Subsequently Col Bingham who succeded Mr Dalzell submitted proposals of one Conservator for Deccan and Southern Maratha Country, Concan and Khandesh and another First Assistant Conservator of forests for Guzarat and Dangs and 7 Assistant Conservators to be appointed for (i) Surat and Country North of Narbada, (ii) Thana (iii) Colaba and Ratnagiri, (iv) Khandesh Dangs, Peth and Nasik, (v) Nagar, Poona Satara and Sholapur, (vi) Belgaum and Dharwar (vii) Canara

On Dr Gibson's retirement Mr Dalzell took over His duties consisted on the one-hand of conservation of the forests including planting thinning, felling and disposing the produce and on the other maintaining the supply of timber to public departments Unchecked devastation and exploitation still reigned with its concomitants of firing the forests and unrestricted grazing This state of affairs existed in all the Presidencies It was with the object of checking this state of affairs and to introduce forest conservancy that the Government of India created the post of Inspector-General of Forests and Dr Brandis was appointed as Inspector-General in 1864 It was realised that little systematic progress could be made in the absence of some recognized law Thus an Act entitled the Indian Forest Act VII of 1865 came to be promulgated The progress of conservancy in Bombay was hampered to some extent due to the inability of responsible Senior Revenue Officials to recognise the importance of the new administrative Department In certain cases valuable forests containing teak and blackwood had been disposed of by the Settlement Officer and Col'ectors in direct opposition to existing orders rather than make over such land to the new Department

The demarcation of the Imperial Forest Reserves was a herculean task. In Thanas the "Warlies and Katkurees" and other hill tribes were found difficult to deal with. The financial position of the Department thus indirectly suffered heavily In 1867 for example, out of the total receipts of 11 lakhs, the net revenue was only Rs 4 lakhs to the Forest Department The fellings carried out in the Presidency were very inadequately supervised Captain Peyton in charge of Canara forests reported that excessive cutting was done in as much as after the years' sales, timber to last for further 2 years was lying felled Progress was made in the work of inaugurating teak plantations, twelve having been formed in the past 4 years in Thana, Ratnagiri, Belgaum, Dharwar and Canara Collectorates

Dr Brandis visited the Presidency in 1870 and gave in a nutshell the forest organization therein "The Conservator" does not exercise control or supervision over the executive management of the forests The subordinate forest establishments are attached to "talookas" consisting of one "Inspector" and a number of Foresters The Chief Forest Officer in the Collectorate is termed as Deputy or Assistant Conservator and he reports to and receives orders from the Collector Forest questions of importance are referred by the Collectors to the Revenue Commissioners who consult the Conservator on all matters requiring reference to Government

The report on Dr Brandis" visit was made to Government by Mr Shuttleworth who took over charge from Mr Dalzell as Conservator of the Presidency in September, 1869, but no definite action was taken thereon

With the revision of the Forest Act of 1865 in 1878 provision of constitution of Reserved and State forests was made Existing rights were protected pending enquiries and slowly but steadily legally 'protected' forests were converted into "Reserves" Out of the total area of the Presidency of 1,87,765 sq miles 13,281 sq. miles were declared as Reserved and 1,631 as Protected

For the management of such vast areas, officers with special training were not available Earlier, posts were filled by men from other branches of Public Service and the Army for supervision over exploitation of timber Majority of them were ardent sportsmen or keen naturalists and showed their excellent administrative adaptability Such a management was not to be ultimately beneficial and Government took notice and so training of men for Indian Forestry was included in French and German Forests before they joined India

In 1873 Bombay again took the lead and divided the Presidency into 3 Conservatorships of Rs 1,000, Rs 1,250 and Rs 1,500 p m A further reorganisation took place in November,

1883 (details not traceable) The commencement of Provincial Cadre was made in February, 1891 The engagement of Rangers to supervise local forest operations was first entirely in the hands of Divisional Forest Officers or Conservators, with no regular organisation or prospects With the establishment of the Dehra Dun Forest School in 1878, trained personnel for this cadre was also slowly made available In 1914 the post of a Chief Conservator of Forests was created in addition to the 3 Conservators created in 1901 In 1921 three more posts of Conservators were added The post of the Chief Conservator of Forests, had, however, to be filled in with the previous approval of the Government of India and had the pay of Rs 2,500– 125—2,750 p m, while the Conservator's pay was Rs 1,750--100—2,150 p m Before 1920 the only avenue open to Indians to the Indian Forest Service was that of direct appointment by the Secretary of State after selection and examination in England From 1921, 40 per cent of the vacancies were to be filled by Indians Up to 1906 the Provincial service was recruited by promotion of Rangers When the Forest Research Institute was established in 1906, the status of the Imperial Forest School was raised to that of Imperial Forest College and a third year course was inaugurated for Rangers for admission to the Provincial service As this did not prove satisfactory, a separate course was started later The recruitment and training of officers is now regulated by the State Government and Gazetted Officers are sent for training at the Indian Forest College at Dehra Dun and the Rangers both to Dehra Dun and Coimbatore at the Rangers' Forest Colleges

By 1900 the total forest area under the Forest Department (including Sind) was 14,945 sq miles of which 13,695 sq miles were Reserved and the rest Protected With the merger of the Indian States, and separation of Sind, the area changed once again and with the reorganization of States in 1956 the forest area with the Department came to 27,772 sq miles With the separation of Gujarath once again in 1960 the area of the Forest Department with Maharashtra now is 21,966 sq miles administered by one Chief Conservator of Forests, a Wild Life Preservation Officer, 7 Conservators, 25 Divisional Forest Officers and 49 Assistant Conservator of Forests

The 15th of August, 1947 was another landmark in the annals of the Forest Department With the Indian Independence the European Officials departed and with that the stalwarts of the Indian Forest Service, save the 3 Indian Officers, the last of whom left the Department in July, 1959

The role of Wild Life in the Department was not ignored Bombay again took lead in promulgating the Bombay Wild Animals and Birds Protection Act of 1951 which has provided ample protection to Wild Life in the State even outside Reserved Forests

With the reorganization of States in 1956, the forests of Kanara, Belgaum, Dharwar and Bijapur went over to the Mysore State and the valuable forest areas of Vidarbha region in Amravati and Chanda Districts along with some important stretches of forests from the other 6 districts came to the lot of the Department, together with its band of experienced and enthusiastic workers, besides those from the Marathwada region

Though details are not fully available, the history of the Department will not be complete without that of the Vidarbha Forests which have recently come to Bombay State A 100 years ago the best maps at that time showed great tracts of this region as unexplored The first Chief Commissioner Sir Richard Temple took the first step to organize the Forest Department for detailed survey and conservation of the timber bearing tracts Thus Capt (Later Colonel) G F Pearson of the army came to be appointed as the first Superintendent of Forests

In August, 1860, Pearson was appointed the first Conservator of Forests and had 2 Assistants, Lieutenant Forsyth and Lieutenant Douglas The first work that he had to do was to collect as many of the unburnt logs in the forests of Jubbulpore and Mandla as possible which were left as an aftermath of the mutiny The sale of these provided funds of the first modest budget for the Forest Department in 1861-62 In 1862 the forests of Berars with the valuable Melghat forests were included but could not be brought under proper management till 1865 Early in 1863, after Brandis was placed on special duty with Government of India to assist in Forest Organization, he called Pearson for discussions at Nagpur and had a joint tour of inspection, whereafter future working of the tracts was to be planned

The financial results of 1863/64 were interesting Total receipts were Rs 70,988 and an expenditure therefor was Rs. 67,707 showing a surplus of Rs. 3,281 The operations mainly consisted of preventing further deterioration and extracting valuable felled material lying in the forests and reconnaissance work

While the Forest Department was engaged in the work of exploring the forests, the settlement branch was undertaking enquiries into ownership of lands throughout the province To prevent the cultural wastes being seized by settlers, this special branch of "Land Revenue Settlement" was created by Government Every village and hamlet was to be visited and every acre of land appraised and assessed and its title established

From a botanical and zoological point this region afforded high interest In the western and southern parts teak was the noticeably important tree whilst in the northern and eastern tracts of C P sal was predominant with practically no teak It was noticed that while teak does not shun any particular geological formation, it thrives best on trap soils predominating in the south and west of the Province whereas sal shunned such formations Actually sal was observed to exterminate teak where there were no trap rocks These are strange facts and correlated with the was the fauna of Central India, the wild buffalo, the swamp deer and the red jungle fowl, occuring mainly in the sal belt

In the earlier years the great distance between remote tracts and the necessity of visiting them during the year with interruption of communications in the wildet parts of the Province, gave rise to delays and mal-practices and idleness on the part of the subordinates In July, 1864 the Chief Commissioner proposed that the Province be divided into 6 divisions and Assistant Conservators be posted in charge

One of the divisions consisted of Nagpur Bhandara Chanda, Wardha and Upper Godavery Districts of the Vidarbha Region of the recently formed Maharashtra State This extensive Division had nearly 1,600 sq miles of area with 408 sq miles of Reserved Forests with 4 Rangers and 1,500 sq miles of unreserved forests with 2 Rangers

Extensive tracts of Private forests existed in Central Provinces In the report by Forsyth one of Col Pearson's able assistants, a mention was first made in 1864-65 of the Aheri Private forests that available opportunity be taken advantage of to secure these excellent teak forests for management Pearson's careful inspection of these forests in 1867 revealed an estimated 60,000 teak trees over 6' girth and 1 lac trees 3' to 6' girth The owner was willing to lease these forests to Government but this could not be implemented as a timber merchant —Bhagwan Das had held a lease that was to expire 4 years later, whereafter it was taken over for management with a 'liberal' seignorage of 3 annas per c ft to be paid to the proprietors

On transfer of Col. Pearson to North-Western Provinces, Doveton was posted who was shortly replaced by Jacob due to former's ill health Col Pearson officiated as Inspector General of Forest from 29th January 1871 to 29 December 1872

The Berar Forests in the then Hyderabad assigned Districts and now part of Maharashtra had their first attempt at proper organisation in 1865-66 through Capt Mackenzie, who was the first Forest Officer appointed in these tracts The receipts in that year were mainly from the seignorage upon teak Receipts were Rs 15,106 for an expenditure of Rs 8,991 By 1868-69 the position improved considerably and receipts rose to Rs 84,557 for expenditure of Rs 34,105 Selection and demarcation of forest reserves commenced vigorously In 1867 this work was first taken up in the Melghat hills

Between 1875 to 1885, 3 Inspector-Generals of Forests visited the newly formed Central Province and Berars Brandis came in 1876 and was accompanied by Smythies one of the young Assistant Conservators This was followed by a visit by Schlich in 1882 who went to Warora, Moharli and Ahiri and drew up his interesting report which included strengthening the staff, fixing external and internal boundaries for all Government reserves introduction of more systematic working by incorporating annual Plan of Operations for Reserves of each district to extend fire protection measures and to extend cultural operations

Ribbentrop who succeeded Schlich as Inspector-General once again visited the Province in 1885/86 to find out why the implementation of his predecessor's recommendations was getting delayed His tour of inspection was very extensive, accompanied by Doveton the then Conservator in charge By 1885 the receipts and expenditure showed a sharp rise over that of 1869/70 For this proportionate rise Ribbentrop suggested increase in staff by 1 Deputy Conservator of Forests 1 Assistant Conservator of Forests, 4 Sub A C Fs, 16 Rangers, 96 Foresters and 529 Guards requiring only Rs 74,981 annually, whereby it would be financially profitable in the near future

Mr Drysdale followed Mr Mackenzie as Conservator of Forests for Berar in 1883 In 1881, 2/3 of the Province was under cultivation and 1/3 was so called waste of which 4 652 sq miles i e 1/4 of the Province was unculturable Out of the 6 Districts of the Berar 3,363 sq. miles of

forests were situated in Ellichpur, Wun and Basim districts while Amravati, Akola and Buldhana Districts had only 1,061 sq miles forests between them The largest compact block of 609 sq. miles was in the Melghat in Elichpur District The total receipts for Bears for 1,881 were Rs. 1 11 lacs with expenditure at Rs 0 59 lacs By 1899/1900 the receipts increased to Rs 4 78 lacs with expenditure at Rs 2 43 lacs

At the time of States Re-organisation several areas from old Madhya Pradesh that were to form the future Maharashtra had only two Conservators' Circles—Central Circle and Western Circle Though several other divisions of these Circles subsequently went over to form the new Madhya Pradesh, with the inclusion of the vast tracts of the ex-proprietary forests in this region, there was a move to create a post of the Development Conservator, which however, did not materialise, but this issue was promptly tackled The Central Circle which later on came to be called the Nagpur Circle was further split into Nagpur and Chanda Circles and additional divisions were created to man the ex-proprietary forests and to formulate Working Plans for these areas

The history of the Department thus needs to be recorded in golden letters with so many " FIRSTS " to its credit as briefly narrated above A full hundred years have gone by replete with events of no mean achievement This is only a prelude, for another glorious centenary nay, many more of the Forest Administration in this State, dedicated to the greatest good of the greatest number

" Forests precede man, deserts follow him."

One impulse from a vernal wood,
May teach you more of man,
Of moral will and of good,
Than all the sages can—

—WORDSWORTH,
Tables (turned).

HOWLERS

Quinine is the bark of a tree, canine is the bark of a dog

Goose-berries are grapes with hair on



FOREST POLICY OF MAHARASHTRA STATE

BY

V D MEHENDALE

Conservator of Forests, Nagpur

Introduction

IN this Article the Forest Policy of Maharashtra State, more particularly of the former Bombay State, has been reviewed for different periods, viz covering the period upto the enforcement of the National Forest Policy in 1952, and the period thereafter and indications for the future are given Actually the Bombay State had not specifically enunciated an independent forest policy The Forest Policy laid down by the Government of India has generally been followed However, while implementing the general policy a special outlook has also been developed on certain forest matters As the forest policy laid down by the Government of India is well-known, it is not reproduced here The special trends developed in this State have been mentioned

Even though no records of any deliberate efforts at forest conservancy during the pre-British period are available, the Ruler of these days must have favoured the preservation of forests, if not for anything else, at least for the reasons of shikar, strategy and security The advent of British Rule which ushered in relative peace and social security in the country saw the destruction of forests commence at a fast pace, for extension of cultivation The pressure of increasing population, both human as well as bovine, accelerated the process The need for large timber was felt for the Railways and Dockyards When the paucity of timber began to be experienced for these constructions, the need for forest conservancy began to be felt It was in such circumstances that Dr Gibson was appointed the first Conservator of Forests in the Bombay State in 1847. The Departmental organisation was later to evolve from this starting point With the appointment of Dr Brandis as the first Inspector General of Forests in 1861, started the campaign for preservation of forests and introduction of scientific forest management throughout India By 1879-80 as much as 14,421 square miles of area was constituted as Reserved Forest in the Bombay Presidency (excluding Sind) However, the distribution of the forests was not according to any planned pattern

The general forest policy of the Government of India has been developed by stages In 1894 after great progress had already been made in the organisation of the Department, the Government of India passed a resolution which was further amended in 1904 laying down the forest policy of India The principles laid down in this Forest Policy were followed in the then Bombay Presidency and were also continued when Provincial Autonomy came in 1935

For introducing systematic management of the forests it was desirable to have special forest maps To prepare such maps, a Forest Survey Department was started in 1871, which later on was merged with the Survey of India Establishment of the Working Plans Divisions soon followed and the systematic working of forests based on the principles of sustained yield commenced The first working plan was prepared in the year 1879 By 1948-49 out of the total of 10,711 square miles of forest area in charge of the Forest Department 9,447 square miles were brought under working plans Steps to introduce systematic fire-protection were also simultaneously undertaken, and progressively all the forest areas in charge of the Forest Department were brought under fire-protection The success achieved in fire-protection is note-worthy as will be seen from the following figures for 1959-60

Total area in charge of the Forest Department (in sq miles)	Area attempted (in sq miles)	Area protected (in sq miles)	Percentage of area protected
21 966	19 834 31	19,665 15	99 14

Initial enthusiasm shown in favour of forest conservancy appears to have dwindled due to financial considerations, when during the period from 1903 to 1918, 1,47,449 acres of forest area from the then Central Circle alone, was transferred to the Revenue Department for disforestation and/or their management Con-

sequently Forest Divisions like Sholapur, Ratnagiri and Ahmednagar were closed This was the first severe set-back to forest conservancy in the then Bombay Province and viewing the position in retrospect, the ill effects of this decision became evident after the Second World War

The present era of the forest administration really begins from 1937, when the first popular Government assumed the responsibility of running the Government The period 1937 to 1952 was however, essentially a transitory period Due to intervention of the Second World War and the changes in the political set-up during the period upto Independence the new trends were for a while, eclipsed by the War effort to which all the resources of the country and the energies of the Department were harnessed During the war the total war supplies made by the Department totalled 2,45,577 tons valued at Rs 2,94,49,945 (figures for tonnage for 1940-41 and of value for 1946-47 have been worked out on pro-rata basis as exact figures are not forthcoming) This in several cases resulted in advance working or overworking posing the difficult problem of rehabilitation in the post-war period

In the wake of the Second World War a definite bias towards establishing industries based on forest produce was created The inferior timber species also gradually came in demand

The most important development from the Forest Policy point of view was the abolition of the grazing fee in the year 1937 Free grazing has done good, neither to the cattle nor to the forests It has actually resulted in the uncontrolled increase in the number of useless cattle on one hand and serious deterioration of the pasture and grazing lands on the other, apart from the loss of revenue to the tune of nearly Rs 5 lakhs annually to the State, as in 1937 The problem of rehabilitation of the grazing lands is now one of the important and immediate problems that is facing the State

In 1948, the State had to take up the question of preventing ruthless destruction of tree growth in forests vesting in private individuals In the absence of effective legal control and due to the short-sighted policy of the owners resulting from rising prices for forest produce, ruthless exploitation in large tracts of private forests commenced This problem became further aggravated due to the merger of the erstwhile Princely States in the year 1948 as in the States jurisdiction, there were many Jagirs and Inams containing extensive forests vesting in private individuals This was a problem before practically every State and in various States it has been solved in a different manner In Bombay State the problem was solved in having control over the exploitation of such forests rather than abolishing the proprietary rights over such forests This control was assumed by suitably amending Section 35 of the Indian Forest Act, 1927 This system had the advantage that the State had not to incur huge liabilities in the form of compensation that would have been required to be paid for acquiring proprietary rights over nearly 10,58,696 acres of such forest tract Though this was an immediate advantage, in the final analysis it appears that it would have been more advantageous if the proprietary rights were completely abolished and the forests taken under Government management altogether, as was done in the former Madhya Pradesh and Hyderabad States

Another far-reaching policy change, adopted by the State during this period was the announcement on the 5th April, 1947, of the Government policy of organising co-operatives of Adiwasis and other forest folk, with the help of social workers and handing over exploitation of forest coupes to such Societies on reasonable terms according to a comprehensive programme for the allround advancement of Adiwasis The growth of this movement has been spectacular in that in 1947-48 when this pattern of working was conceived there were only 11 societies, and 13 coupes were allotted to them, whereas in the year 1960-61, 353 coupes were allotted among 180 Societies in the present Maharashtra State

During the war period and later under the "Grow More Food Campaign" considerable acreage of forest land was given for temporary cultivation Thus by 1950-51 the following acreage of forest land was under cultivation

(*i*) Pure cultivation 1,48,846 acres
(*ii*) Agri-Silvi cultivation 39,598 acres

Later on, though in 1949 Government banned leasing of more areas for cultivation, it became very difficult to resume the lands already given for cultivation Not only this, but working from the lands assigned and also otherwise heavy encroachments and illicit cultivation was also resorted to Though for a period extending over nearly 10 years since 1951, attempts were made either to resume these lands or to introduce Agri-Silvi cultivation in the lands under pure or unauthorised cultivation, these attempts have not at all been successful

Demand for forest land for cultivation is ever on the increase. This will be more so in the

future, considering that the population is increasing by about 1 8 per cent per annum Government has in the year 1959 appointed a High Power Committee for examining the question of releasing certain types of forest lands for cultivation and it is estimated that consequent to the decision of this Committee about 3,50,000 acres of forest land will soon be excised Though most of the areas that will be taken away are either devoid or deficient in tree growth of the prescribed species, these areas were once well-clad and allowed reasonable time, considering that the forests grow slowly according to the laws of Nature and the required resources, re-afforestation of these areas cannot be considered as an absolute impossibility Even in their present condition such areas were acting as a buffer and were helpful in preserving the interior areas If these areas are once finally excised they will be lost for ever for forest purposes and in due course further encroachments will commence as in the past

Soon after the merger of the erstwhile Princely States in 1948, occupancy rights were granted to the land-holders Rights over tree growth which were in most cases reserved by the Rulers were transferred in 1951 except on Reserved trees The Reserved trees were only the three species viz teak, blackwood and sandalwood This resulted in the cutting of trees of non-reserved species on an unprecedented, colossal scale Such species included even species of economic importance like mhowa, khair and hirda It became legally impossible to halt this wave of destruction

In the administrative sphere the important development during the period was the establishment of a Research and Utilization Section in the Forest Department in the year 1938 This section since its commencement has done valuable work in the fields of propaganda, encouragement to industries based on forest produce as raw materials, evolving new techniques for afforestation and various silvicultural operations, making inventories of various products available, etc

Wild Life had not received adequate attention in the past The necessity of having special legislation with a view to prevent destruction of this rapidly vanishing national asset and also to create administrative machinery to enforce the law was keenly felt and Bombay was the first State in India to enact comprehensive legislation in this respect This is known as the Bombay Wild Animals' and Wild Birds' Protection Act, 1951

The period from 1939 onwards has all along been a transitory period During this period after the War, first came the merger of Indian States, then the abolition of Inams and Jagirs and several types of Watans and then the Reorganisation of States At every such time the Department had to face new problems and difficulties Heavy task of post-war reconstruction programmes and then implementation of plan development schemes had also to be undertaken and literally the department had to strive, even without breathing time

In formulating the 1894 Policy the Government of India were guided by the following objects —

(1) The sole object to which the management of forests is to be directed is to promote the general well-being of the country

(2) The maintenance of adequate forests is dictated primarily for the preservation of the climatic and physical conditions of the country, and secondly, to fulfil the needs of the people Subject to these conditions —

(*a*) Permanent cultivation should come before forestry ,

(*b*) The satisfaction of the needs of the local population at non-competitive rates, if not free, should override all considerations of revenue ;

(*c*) After fulfilling the above conditions, the realisation of maximum revenue, should be the guiding factor

Distribution of forests as a result of this policy has become largely uneven throughout the State It is due to the above considerations that the proportion of forests to agricultural lands is completely upset There are several districts in the State where in the last few decades there have been no forests at all and yet in other districts the forests are only in name

The old policy apparently considered the then existing state of affairs in the country At that time the actual extent and potentialities of the forest wealth were not precisely known. During the long intervening period that has elapsed, the vital role of forests in sustaining agriculture, industry, railways and defence and other national needs, apart from their role in determining the physical, biotic and climatic conditions, has manifested itself in a more pronounced manner than before. The population of India has since increased and is still increasing, resulting in relentless pressure on the forests not only for more land for agriculture, but for increased supplies of firewood, fodder, timber, agricultural implements, etc , which are all directly or indirectly connected with the manage-

ment of forests Various plan projects aim at industrial expansion and general improvement in the standard of living of the common man. Quite a few of such schemes lean heavily on forest produce

Large tracts of forest areas were and are still under private ownership Though the Forest Act provided for certain control measures over such tracts it was perhaps not felt necessary and therefore, no directives were contained in the old policy regarding the treatment of such forests in the wider national interest Similarly the concept of " Forestry Extension " was unthought of, all that time

All the above considerations necessitated reorientation of the forest policy and accordingly a new comprehensive policy was formulated in 1952, by the Government of India to meet the needs of the country.

The revised policy was formulated on the basis of six paramount needs of the country as follows —

(*i*) the need for evolving a system of rational land use ,

(*ii*) the need for checking—

(*a*) denudation in mountainous regions, on which depends the perennial water-supply of the river systems, whose basins constitute the fertile core of the country ;

(*b*) erosion progressing apace along the treeless banks of the great rivers leading to ravine formation and on vast stretches of undulating waste-lands depriving the adjoining fields of their fertility ;

(*c*) the invasion of sea-sands on coastal tracts and the shifting of sand dunes, more particularly in the Rajputana desert ;

(*iii*) the need for establishing treelands, wherever possible for the amelioration of physical and climatic conditions, promoting the general well-being of the people .

(*iv*) The need for ensuring progressively increasing supplies of grazing, small wood for agricultural implements, and in particular of firewood to release the cattle-dung for manure to step up food production ;

(*v*) The need for sustained supply of timber and other forest produce required for defence, communications and industry ;

(*vi*) The need for the realisation of the maximum annual revenue in perpetuity consistent with the fulfilment of the needs enumerated above

It is evident that the National Forest Policy indicates the vital needs which are required to be served and provides the fundamental basis which should govern the administration of the forests in future The National Forest Policy makes it quite clear that though it lays down the general principles in the national interest, discretion of the State Government to regulate details of administration remains unfettered, but the general principles of the above Policy must be observed by the State Governments in framing their policies and legislation

In Maharashtra State, though the forests are one of our most prized assets we are faced with the lack of a clearly enunciated and comprehensive forest policy It is high time that in the present days when developmental activity is progressing fast, demand for forest land for cultivation is threatening the very concept of forest conservancy, more and more forest produce is needed for various purposes, and the role of forests in maintaining the site factors is brought out in clear terms due to natural calamities, a clear and unambiguous statement of objectives should be available to guide not only the services but also the Government so as to ensure a correct approach to solve problems that may arise in the management and administration of our forests and also to ensure continuity of action in future It is of the utmost importance to frame a comprehensive State forest policy based on sound principles and past experience and long-term considerations After having framed such a policy it will be necessary to jealously guard it against infraction just as we guard our Constitution The following aspects of forest and land management might be helpful in formulating such a policy for the State.

Types of forests —Physiographic, geological and biotic factors vary considerably in different parts of the State The annual rainfall varies between 20" to 300" and the altitudinal variation is from sea level to 4,500' With such wide variations in locality factors various types of forests are obtained.

The most important timber species of the State is teak Other important hardwood species are ain, bija, tiwas, khair, babul, salai, etc , and bamboos locally occur to a fair extent. The important minor forest products are bamboos, bidi leaves, lac, grass, hirda, various types of gums etc Out of the total revenue of the State nearly 76 8 per cent. is obtained from timber and 21 6 per cent from firewood and the rest from minor forest produce

Inadequacy of forests —The forest area in Maharashtra State is quite inadequate This

can be seen from the following considerations

(*a*) *Total land (Geographical) area* vis-a-vis *forest area.*

CLASSIFICATION OF THE FOREST AREA (in Sq miles).

Geographical area of the State (in Sq. miles).	Total forest area (in Sq miles)	BY LEGAL STATUS			BY OWNERSHIP			IN TERMS OF EXPLOITABILITY.		
		Reserved forests	Protected forests	Unclassed forests.	State	Communal	Private	Exploitable	Potentially exploitable.	Other forest area
118831 32	25933	15308	6716	3909	24512	4	1417	17745	861	7327
	per cent. to land area 21 8 per cent.							per cent to land area 15 7 per cent.		

The optimum land area required to be maintained under forest cover according to the National Forest Policy is 33 1/3 per cent We are therefore, short of this area by nearly 12 per cent Considering that many of the forest areas are in various stages of denudation the above deficiency is still further aggravated

(*b*) *Per capita area and outturn of forest produce*

TOTAL

Total population (as per census)	PER CAPITA FORFST ARFA		OUTTURN		PER CAPITA OUTTURN	
	Total forest area	Exploitable and potentially exploitable forest area.	Timber (in 1000 cft)	Firewood and Charcoal	Timber.	Firewood
3,20,03,086						
Urban 92,51,442	0 51 acres	0 37 acres	12649	48713	0 4 cft.	1 5 cft.
Rural 2,27,51,644						

According to the F. A O study, *per capita* consumption of round wood in India is 0 6 cft This itself is very low as compared to any advanced country like U S. A. where the *per capita* consumption of roundwood is 63 5 cft and the U S S R where it is as high as 37 00 cft In Maharashtra State we are short of even the average Indian figure which is itself very low As regards firewood obviously the production of 1 5 cft per head per annum is far too inadequate even after making a liberal allowance for the use of power and gas by a reasonable section of the urban population. The bulk of the deficiency in firewood is made good by burning cattle-dung instead of using it for manuring the fields

(*c*) *Forests and their development.*—The U S A and U S S.R., which are the most advanced and prosperous countries are also the countries with the highest proportion of forest area and largest figures of forest area *per capita* Thus in U S A and U S S R the proportion of forests to the total land area is 32 8 per cent and 33 9 per cent respectively, while the *per capita* forest area in these countries is 1·8 and 3 5 hectares i e , 4 45 and 8 65 acres respectively In Maharashtra the corresponding figures are 21 8 and 0 51 acres

Ours is an undeveloped country and we are making big strides towards development Wood is an important raw material in a developing economy This fact coupled with the fact that the population in India is increasing every year by about 1 8 per cent makes it quite obvious that the *per capita* requirement of timber and firewood is going to increase several times in the years to come In the Timber Trend Survey carried out by the F A O in the Asia Pacific Region, it has been estimated that the gap between demand and supply of timber from the various indigenous sources, which is at present of the order of 41 million cubic feet is likely to increase by 1970 to 89 million cubic feet and by 1975 to 120 million cubic feet. In respect of firewood the present gap of 3,545 million cubic feet is expected to increase to 4,707 million cubic feet by 1970 and to 5,734 million cubic feet by 1975 These figures, staggering as they are, should help in bringing home the fact that we are heading towards a serious wood

famine and steps to avert the calamity should be taken before it becomes too late to do so as forests grow slowly

Mal-distribution of forests —In this State we are not only suffering from inadequacy of overall area under forest but also from the faulty distribution of the existing forests Percentage of forest area varies from as much as 70 per cent in Chanda District to only 0 11 per cent in Osmanabad District Excluding Greater Bombay, Kolhapur is the most thickly populated district (population 451 per square mile) and Chanda is the most thinly populated district (population 106 per square mile) The forest area *per capita* in Kolhapur is only 0 31 acres whereas in Chanda it is as much as 4 75 acres, the average for the whole State being 0·51 acres

As the total area under forest in this State is very inadequate even for the present requirement of forest produce and its distribution is uneven and faulty, measures to augment the " Forest Potential " of the State must receive prime consideration in the future forest policy of the State The following measures suggest themselves in this context —

A. Measures calculated to increase the area under trees

(*i*) It seems impossible to get assigned any new areas for constituting new forests It therefore, seems very essential at least to guard against any further reduction in the forest area by diverting existing forest areas for other purposes Wherever existing forests are unproductive at present, immediate steps are also required to be taken to launch ambitious afforestation schemes for afforesting all such areas and funds for accomplishing this task as quickly as practicable, may have to be liberally provided

(*ii*) *Irrigated plantations* —The irrigation potential in the State is fast increasing By the end of the third five year plan the irrigation potential of the State will be nearly 40 lac acres Areas where irrigation facilities are extended are also generally the areas of dense population and cultivation. Here the percentage of cultivable land is high and the forest percentage is either small or even negligible The requirement of small timber, firewood, bamboos etc., required by the agricultural community in such tracts is also high It will therefore, be very helpful in order to make such tracts self-sufficient in respect of their requirements of forest produce to earmark certain percentage of the area from the command area of each irrigation project for forestry purposes and to raise, irrigated plantations of species like teak, sissoo, bamboos and mulberry, on such sites Marginal lands, if they can be irrigated, can be best utilised in this manner. Such a step apart from meeting local demand might even lead to further prosperity of these tracts as in due course, new industries based on forest produce that will be obtained from such plantations can also be started.

(*iii*) *Farm Forestry* —The idea of farm forestry is that every farmer should be self-sufficient in his requirement of fodder, fuel and small timber The regular forests should be conserved for their protective functions and for meeting the demand on the higher plane i e the State requirements, the requirements of urban population, of industry, etc It is, therefore, necessary that all the marginal pieces of lands in every agricultural holding are used for growing trees like babul, neem, khair, bamboo, sissoo etc , if necessary by special legislation If every farmer devotes a fraction of his holdings and his resources, to the production of his own requirement of fuel and small timber, the pressure on the regular forests will appreciably decrease This will have a beneficial effect on Forest Conservancy and even from the agricultural point of view this will result in the use of cattle-dung, which at present is being burnt, for manuring fields where it is required the most

(*iv*) *Village woodlands* —Whereas farm forestry is mainly to be practised individually by every farmer, village communities are also required to be harnessed in a co-operative effort to raise their own village woodlands which will meet the requirements of the villagers of small timber, firewood and particularly fodder Already a scheme in this respect has been prepared and incorporated in the Third Five-Year Plan with a total provision of Rs 5,00,000,00, but the response from the villagers is not encouraging. Ways and means will have to be found out, to get this task accomplished

(*v*) *Road-side, Rail-side and Canal-Bank plantations* —So far, systematic land use of such odd bits has not received much attention The great potentiality of these sources to step up the total forest potential of the State will be apparent from the following figures ·—

	Miles.
(*a*) Total Mileage of Metalled and non-metalled Roads in the State vesting in P. W. D. & D. L. Bs.	20,814·38

	Miles
(*b*) Total length of Railway mileage	2,656 12
(*c*) Irrigation canals (approx)	3,000 00
Total	26,470 50

Even if ½ chain width on either side of these communications and irrigation lines is utilised for systematic raising of tree-crops, every such mile will contribute 8 acres towards augmenting our Forest Potential With the stepping up of the Road Communications and Irrigation programme under the Plan Schemes this potential will also automatically be stepped up This so far neglected source, thus holds great promise in solving one fundamental problem facing the State

B. Indirect measures

(*i*) *Concessions and privileges* --In western Maharashtra, free privileges have been granted liberally In Vidarbha also there are "Nistar" privileges and rights The financial implication of the various privileges and rights is of the order of Rs 22 lacs approximately There is still a clamour to liberalise these further Unrestricted enjoyment of some of these privileges such as "removal of dead-wood on head-loads even for sale" and "lopping for 'tahal' burning" have been mainly responsible for the large scale denudation and destruction of the forests in the easily accessible localities and for the present deplorable conditions obtained in many districts This question needs a scientific approach In the first place privileges must be within the capacity of the forests and secondly they should not be capable of misuse like deadwood "head-load privileges" Finally, the concept of granting forest produce free, needs to be re-examined in the present context as anything given free loses half its value

(*ii*) *Forest protection* Next to fire, the greatest harm to the forests comes from illicit cuttings, illicit cultivation and illicit grazing Vast forest tracts once well covered have been rendered treeless due to these reasons The meagre staff of the Department by itself will never be able to keep in check these organised destructive forces With the increase in population, rising trend of prices of forest produce, growing unemployment, and improved communications, illicit cuttings has taken a serious turn. The question, therefore, needs to be examined from an altogether different angle The forests are 'open treasuries' and, therefore, other concerned Departments should also be called upon to share with the Forest Department the responsibility of guarding these 'open treasuries' of the State

(*iii*) *Mechanisation of exploitation methods* -- The efficiency of the present exploitation methods can be improved a great deal by mechanisation Extensive road development programme will be further conducive to bring the entire forest tracts within the economic reach of markets This will enable utilisation of inferior timbers and firewood which at present remain in some interior places unutilised

(*iv*) *Intensive working* -It is necessary to practise intensive rather than extensive forestry This will mean making the present territorial charges smaller and manageable This will lead to better protection and increased production

(*v*) *Development of private forests* - -Considerable forest area (1,417 square miles) still vests in private individuals in Western Maharashtra This by no means is worked on principles of sustained yield Model Rules framed for regulating exploitation from such forests make some provision to guard against wanton destruction of these forests The Model Rules cannot however, take the place of a regular Working Plan which alone can regulate cutting on the principle of sustained yield Besides, there are many lacunae in the actual implementation of section 35 and its amendments The problem of private forests, therefore, may need re-examination *de novo* In Vidarbha, proprietary rights have already been abolished and all the ex-proprietary forest areas are now under Government management Regular Working Schemes for such forests have either been completed or are under preparation

(*vi*) *Utilization of inferior timbers* -The existing timber consumption per capita is extremely low Considerable increase in the timber consumption is implicit in an improved standard of living which all development projects aim at As there is a limitation on the increase in the area under forests, closer, fuller and rational utilisation of the available forest produce is to be considered Bulk of our forests are mixed forests and teak is the most popular timber Bija, ain and sissoo are also quite popular However, supplies of these first grade timbers are limited and the prices are also high There are secondary timbers available in appreciable quantities in most of the forests which are not much in demand at present because of their poor quality in respect of strength, durability and other technical properties Their durability can be improved by preservative treatment The other physical properties can also be

improved either by seasoning or processing such timbers into various types of processed woods such as ply-wood, chip-boards, hard-boards etc This will necessitate research and installation of a net-work of preservative, seasoning and processing plants in the timber-producing districts of the State.

(*vii*) *Trees in private holdings*.—Trees in private holdings are an important asset This asset has not so far received the attention it deserves The ill-famed Dunlop Declaration resulted in the past, in the total denudation of hill sides in Ratnagiri District Conferring of occupancy rights without special reservation of the locally important tree species in occupied lands in the jurisdiction of the former Princely States resulted in very heavy exploitation of such tree-growth in recent times Trees whether they are in regular forests or in private holdings have a mission to perform It therefore, seems very essential that the question of conserving this asset and harnessing it for the benefit of the community as a whole needs serious consideration and it should therefore, be necessary to augment the 'cut fodder stock' in all important fodder producing districts. Schemes calculated to build up fodder stocks as a standing provision for lean years, need to be considered as a part of the Forest Policy.

Forests, floods and soil erosion.—It is a matter of common knowledge that serious erosion of surface soil is taking place practically in every district The quality of the cultivable land is thus impaired This is sought to be made good by adding manures etc., which are costly As a long term measure it is necessary to assess the root cause of such erosion and to take timely action to remove the causes of erosion

There are no two opinions that erosion is the least in a tract well covered with trees in vulnerable places Due to erosion, silting of tanks has taken place on an appreciable scale, as will be seen from the following figures in the former Bombay Province —

Name of Reservoir (in the former Bombay Province).	Catchment area in sq miles	Storage capacity at the time of construction in ft /Acs	Years of capacity surveys			Silt deposit in ft /Acs	Total depletion in storage to the date of survey per cent.
			First.	Last	Period in years		
Lake Fife (Bhandardara)	196	90,056	1870	1940	70	19,801	22 0
Ekruk Tank ..	159	76,446	1890-91	1923	32	10,368	13 6
Nehr tank .	59·55	11,998	1896	1923	27	2,600	21 7
Mayahi tank . .	54	4,329	1891-92	1922-23	31	2,607	60 2
Muchkundi tank . .	26	16,152	1890-91	1924-25	34	2,610	16·0
Matoba tank ..	10	5,255	1878	1941	63	1,010	19 2
Koregaon tank	7	2,404	1891-92	1925	33	487	20 2

Efficiency of irrigation projects put into commission at an enormous expense, is seriously impaired due to silting Therefore, it is necessary that the causes of silting are removed, so that silting is reduced to the minimum Trees again serve this purpose admirably

Both soil erosion and floods result from the same cause, namely the rate of run-off High run-off entails heavy erosion and also heavy floods In effect, erosion control and flood control are inseparable, as the control of one automatically results in the control of the other In order to prevent floods or at least to mitigate their severity, the policy of water-conservation from the very source is required to be followed Nature itself has laid down the design of flood control, which has been tampered with by man to his own ultimate disadvantage It is, therefore, necessary to revert to the natural design as far as possible and to improve it wherever we can *The natural design consists in maintaining adequate forests in good condition in the hill catchments to reduce run-off and to increase the period of flow in streams and springs*

The 1952 National Forest Policy has laid stress on classifying the forests on a functional basis. Such classification has not so far been undertaken. This is urgent and needs to be carried out

expeditiously Side by side, it also seems necessary to carry out land-use survey so that vulnerable areas which need to be maintained under permanent vegetal cover can be constituted into reserved forests for which such areas are most suited

Forestry and Agriculture – In planning rational land-use, the role played by the forests, both protective and productive, is also to be considered in addition to land suitability It may be true in a given case that the land may be suited to agriculture on considerations of soil, situation etc, but even in such a case the role of forests as protector of agriculture and defender of the soil should receive due weight Forestry has all along been wrongly assigned the role of 'handmaid of agriculture' when in fact forestry is the 'foster-mother of agriculture'

Forestry and employment Forestry is comparable to industry from the employment point of view On an average 53,059 persons (23 610 full-time and 29,459 part-time) are engaged per day in different types of forestry work including forest industries Intensive forest management to which reference has been made earlier, will as a corollary, afford still more scope for employment Expansion of industries based on forest products will augment this further Thus in solving the employment problem the forests have a mission to perform

Forests and the Adivasis The total population of Adivasis inhabitating the forest area in the present Maharashtra State is 21,87,000 This represents 6 8 per cent of the total population of the State This population mainly depends on the forests for their livelihood and can look only to the forests for the betterment of their lot Their betterment can be brought about not by clearing forests but by improving them and by more intensive working

In order to improve, firstly the economic lot of the Adivasis and secondly to bring about their all round development, measures like the adoption of the minimum wages clause in the sale conditions of the Forest Department were taken as early as in 1937, in Western Maharashtra This provision has now been made applicable to Vidarbha

The movement of organising the Forest Labourers' Co-operative Societies is also now introduced in all parts of the State and is gaining ground This movement was originally, started in 1947 and in the year 1958, Government appointed an Evaluation Committee to —

(*a*) study the working of the Forest Labourers' Co-operative Societies in the State,

(*b*) suggest to Government ways and means to improve the defects, if any, in the working of these societies, and

(*c*) make suggestions for organising, the Forest Labourers' Co-operative Societies' movement on a better footing

The recommendations of the Evaluation Committee should receive due consideration in the future forest policy in respect of the uplift of the Adivasis

Forest budget Going through the figures of revenue and expenditure under 'Forests' for the last nine decades it is seen that the percentage of expenditure on forests as compared to the revenue obtained therefrom, has come down in the last two decades or so In order to maintain the productivity of the forests, at a sufficiently high level and if possible to improve it, it is but necessary to plough back as large an amount as possible The minor forests and pastures have particularly suffered heavily on this account In this context the directives given in the 1952 National Forest Policy are very sound and it will not be out of place to reproduce them here -

"Forestry is a long-range enterprise and it becomes incumbent upon State Governments to secure for it freedom from vagaries of the annual budget A steady flow of funds is indispensable for sustained forest operations such as replacement of what is removed annually, improvement of remaining crops, development of communications for opening up remote areas, and protective measures, they have to be based on phased schemes which should not be set aside lightly Budget cuts made from year to year to meet the exigencies of State finances can only be made at the expense of continuity in forest management apart from other benefits - and at the sacrifice of forest revenue and other benefits in the coming year The creation of a sinking fund, therefore, by investing a portion of the revenue in Government securities, more particularly during boom years, would not only ensure availability of funds for replacement and development costs, but may also be made to act as an equalising fund to be drawn upon in lean years to prevent a fall in revenue The immediate profit motive should be rigidly ruled out, for, this urge may endanger the supply of large and special timber for defence and industry and lead to a disturbance of climatic conditions seriously affecting agriculture The adoption of rotation to produce large sized timber is often of greater importance to the general economy of the country

than that of rotations which yield the maximum rate of interest in forest investments".

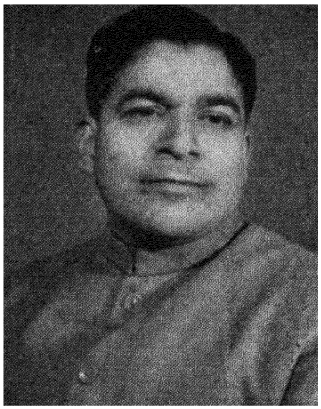
Plan effort—The total outlay of the Second Five-Year Plan of the Forest Department was Rs. 169 lacs The Third Five-Year Plan has not yet been finalised. However, a provision of Rs. 301 74 lacs has been made under various schemes of the Forest Department Allocations for various departmental schemes in the Third Five-Year Plan are made on the basis of the recommendations of the Study Group In the absence of a properly laid down comprehensive forest policy, such planning, however carefully it may be done, will be of an *ad hoc* nature Planning will be sound and maximum benefit of expenditure incurred will be derived only if a clear-cut and unambiguous statement of objectives is available as a guide for all times

Forest Publicity– Successful implementation of a long-term rational forest policy will depend to a large extent on the willing co-operation of the people The average citizen is not yet aware of the beneficient role that the properly managed forests play in promoting public zeal nor has he realized what catastrophic consequences will follow if the existing forests are depleted In the interest of forest conservancy and also in the ultimate interest of the community it becomes necessary to impose certain restrictions on the freedom of individuals to operate on the forests It is, therefore, very essential to have effective standing arrangements for forest propaganda

Forest administration—For implementing a comprehensive forest policy an administrative structure of proper magnitude and quality will be necessary The basic pattern of the Forest Department has remained unchanged for the last forty years or so In the present days a forest officer has to perform multifarious duties including routine executive work, protection work, implementation of schemes, etc. The strain of executive work has increased considerably as with more and more areas coming under Working Plans silvicultural operations increase. Artificial regeneration has progressed by leaps and bounds New types of works like afforestation works are also required to be undertaken With the increase in population and opening up of the country, protection has become difficult and illicit cutting, illicit grazing and encroachments are on the increase The work in the office has no comparison to what it used to be in the pre-war days All these changed conditions call for a critical examination with a view to reorganise the department and put it on a sound footing so that the forest officer could devote his time and energy fruitfully in looking after the forests under his care Unless the superior officers are enabled to pay more frequent visits to all forests in their respective charges real improvement of forests will not be achieved

The urgency and importance of framing a sound forest policy cannot be over emphasised The task is very complicated as a compromise formula is to be evolved between the various conflicting interests It may, therefore, be worthwhile to appoint a Special Committee to enquire into all questions pertaining to our forests in detail and to make specific recommendations in respect of the future forest policy of the State

Man who believes himself the Conqueror of them, is at once the maker and the victim of wilderness, deserts and desolation.



FOREST ADMINISTRATION IN MAHARASHTRA STATE

BY

S. G BHOGLE

Conservator of Forests, Amravati

PRIOR to November 1, 1956, the Marathi-speaking regions were dispersed in the erstwhile Bombay Presidency, Central Provinces and Berar—later known as Madhya Pradesh and the then princely State of Hyderabad After India became independent, the reorganisation of States in India took place in November, 1956 Due to this re-organisation, the dispersed Marathi-speaking areas were merged together and Bombay State came into existence with the composition of Saurashtra, Gujarath, Vidarbha and the Marathi-speaking districts of the then Bombay Presidency This was the bilingual Bombay State However, on 1st May 1960, the Bombay State was bifurcated and the Maharashtra State as it exists to-day, came into existence. The present Maharashtra State consists of the following areas added to the Marathi-speaking districts of the then Bombay State .—

Vidarbha—

Comprising Chanda, Wardha, Nagpur, Bhandara, Yeotmal, Amravati, Akola and Buldhana Districts (formerly forming part of the then Madhya Pradesh)

Marathwada –

Comprising Aurangabad, Bir, Osmanabad, Nanded and Parbhani District (formerly a part of the then princely State of Hyderabad)

One has therefore, to go through the past administration of these regions which formerly formed part of the various administrative units but now form part of the present Maharashtra State.

It is a matter for pride that Bombay Presidency was the first in India to take a bold step in appointing Dr Gibson as the Conservator of Forests in 1847 The Conservator was the head of the Forest Department in the early stages He did initial work by undertaking extensive tours. He was the sole and lone worker without any assistants He was allowed to spend only Rs 358 per month on the meagre establishment of a few Foresters and other staff The result of such administration was obvious and inspite of Dr. Gibson's personal endeavour and interest in forestry, forest conservancy had failed. Later on, apart from office staff, the staff provided was :

One Conservator,
One first Assistant Conservator,
Two Assistant Conservators, and
Foresters

and the total expenditure on staff was Rs. 1,838 per month.

The Government realised the grave situation and in addition to the existing staff, increased the number of Assistant Conservators of Forest to 7, with the creation of 7 Divisions in 1862 Upto 1870, the Forest Department remained under the Revenue Officials and the Conservator could do nothing independently The Collectors did everything by ordering the Assistant Conservators and the Conservator remained merely an advisor and consultant having no direct responsibility over the forest administration.

In the year 1870, the Conservator became a little more than an Inspecting and Advisory Officer and he was brought on par with the Conservators of the other Provinces under the Government of India Soon, it was appreciated that the existing jurisdiction for a single Conservator was too unwieldy to do anything effective

and in the year 1873, the posts of two Conservators were created. Due to this, there was improvement in the activities of the department in the shape of demarcation, survey, plantation, etc. However, the progress was slow The obstruction from the Revenue Officials and the public continued which retarded the pace of desired progress Even the Government did not care much, to reorganise the department as was done in other Provinces The Government was satisfied merely with increasing revenue The department maintained a large subiordinate staff which was very poorly paid The staff was so low paid, that even a living wage was not given to them It would be worthwhile to note that by 1890, the following staff was working in the Department

Permanent—

Rangers 40
Foresters 145
Forest Guards 3,253.

Temporary—

Foresters and Forest Guards, etc 501 Extra staff was proposed in addition to this as follows .

Rangers 123
Foresters 37.
Forest Guards 654.

Considerable correspondence went on and the net result was that though the Forest Departments in other Provinces had undergone reorganisation twice (in 1892 and 1900), Bombay Presidency was excluded from it Thus the executive establishment was denied the overdue improvement in prospects This non-fulfilment of their legitimate demands seriously retarded the progress of the Department

By 1901, Bombay Presidency had 3 sanctioned posts of Conservators and three more were added in 1921 The Chief Conservator's post was sanctioned in 1914 but was actually filled in December, 1917 The Forest Administration was headed by the foreigners till 1947 when an Indian was appointed as the Chief Conservator of Forests Due to the enactment of the Bombay Wild Animals and Wild Birds Protection Act, 1951, enforced in 1953, a post equal in rank to a Conservator was created but not filled independently till 1956

The eight districts of Vidarbha which have now been included in the present Maharashtra State were formerly included in the then Central Provinces and Berar and subsequently in the then Madhya Pradesh In 1860, Mr Pearson was appointed the first Conservator of Forests and had only two assistants In 1861, the Central Provinces were constituted into a Chief Commissionership and in 1862, the forests of Berar were included in it. In 1863-64, four Forest Divisions were formed The expenditure in 1863-64 was 95% of the revenue Later on, six Divisions with one Assistant Conservator for each, and Rangers, Darogas and Work-Watchers were appointed. The Conservator was paid Rs. 800 p m. During this period, the Central Provinces were advancing in the field of forest protection, exploitation and plantation but the Berar district lagged behind In Berar, the establishment cost was raised from Rs 4-8-0 in 1864-65 to Rs. 27,553 in 1868-69, whereas the expenditure on Conservancy and Working was raised from Rs 2,330 to Rs 6,552 By 1884, the revenue rose from Rs 26 16 lakhs to Rs 41 72 lakhs

In 1883, the forest staff was strengthened by three Deputy Conservators of Forests or Assistant Conservators of Forests and 4 Sub-Assistant Conservators, 16 Rangers, 96 Foresters and 529 Forest Guards The expenditure rose to 53% in 1882-83 from 42% in 1878-79

In the year 1901, the Central Provinces had three Conservators In 1906, the appointment of a Chief Conservator of Forests was sanctioned and made permanent in 1911 By 1950, Madhya Pradesh had a strength of one Chief Conservator of Forests, 4 Territorial Circles, 27 Territorial Divisions, 6 Working Plan Divisions, 1 Silviculture-*cum*-Utilization Division and so on However, by 1954, one post each, of Deputy Chief Conservator of Forests and Conservator, 5 Territorial Divisional charges and 2 Working Plans Divisions were added Out of these, due to reorganisation of States, two Circles comprising the eight districts of Vidarbha as stated earlier, were added to the then Bombay State and the staff included in the present State of Maharashtra

The story of Forest Administration in Marathwada which formed the part of the then Princely State of Hyderabad but now included in Maharashtra does not differ from that of the other components of the present State. Forestry commenced in 1857 Marathwada was the most neglected part One of the two Divisions had a Working Plan and the other was worked under a Working Scheme The then Hyderabad State was interested in obtaining more revenue, without spending much on forestry. However, it is noteworthy that by 1945, this State had one Working Plan Circle under a Conservator, out of the three Circles, three Afforestation Divisions, one Forest Utilization Officer and one

Silviculturist By 1956, almost 99 per cent staff upto Forest Guards was trained in Forestry

At the time of re-organisation of the States, the Bombay State had one Chief Conservator of Forests and one Deputy Chief Conservator of Forests The post of the Deputy Chief Conservator of Forests was retained in the set-up of the Forest Department as approved by Government Resolution, No SRO 2160/7254 (a)-Y, dated 1st May 1960 It was, however, subsequently discontinued, vide Government, Agriculture and Forests Department, No BFS 2360-J, dated 13th September 1960, in view of the reduced size of the State Similarly the post of the Wild Life Preservation Officer was left unfilled for a considerable period. During the reorganisation of States, the post of the Research and Working Plan Conservator came to be abolished and as a result of that, work was entrusted to the Deputy Chief Conservator of Forests Then with the bifurcation came the formation of the present State of Maharashtra on 1st May 1960 The post of the Wild Life Preservation Officer was later on abolished and that of the Conservator of Forests Headquarters, was created The Chief Conservator of Forests came to be appointed as the Wild Life Preservation Officer under section 4 of the Bombay Wild Animals and Wild Birds Protection (Extension and Amendment) Act, 1960 Chanda District was formed into an independent Circle, and Nagpur and Bhandara Divisions were split into two each Thus the letest organisation of the Forest Administration as in 1961 is as follows --

(1) Chief Conservator of Forests and Wild Life Preservation Officer	1
(2) Conservator of Forests, Headquarters	1
(3) Territorial Conservators of Forests	6
(4) Divisional Forest Officers, Territorial	27
(5) Assistant to the Chief Conservator of Forests	1
(6) Divisional Forest Officers, Working Plans	4
(7) Assistant Conservators of Forests	47
(8) Forest Statistician	1
(9) Forest Engineer ...	1
(10) Deputy Forest Engineers ..	2
(11) Silviculturist ...	1
(12) Assistant Silviculturist	1
(13) Forest Utilization Officer	1
(14) Personal Assistant to the Chief Conservator of Forests (Non-technical)	1
(15) Technical Assistants (R F O's rank)	3
(16) Rangers	259
(17) Foresters Grade I	146
(18) Foresters Grade II	898
(19) Forest Guards Grade I	273
(20) Forest Guards Grade II	4198

The Forest Department has ever been having inadequate staff with meagre pay-scales The same legacy is being carried right up to this date The tendency to give more and more surplus revenue gained momentum and there was as if a keen competition from time to time to this effect without much regard to the adequacy and welfare of the forest staff The forest area of Maharashtra State is 25,933 square miles The staff employed at present is very scanty Protection of forest, silviculture management, etc are consequently very difficult to practise to the required extent on an ideal basis We should have 8 territorial Circles, one Deputy Chief Conservator of Forests, one Conservator of Forests for Research, Working Plan and Development, 8 Working Plans Divisions at one Working Plan Division for each Circle, 41 Territorial Divisional charges 9 posts of Assistants to the Chief Conservator of Forests and Conservators of Forests, 245 territorial Ranges plus 24 for Working Plans including the Mobile Squads, 4,900 Beats and 1 500 Rounds and with an independent Wild Life Preservation Officer for the State This shows that the administration is dragging on with a shortage of 2 Circles, one Deputy Chief Conservator of Forests, 15 Divisional charges, 51 Range Forest Officers, 700 Foresters and about 500 Forest Guards Every effort is being made to bring home to Government the need and urgency for these ideal conditions so as to ensure the required degree of efficiency and effective implementation of the National Forest Policy in the State The same is the case with pay scales Now that 100 years have passed since the inception of the Department, it is time that necessary housing accommodation is provided to the staff We are spending progressively low to give more surplus as would be evident from the following statement :

Year.	Revenue in lacs.	Expenditure in lacs.	Surplus in lacs	Percentage of surplus to total revenue.	Percentage of expenditure to total revenue
	Rs.	Rs.	Rs.	Rs.	
1870-71	12 00	7·50	4 50	37 50	62 50
1890-91	26 08	14 41	11 67	44 75	55 76
1920-21	63 37	56 31	17 06	26·92	73 08
1940-41 ..	44 54	28 09	16 45	36 93	63 07
1959-60 . .	577 06	209 53	367 43	63 67	36 33

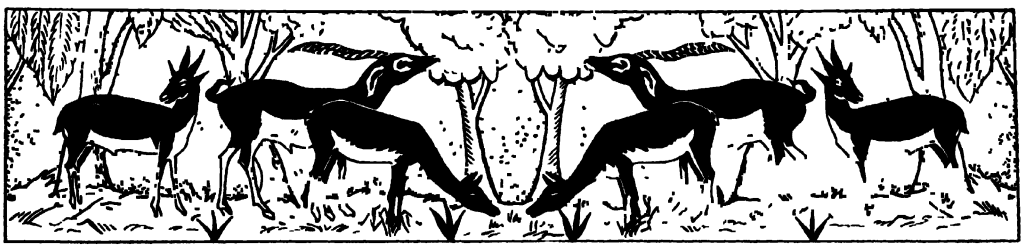
The Department spent 60 per cent of revenue in 1924/25 and only 35 per cent in 1958-59 It may be remembered that the latest figures include expenditure on plan schemes as well Progress of plantation, regeneration, communication and working plans is not commensurate with the increased needs of the ever expanding industries and increased attention is being paid to organise the forests for their economical and systematic exploitation and development within the available resources which leaves much to be desired in important aspects in respect of communications, economic methods of exploitation, etc Mechanised equipment like tractors, mechanical saws, portable saw-mills, and techniques like wood-seasoning and wood-preservation, etc are yet to be introduced to the required extent Speedy steps are therefore called for to immediately develop the forest resources of the State and also to better the lot of its forest personnel, if the Forests are to play the role fully in our expanding economy

If thy heart were right then would every creature,
be to thee a mirror of life and a book of holy doctrine.

—THOMAS A. KEMPIS

The love of nature is the only love, that does not deceive human hopes.

—HONORE DE BALZAC.



FOREST PROTECTION IN MAHARASHTRA STATE

BY

S S BUIT

Conservator of Forests, Thana

Introduction

THE State economy is primarily agrarian The well-being of the peasantry demands rational land use to ensure satisfaction of the basic needs This objective can only be served by optimum balance between farming, pasturage and forests Rapid rise in human population, low and diminishing crop yields, and expansion of cattle wealth has led to continuous expansion of farm lands in the areas that need to be dedicated to forests The limited pastures are over-grazed to denudation The tree growth has disappeared in many areas because of over-use as fuel The herbaceous sward in many populous regions is often so over-grazed that they border on semi-arid conditions As the plough encroaches on forest land, the production of firewood and agricultural timber is critically reduced The growing dearth of firewood has given rise to the pernicious practice of diverting the valuable cow-dung manure from the fields to the village hearths The majority of the dry stock lives on a semi-starvation diet There is therefore a crying need to halt the vicious circle The forests of the State constitute an incomparable asset of immense potential value which under judicious management can be perpetually drawn upon to provide for the well-being of the common man

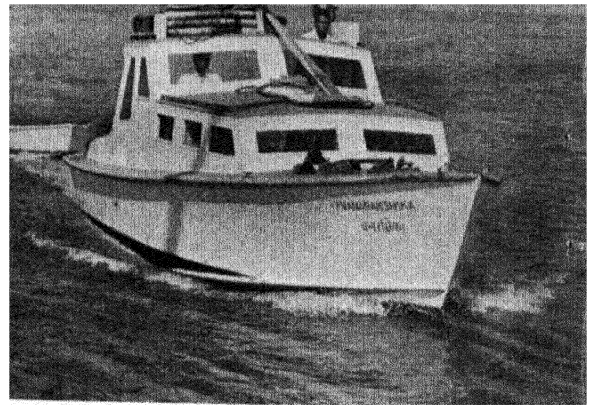
The utility of forests, their place in the life of the common man and the economy of the State

Directly, the utility of the forests lies in supplying the essential requirements of small timber, firewood, grass, grazing, etc and in yielding large timber and other commercial produce which sustain industrial development. Indirectly, forests moderate extremes of climate, regulate water-supply, thus mitigate floods and soil-losses, conserve soil, moisture and promote agricultural development.

The total extent of forests in the State today is about 25,933 Sq miles which is about 21 8 per cent of the total land area of the State The human population according to the 1951 census is about 3 20 crores and the cattle population numbers about 238 lakhs including sheep, goats etc The per capita distribution of forests (about 0 51 acres) and the production of wood (about 3 cft per annum per acre based on Indian average) are dismally poor In a Welfare State however, the needs of the people have to be met with adequately and at reasonable cost.

The region comprises parts of the Central Indian water-shed and the catchment areas of the important river systems viz the Godavari, Bhima, Krishna, Koyna, Wainganga, Wardha, Purna, Tapti Vaitarna, Ulhas Kundlika, Amba, Savitri, etc It is imperative that the strategic areas remain under permanent vegetal cover Indiscriminate clearance of forests in the catchment areas in particular, has led to the silting up of rivers and creeks, as is clearly manifest, in the numerous once navigable creeks on the west coast which are no longer navigable except by small country-crafts, and to recurrent floods The vast hydro-electric and irrigation projects that are coming up in the State, if they are to function effectively, necessiate that the catchment areas of the water-courses bunded are properly conserved A new era of industrialisation is forging ahead in the State The forest based industries such as saw-milling, pulp and paper, fibre-board, straw-board, playwood, bobbins and other textile requisites, boat-building, matches, packing cases, lac, catechu, essential oils are some which represent a significant element in this developing industrial tempo The State forests must ultimately cater to these industries adequately as also meet the increasing demand on forest produce elsewhere, where essential, as in the case of urban and rural housing, fuel and pasture The growing economy as a result of developmental activity all round has therefore accentuated its dependence on forests more than ever before

The forests are a valuable public asset that provide to a significant extent the wherewithal to meet both normal and developmental expenditure The annual receipts realised during the year 1959-60 were Rs. 5,77.06,517. The forests are a primary source of employment in the backward forest areas of the State Though not substantiated by an economic survey it is estimated that forests contribute nearly to the extent of 50 per cent to rural economy particularly in those tracts where forests preponderate.



" Vanarakshika " Motor Launch for patrolling the creeks of Thana District.

The need for protection and intensive forest management

As mentioned earlier, the actual area under forests barely forms 21 8 per cent. of the total land area, and falls far too short of the optimum 33 per cent laid down by the National Forest Policy Circumscribed by this limitation, the case for extensive forests and their management ceases to hold any promise and must needs be supplanted by intensive management

It is therefore, vital to our economy that the existing forests are protected, conserved and developed against all factors and influences which are inimical to conservation, growth and development, as the baneful effects of destruction will have far-reaching effects, often disastrous Forests stand for the greatest good of the largest number in perpetuity The concept of sustained yield and rational management make it necessary to restrict the freedom of the user Forests do sustain or aid agriculture whether as a handmaid or foster-mother Closer integration of forestry, agriculture and industry for mutual benefit, is therefore essential Social benefits that accrue from such integration will enable the creation of a balanced rural community and provide more and varied employment

Forests are a dynamic living association, continually changing in space and time The individual components and forest communities are an expression of the environment, soil, climate and microclimate, edaphic and micro-edaphic factors, biotic influences micro-organisms and the historical factors which determine the present composition and trends of development Any abrupt change such as clearance of forests in strategic areas, unrestricted satisfaction of local demand of forest produce, and grazing and management unrelated to environment may gravely jeopardise forest economy

Forestry is not mere conservation of forests in the natural state but development of stands of the highest production, of economic species apart from the protective function Protection today, therefore, is not a mere static function It must precede, follow and correlate planned management Sound protection and management can aid primary functions of forests better and concurrently yield maximum outturn of forest produce.

Adverse influences

Forests are vulnerable to a host of adverse influences which compel diverse protective measures both in the initial and developmental phases These are reviewed below in so far as they relate to the conditions prevalent in the State.

Natural Causes

Forest.—This is only of local occurrence in the State, as in the Melghat valleys The silvicultural systems such as the Shelter-wood Strip and Selection-*cum*-Improvement, coupled with the avoidance of clearance of tree-growth in frost-liable areas have controlled appreciably the ill-effects of frost

Drought--Physical and physiological drought conditions do prevail to a varying extent in areas with scanty rainfall, such as in Vidarbha and Marathwada regions as also in high rain-fall areas as in the Western Ghats The effect is pronounced in the years of poor rainfal The adverse effects on recruitment and establishment of reproduction, increment and growth are noticeable However, high mortality of the growing stock due to drought has not been recorded. Here too, only silvicultural measures can afford any protection.

Floods, Tides.—Damage to forest reserves due to floods has not been consequential Due to tidal erosion some of the Casuarina plantations over narrow strips and mangrove belts on the western coast have suffered to some extent

Wind, Storms, Cyclones—Damage due to high winds and storms is generally localised Cyclones of 1940 and 1948 wrought terrific havoc in the valuable Thana Teak forests uprooting thousands of teak trees The damage was heavy in the older age-classes This has resulted in serious depletion of the growing stock of teak in larger girth classes.

Animals—The incidence of wild game in the forests of Nasik, Thana and Poona Circles is much less and the damage is therefore negligible

In the forests of Chanda and Melghat of Vidarbha region however, deer and antelope do cause appreciable damage to young concentrated regeneration areas. The first three coupes of the Plain Felling Series in Allapalli Range partially failed to regenerate quickly due to heavy damage by chital, coupled with other factors Control of the incidence of game is the only practicable measure and has been attempted with success Porcupines proved a menace in the semal plantations in Chanda Divisions Porcupine-proof fences were tried with success, but proved expensive Pigs, hare, rats and monkeys cause some damage locally Rats multiply after bamboo seeding and cause considerable damage to young plantations of khair, kaju, teak, semal, etc, by nibbling at the tap-roots below the collar Serious damage was noticed in Thana and Kolaba forests to plantations of various species in the year 1960-61 after the gregarious flowering of bamboos in 1959-60 I have seen some beautiful current year plantations of khair completely ruined during the last season Rat-poisoning over such large areas when rat breeding is indeed staggering proved ineffective

Plant diseases –Little attention is paid to forest pathogens in field forestry Forest-stand disorders, may be basically physiological, nutritional, microbiological or due to soil conditions Amelioration of site-conditions to remedy the ills with the aid of chemicals is not feasible in current forestry

Fungi —A detailed survey of the diseases in varied forest types both deciduous and evergreen is lacking No major incidence of the epidemic variety has been reported in recent years

Insects Teak defoliation due to *Hyblaea puera* and skeletanisation by *Hapalia machaeralis* which are now endemic, results in appreciable loss of increment Chemical control is not possible Biological measures have been devised by avoiding pure extensive plantations and trees which are alternative hosts are commonly prescribed and attempted

Young semal plantations suffer seriously from shoot-borer attack *Ailanthus* plantations in Chanda received a set-back due to intensive defoliation The intensity of damage to other species has not been recorded However, the only measures available to counteract the damage, are biological which have not proved efficient

Weeds, Climbers, Epiphytes, Parasites, etc.

Lantana an exotic garden-escape has literally run wild in Melghat forests creating difficult conditions for the regeneration of teak Luxuriant growth of grasses with matted root-systems such as *Imperata*, create conditions detrimental to regeneration

Bamboos smother young teak plantations and inhibit regeneration of the tree species Other obnoxious weeds, shrubs and trees also retard recruitment and growth and have ruined untended plantations over many parts of the State

Climbers do cause appreciable damage Malformed growth in many a natural and managed forests is partially a result of past climber damage However, due to systematic eradication of climbers in well-managed forests climber damage is appreciably reduced Selective weedicides are too expensive for field trials Careful weedings in regeneration areas is the principal remedial measure

Epiphytes cause some damage in evergreen and semi-evergreen types.

Biotic factors

Man The damage by natural agencies is however, eclipsed by the large scale and wanton destruction of forests by the acts of man and his animals The cumulative effect in bad cases has led to almost complete annihilation of forests and pasture, to the detriment of his own needs

Fires —Fire often quoted in forestry 'as a good servant but a bad master' has mainly been a bad master Uncontrolled fires either accidental or wanton, caused in mistaken belief that it promotes good growth of grass or propitiates a deity, fires kindled to keep away wild animals to facilitate collection of mhowa flowers and to promote better yield of tembhurni leaves, fires caused by hunters and farmers in marginal belts have all been an anathema on forests and a potent factor in decimating them They cause serious damage to forest by destroying regeneration and organic material, by baking and impoverishing the soil and by seriously damaging both immature and mature growth

The damage and destruction caused by fires is seldom spectacular in our tropical forests as compared to the pure coniferous stands But the cumulative effect however is not less disastrous Surface fires no matter how light, have a devastating effect on young growth, and seedlings and young reproduction are killed outright Saplings and poles owing to relatively thin bark offer little resistance to fire, are injured at the base, and badly scorched and girdled Merchantable trees are wounded, which in turn breed disease, fungal and insect attack Much of the unsoundness in

the growing stock may be attributed to fires Repeated fires result in regression, leading to destruction of forests and their replacement by savannah type of grasslands or lands bereft of vegetation In short they create conditions inimical to regeneration They are more widespread in drier regions of the State. But it is a mistaken notion that their recurrence or the extent of their damage is much less in moist regions viz the forests of the Western Ghats in Thana and Kolaba Divisions Large portions of forests in this region are also annually burnt

Fire protection measures have been successfully implemented over many years now, in some of the well-managed State forests viz the forests of Allapalli Sub-Division and portions of Melghat forests Effects of protection are manifest in the deteriorate Grazing may result in direct damage improved stand and site quality The following statistics indicate the incidence of fires

Year	No of offences
1953-54	2,550 (Average)
1954-55	
1955-56	
1956-57	1,927
1957-58	2,399
1958-59	1,579

Fire-protection measures such as the maintenance of fire-lines, watch and ward, fire-fighting and control measures, early burning, counter-firing, have largely proved ineffectual in many areas Inadequate and poorly maintained fire-lines, lack of roads, dearth of labour, want of look-out towers, speedy vehicles and poor communications are some of the limiting factors, as also public apathy and lack of consciousness amongst some of the forest personnel too By the time intimation of fire is received at the forest station and aid reaches the affected spot, large areas are already enveloped by fire and worse still not a little area gets scorched by inefficient counter-firing Odd enough, we have come to accept fires as a routine mishap and in many parts of the State there is hardly any fire conservancy worth the name. We spend too little in money and effort, in a matter which should claim the first attention of the forester Efforts need to be revitalized and properly oriented to secure efficient fire-protection Fire-discipline amongst the personnel is the prime need Well planned external and internal fire lines, properly maintained in the fire season, a well developed net work of forest roads, rigid implementation of rules, effective watch, intimate knowledge of the frequency of fires in the locality with the aid of fire maps, look-out towers, facilities for patrolling and speedy intimation of fire occurrence by telephones or "walkie-talkie" wireless sets, vehicles adequately equipped with fire-fighting appliances, to rush labour and other aids to fight the fires are pre-requisites for proper fire-protection Besides, intensive propaganda is essential to enlist public cooperation

Grazing

Forests have to meet the demand for grazing of cattle of the surrounding populace Production of trees and provision for grazing are to some extent conflicting demands and can overlap only to a reasonable extent Excessive grazing upsets physiological and biological balance and as a result tree-growth and pasture steadily deteriorate Grazing many result in direct damage to young growth by browsing and trampling, to the complete elimination of reproduction and eventual destruction of the forests directly proportional to the intensity and the periodicity of unrestricted grazing Hardening and compacting of soil renders conditions of regeneration and growth extremely unfavourable Removal of vegetal cover aids sterilization, increased run-off of water, soil erosion, formation of gullies and screes on steep slopes, ultimately resulting in the exposure of the underlying rock

The pressure of grazing is exceedingly heavy in marginal forests, in all populous areas of the State There is little pasture available and the bovine stock is gradually starved on the little roughage available in the absence of stall-feeding It is paradoxical that extensive forests often symbolise poorest stocks

The cattle population of the State is nearly 238 lakhs of which nearly 40 per cent avail of periodic grazing in the forests. The overall average grazing incidence may on the face of it sound reasonable All the grazing is generally concentrated on marginal lands in close proximity of habitation and the results are manifest in the bare wood-lands surrounding villages Even Protection Forests which serve a vital function are at times overgrazed, whereas to enable them in these strategic areas to fulfil their function it is essential that grazing should ordinarily be excluded or only very light grazing permitted.

It is therefore imperative, to regulate grazing to compromise the needs of grazing of essential cattle with the bearing capacity of the forests. A rational forest grazing policy in vogue in Vidarbha forests needs immediate application in other parts of the State. The principles

underlying this policy are the formation of grazing units inversely proportional in size to the grazing pressure -higher the intensity, smaller the units, fixation of grazing incidence directly related to the bearing capacity, functional type and the object of management of the forests limiting the number of cattle to be grazed in the area on the basis of the incidence fixed closure of regeneration areas and monsoon or rotational closures to enable a period of rest to the pasture for proper stocking, either naturally or by reseeding, and listing the priority of cattle for grazing, such as essential plough-animals, milch stock, non-essential and commercial stock, etc

Grazing research is essential to determine the grazing incidence in varied forest types

Sheep and goat grazing is inimical to forests and cannot be permitted in any managed forest

The grazing problem is vitally concerned with the needs of the common agriculturist, to enable him to graze his cattle and at the same time to help maintain the forest to meet his other needs Compromise here must be mutually beneficial Effective closures and limiting grazing incidence are possible without fencing with the cooperation of the agriculturist as has been successfully demonstrated in Vidarbha forests

Unauthorised clearance of trees for farming, shifting cultivation, illicit fellings, excessive privileges.

This aspect of forest destruction has assumed alarming proportions in our State It is an intimate human and social problem The people mainly concerned are the aboriginal populace or backward classes staying in or in the vicinity of the forest, whose economy is closely linked with the forests These people live in pathetically substandard conditions Their cultivation is poor The rise in poulation and living costs have thrown them back on the forest to earn a living somehow There have been large-scale unauthorised clearances everywhere particularly where the pressure of population is high, as in Thana and Nasik Circles Unfortunately such cultivation on slopes can neither be productive nor remunerative The individual has no wherewithal to terrace the slopes, bund the fields and irrigate them The cultivation is primitive and transient The area is ultimately lost to forests pasture and agriculture In the process, vast stretches of unproductive wastes are annually added The shifting cultivation does not prevail to any appreciable extent in our State forests and is localized to small areas of proprietary forests of Ahiri Zamindari A form of shifting cultivation does obtain in Kolaba and Thana forests popularly known as "Varkhas" cultivation Soil conservation measures may mitigate this evil

Illicit fellings have sharply risen to meet either personal needs for housing or to supplement meagre earning The unfortunate result is that the people are destroying their important source of life for a transient unlawful gain Scant regard for forest regulations and authority is becoming increasingly apparent This is not unlikely in any society living virtually on the verge of penury with no prospect of an alternative resource or employment

The following Statement furnishes information on the incidence of offences pertaining to illicit fellings for the period indicated

Year	No of offences
1953-54	
1954-55	37,939 (Average)
1955-56	
1956-57	37,635
1957-58	40,608
1958-59	41,687

This Statement may not give a factual account since the number of undetected offences and the extent of illicit fellings is infinitely more

Cases of organised illicit fellings by unsocial elements are not infrequent, where the dire poverty and gullibility of the backward people employed in the illegal trade are often exploited These illicit fellings are aided by improved communications, mechanised transport facilities for quick conversion by saw mills and disposal at the large consuming centres The inadequacy of vigilance staff is also partly a reason for the increase in illicit cuttings and the meagrely paid lower staff is often seduced into this surreptitious trade The illicit fellings are prompted by high timber prices, giving surprisingly large dividends since the labour is given a mere pittance of the earnings

Large areas of proprietary '*Malki*' forests, interspersed amongst forest reserves, are irregularly exploited and afford ample opportunity for the transport of illicit forest produce under the guise of exploitation in Malki lands There is an urgent need to take over these areas The lacunae in the detection of forest offences result in acquittal in many cases and in not a few, the punishment inflicted is trivial and is vicariously borne by the intermediary and not the actual organisers of the racket It is needless

to say that the total loss to the forest wealth on account of illicit cutting is enormous Many of the wooded hills around Thana, Kalyan, Bombay, Poona and in the coastal belts have been fast depauperated of tree-growth and today carry mere scrub vegetation, which too is repeatedly cut back for illicit trade in firewood head-loads, which has made the rehabilitation of these areas well nigh impossible Strange as it may seem, attempts to rehabilitate the denuded slopes have been resented by the local populace apprehending restrictions on their privileges There have been cases where the planted seedlings of kaju and other species have been uprooted and destroyed in some of the recently afforested areas of Thana and Kolaba

To counteract this evil of illicit cutting several regulations for check in transit and on conversion of forest produce have been imposed The welcome innovation was the operation of Mobile Squads for the detection of forest offences These are staffed by Range Forest Officers and armed Constables, who keep constant vigil, by patrolling (by jeep provided for each squad A Motor Launch and a 'Dinghi' with the necessary staff also ply vigilantly to check illicit transport by sea in Thana and Kolaba Divisions These Squads do useful work and check to some extent illicit exploitation But here again the law, the regulations and the measures fall far short, to arrest and curb effectually the alarming incidence of illicit fellings in the worst affected areas which are susceptible to illicit fellings Total removal of unemployment and the satisfaction of the necessaries of life through forests, alone seem to be the clue to this problem which has long baffled solution Intensive forest development can offer alternative source of employment to the affected individual and a fully stocked forest will meet his needs in perpetuity But ironically he is destroying his primary source of livelihood A dynamic policy is therefore needed, with concerted measures and rigid enforcement of forest laws which are essential to protect the forests

Certain privileges are granted to the forest dwellers They are necessary too They do however, at times impair conservation seriously The abuse of privileges has become far too common that it cannot be brushed away lightly For instance, the privilege to collect dry fallen firewood for *bonafide* use or for petty sale or barter has been abused with impunity for the "manufacture" of firewood by girdling or felling trees in forests and splitting the wood when dry Forests are not an inexhaustible mine and therefore cannot permit the unbridled exercise of privileges, much less their abuse.

A forester is not ordinarily concerned with the social aspect of privileges that the State may concede or with the attendant loss of revenue His primary task is the protection of forests The privileges however, need to be compatible with the prevailing forest conditions to permit conservation and development

Flaws in Management

Protection against errors in management may at first sight seem odd to many of us, but certainly it is not of the least significance Mistakes in management have far-reaching effects Clear or over-fellings without assuring restocking, clearances in refractory areas impossible or difficult to regenerate, encroachment on future yields to inflate the revenue, abrupt changes in growing stock unrelated to stand environment are not uncommon failings Forest management is not mere administration but a sound technical achievement Properly trained, and adequate personnel in all cadres, sound ecological studies, evaluation of growing stock by reasonably accurate stock maps, scientific planning and management, periodical assessment of the results of work are essential pre-requisites of sound forest management I am convinced that there is a considerable leeway to be made in this respect and our efforts leave still much to be desired It is true that the limited forest personnel has to labour against heavy odds, amongst public distrust and apathy and lack of adequate appreciation of the paramount need for forest conservancy by social workers and administrators alike Only a fraction of the annual forest revenues is ploughed back to aid efficient forest conservancy Necessary facilities and incentives are wanting for the protective staff who dread their duty in 'bad' areas as a result of organised assaults in many cases These ills need to be remedied to promote better effort The service also needs to inculcate the missionary zeal in the profession of its choice.

The factors and forces responsible for the destruction of the forests are as observed earlier, to a very large extent man-made as a consequence of his thoughtless actions for his personal use and gain It is extremely rare that natural calamities come like a visitation on forests wherein the delicate balance of nature is maintained. Historically we notice that colonization and civilization have grown apace with the destruction

of forests, to the detriment of man and the eventual decline of prosperity of the region Vast engineering and irrigation projects may help reclaim today large areas lost to cultivation and prosperity at enormous costs but can neither adequately recompense the irreparable loss of vegetal cover nor restore the permanently impaired economy There is justified apprehension that the State forests may prove a wasting asset It is also feared that realization of the full potential of our forests may prove a cherished but an utopian ideal in the present context of the state of conservancy and development It is often said "The hand of man is a withering hand", but it can as surely protect and foster The common man in the village has a very large stake in the conservation and development of forests Foresters working in close harmony with the rural populace can avert the dismal picture depicted by Oliver Goldsmith in his "Deserted Village"—a caution repeated by the former Inspector-General of Forests in one of his notes —

"Ill fares the land, to hast'ning ills a prey,
Where wealth accumulates, and men decay;
Princes and Lords may flourish, or may fade;
But a bold peasantry, their country's pride;
When once destroyed, can never be supplied"

The forest is a peculiar organization of unlimited kindness that makes no demand for its sustenance and extends protection to all beings, offering shade even to the axeman who destroys it.

—BUDDHA.

HOWLERS

Buttress is a woman who makes butter

* * * *

Bacteria is the back entrance of a cafeteria

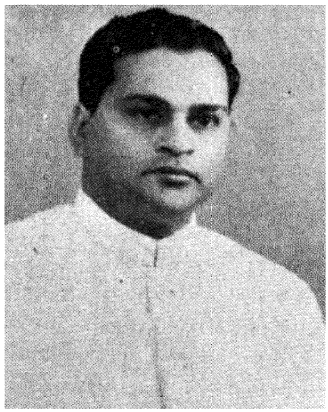
* * * *

Trees grow best where the soil is futile

* * *

Forests survive only where man's destroying hand is checked in time





FOREST DEVELOPMENT PLANS, IN MAHARASHTRA STATE

BY

D. V. KHISTY

Conservator of Forests, Head Quarters, Poona

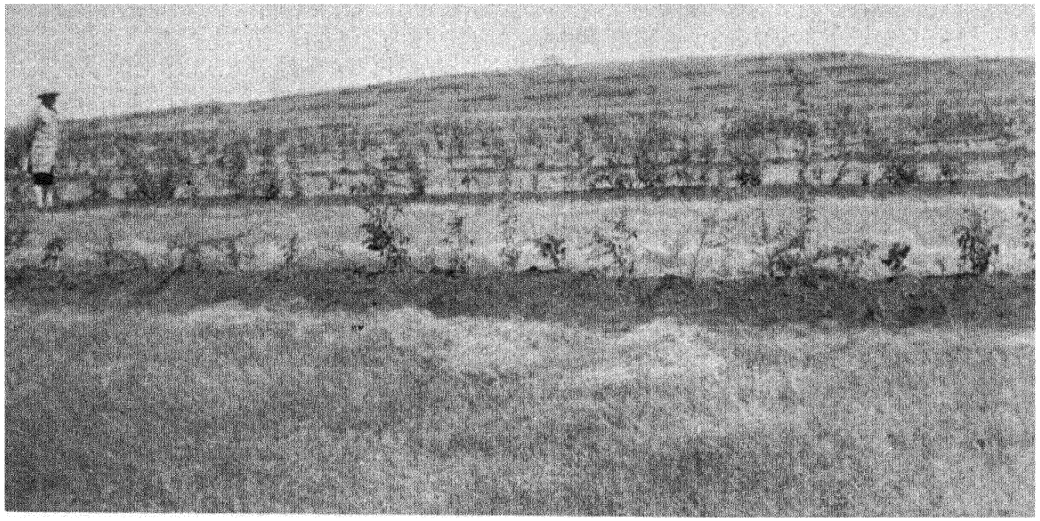
ECONOMIC planning has come to stay and is aptly envisaged by the planners as a continuous process With the advent of freedom, the people have cherished the ideal of seeing the country usher in a prosperous era. This ideal has been sought to be achieved by our planners by an intense and a vigorous campaign all round Economic planning in our country is the first of the kind, and on its success hinges the socio-economic and socio-political stability of the country The main objects of planning are to impart an agro-industrial base to our growing economy, to develop the employment potential therefrom and in the ultimate analysis to step up our national income The forests being a national asset contribute in no small measure, to the general welfare of the community.

The State of Maharashtra is rich in its wealth of flora and fauna The forest resources are, however, no longer considered inexhaustible In a developing economy, there is an increasing demand on some of the forest products with the result that the existing resources have fallen short of this demand We have, therefore, to take positive steps to enlarge our resources, to bridge the widening gulf between demand and supply The consumption of wood per capita is the lowest in our country being 2 cft as against 20 cft. in Europe and America We are not self-sufficient even in our basic requirement of fire-wood, let alone timber and other industrial goods The present average output of our forests as a whole is estimated at just 2 5 cft per acre per year, whereas annual outturns of over 25 cft. per acre are not unknown in other countries. This impels us to realise the need of increasing the productivity of our forests by resorting to intensive forestry

There are two main aspects to be considered in attaining self-sufficiency in the supply of forest produce One is to increase the acreage under the forest by adopting a policy of rational land use and by bringing under forests or pasture all marginal lands unfit for permanent and economic agriculture The second is to protect efficiently and conserve the existing forests and to increase and enrich the growing stock therein by an intensive silvicultural programme

As regards the first aspect, the Government of India has laid down the National Forest Policy in 1952 which stipulates that, the optimum extent of land under forests should be 33⅓% of the aggregate land area Of the total land area of 1,18,831 sq miles in Maharashtra State, about 25,933 sq miles are covered with forests which amounts to about 21 8% as against 17% in the composite Bombay State Though this position shows a slight improvement, there is still much leeway to be covered Besides, barely about ⅓rd of our total forest area can be regarded as really productive Thus the new Maharashtra State has hardly 0 5 acre of forest area per capita which is obviously far too inadequate to satisfy even the elementary needs of the agriculturist The above forest area of 25,933 sq miles comprises an area of 21,966 sq miles in charge of the Forest Department, 2,550 sq. miles in charge of the Revenue Department and 1,417 sq. miles of private forests

Coming to the second aspect, it is essential that the forests perpetuate at a high level of productivity through judicious and scientific management of the stand and profitable utilisation of the products derived therefrom In order to achieve this object, the Maharashtra State



Rahuri Soil Conservation Demonstration Centre, Ahmednagar District with ridges in the foreground (Plain area) and trenches in the background (Hilly area)—Poona Division

Forest Department has embarked upon various developmental schemes under the State Five-Year Plans

During the First Five-Year Plan, the developmental works sponsored under the Post-war Reconstruction Programme were continued and completed at a cost of Rs 22 90 lacs The works undertaken during this Plan were comparatively few and on a small scale These comprised the clothing of denuded forests, opening up of new road communications to promote greater output from the remote interior forests in particular, construction of wells and provision of residential accommodation to the forest staff in the interior, to give them the essential amenities of life to give their best in looking after the forests entrusted to their care, revision of working plans and schemes, the prescriptions of which were thrown out of gear by the emergent war fellings, and the creation of two new Circles, viz the Research & Working Plans Circle and the Northern Circle to cope with increased activity The following tabular Statement gives in a nutshell the achievements under this Plan both in terms of physical and financial targets covered :—

Serial No.	Name of the Scheme.	Physical target achieved.	Expenditure incurred
			Rs.
1	Additional territorial Conservator's Circle	Appointment of Staff	3,28,380
2	Research and Working Plans Circle ..		7,19,109
3	Forest Rehabilitation Scheme . ..	Completion of 7 Working Plans and finalisation of 47 Working Plans.	6,61,162
4	Forest communications	....	1,09,308
5	Buildings and wells	27 buildings, 2 wells	2,85,823
6	Improvement of denuded areas ..	Plantation in 3436 acres and maintenance of plantation in 2867 acres.	1,87,150
		Total ..	22,90,932

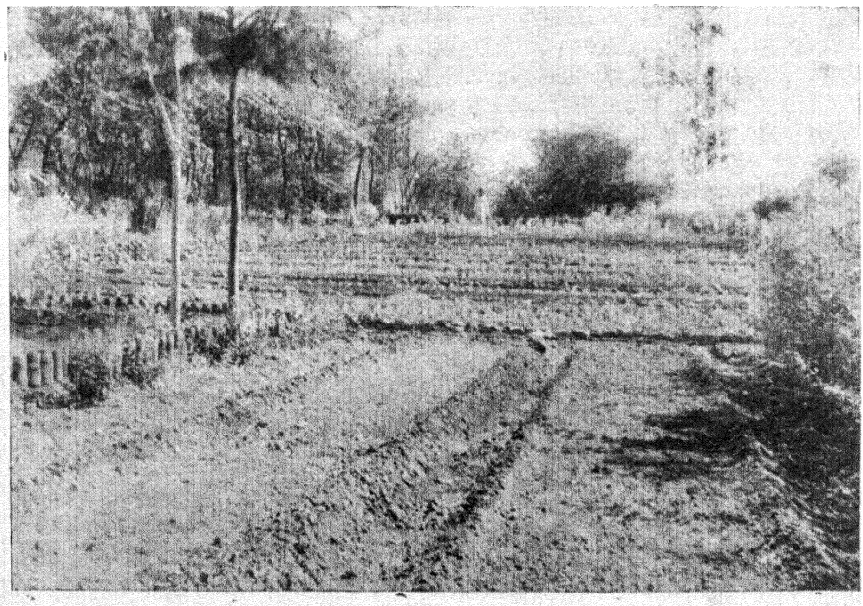
The 2nd Five-Year Plan covered a wider amplitude and aimed at the all-round development of forests.

The following summarises the broad features of the Plan -

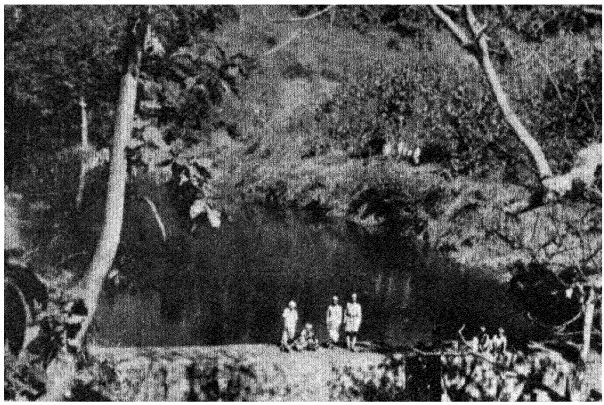
Serial No.	Name of the Scheme	Physical target achieved		Financial target achieved in lacs
				Rs
1	Reorganisation of Circles, Divisions, Ranges, Rounds, etc and creation of additional posts in West Maharashtra	Creation of new Circles	1	14 62
		Divisions	3	
		Working Plans Divisions	12	
		Sub-Divisions	1	
		Ranges and the other Staff	13	
2	Training of Personnel	Opening of Forestry School at Chanda		7 77
		Training of		
		11 Gazetted Officers		
		11 Rangers		
		29 Foresters		
		60 Guards, and		
		84 Clerks		
3	Silvicultural Research	Opening of two Research Centres, one at Chanda and the other at Melghat		0 57
4	Survey and demarcation of private and undemarcated forests	Survey and demarcation of 2902 36 sq miles		3 79
5	Survey of Forest Resources	Survey over 1239602 acres		1 45
6	Forest Settlement	Appointment of two Forest Settlement Officers		0 87
7	Afforestation of arid and blank areas	Afforestation 30125 acres Acquisition of 50194 acres, construction of 6 dams and 6 bunds and establishment of 13 Demonstration Centres		36 65
8	Rehabilitation of pasture lands	Wire fencing 23 miles 5 Fs Development of kurans over an area of 13385 acres		10 57
9	Establishment of a Fodder Bank at Dhulia as a bulwark against famine and drought	Land improvement works 3000 acres Construction of sheds for storing 20 lac lbs of hay for supply to scarcity areas		3 87
10	Establishment of Wet Nurseries	127 Nurseries and purchase of 33 pumps with ancillary equipment		7 82
11	Raising the economic status of Forest Labour	Establishment of 5 Dispensaries with 2 Mobile Vans		1 95
12	Forest Rehabilitation Scheme	Revision of 8 Working Plans Preparation of 3 Working Plans		0 70
13	Village Forest Panchayat Scheme	Appointment of staff for technical guidance to Village Panchayats 12 Villages with 80 acres in Non-Block area and 68 villages with 1855 acres in Block area		0 26
14	Plantation of valuable trees	Plantation of Teak 6414 acres		14 77
		Plantation of Matchwood 3168 acres		
		Plantation of Cashewnut 9263 acres		
15	Development of minor forest produce	Lac cultivation— pruning of 5371 trees and infection on 5460 trees Cultivation of medicinal plants— 23 acres Bamboo plantations 90 acres Agave planting -1476 acres		3 30
16	Forest Protection and measures to prevent illicit cutting	Opening of 26 Nakas, Training of 37 subordinates in fire-arms Purchase of a Motorised Dinghi and a launch and establishment of Mobile Squads		5 58
17	Mechanised transport and the use of other mechanised equipment in forests	Purchase of one truck and construction of extraction paths		0 43
18	Forest Communication	Construction and improvement of roads over 147 miles		13 74
19	Forest Buildings and Wells	Construction of 225 buildings Construction of 357 Kachha huts Part construction of 12 Quarters Completion of one well and part construction of four wells		17 96
20	Wild Life Preservation	Establishment of a Game Sanctuary at Radhanagari		0 79
21	Establishment and development of forest parks.	Development of Parks at Taroba, Mahableshwar, Himayat Baug and Mahismal		4 34

The above two Five-Year Plans laid a firm foundation of progress on which the succeeding Plans will rest as an edifice, highlighting the pace of development of the forests in the economy of this State The numerous values that we derive from forests before they are harvested are no less important in our economy as the final products derived from them For this purpose we must have a scientific appraisal of our Forest potential The first step in this direction is the Forest Resources Survey which is proposed to be taken up under the Third Five-Year Plan at a cost of Rs 8 34 lacs This scheme aims at a qualitative and quantitative analysis of the different utilisable forest resources so as to give us a blue-print to set out a pattern for the exploitation of these resources and to promote establishing the forest-based industries at nodal points.

Apart from this, there are other schemes, which together are connecting links in the chain of all-round and steady progress Under the schemes "Survey and Demarcation of Forests" and "Revision and Preparation of Working Plans", a sum of Rs. 21 04 lacs (Rs 10 67 *plus* Rs. 10 37) has been provided These schemes envisage survey, demarcation and preparation of Working Plans and Working Schemes, for about 2265 sq miles of forests which hitherto were not under systematic exploitation In order to reboise the barren, denuded and under-stocked areas and to rehabilitate pasture lands by means of fencing, improved fodder and forage, rotational grazing, etc two schemes under the captions "Afforestation and Soil Conservation" and "Development of Forest Pastures" covering a financial target of Rs. 37 39 lacs and Rs 5 30 lacs respectively have been proposed under the Plan These schemes envisage intensive soil conservation measures with a view to conserve moisture and improve the hydrological status of the soil to support the vegetation raised and also promote the development of forest pastures. The total area that will be covered under both the schemes is 50,368 and 3,618 acres respectively. In addition, it is proposed to introduce rotational grazing over 1,553 acres The Plan also lays accent on the effort required from the public, as active participants in a venture which is essentially in their interest In order to enthuse the village communities in this direction, a scheme "Assistance to Village Panchayats for Afforestation and Development of Pastures" has been included in the Plan Under this scheme, it is proposed to give assistance to Village Panchayats to the extent of 2/3rd of the cost of the plantations and to offer them loans to the extent of 1/3rd of this cost This scheme is expected to go a long way to increase the forest potential and to make up the deficit of area under forest cover The scheme "Plantation of valuable trees" proposed under the 3rd Five-Year Plan at a total cost of Rs 22 60 lacs aims at improving the economic value of our forests and in catering to the varied demands on the forest products. This scheme



Forest Nursery at Ramling, Poona Division



Anicut in Melghat—Amravati Division

entails the raising of plantations of valuable species like teak, semal, eucalyputs, cashew, sandal, and khair over an area of 19,785 acres Such large-scale planting and afforestation programme calls for an assured and adequate supply of planting stock for which purpose a scheme "Establishment of nurseries" covering a sum of Rs 3 89 lacs is included in the Plan for raising 24 nurseries These nurseries will also provide the planting stock for the planting up of areas outside the forests, by the villagers as referred to earlier The scheme also contemplates establishment of 2 seed stores for the storage and preservation of seed In order to develop minor forest products such as lac, agave, bamboo, etc which are of economic importance, Rs 24 48 lacs have been set aside under the scheme "Development of , Minor Forest Produce" Under this scheme, it is proposed to infect about a lac, of lac-hosts with brood lac, carry out Agave planting along 300 miles of demarcation lines, periphery of plantations and afforested areas, plant bamboo over 26,175 acres and raise plantation of oil-bearing seeds over 480 acres and of other valuable species like nutmeg, rubber, etc over 200 acres In order to step up forest output and to reduce wastage in felling and conversion, of timber, it is necessary to use the modern scientific tools and techniques in logging and to improve the system of communications Two schemes have been proposed in this regard under the Plan, one under the title "Forest Communications" covering a financial outlay of Rs 27 70 lacs and a physical target of 372 miles of roads and two new bridges and the other under "Mechanised Logging" with a provision of Rs 40 70 lacs The scheme of "Mechanised Logging" will be implemented principally in Amravati and Central Chanda Divisions where departmental exploitation is on a fairly large scale, and would serve to add to our timber resources substantially, which otherwise would have gone waste by the use of outmoded and wasteful logging tools and techniques.

A further way in which the effective output from our forests can be increased is by upgrading the properties of sawn timber derived from secondary or inferior species by the application of the latest techniques of seasoning and preservation Seasoning imparts dimensional stability to the timber while preservation serves to prolong its life The Scheme "Development and supply of substitutes for teak" has been proposed in the Plan involving a total financial outlay of Rs 52 48 lacs An integrated unit consisting of a sawmill, seasoning kilns and a treatment plant with an intake of about 3,000 tons of secondary timbers annually, at each of the three principal centres of timber-supply viz. Dahanu Road, Paratwada and Ballarshah is proposed This scheme will serve to popularise the secondary timbers and also reduce the deficiency of timber-supply in the market Development of our forests will have lost its edge and tempo, were it not guided by intensive and intelligent forest research A scheme known as "Forest Research" has, therefore, been included in the Plan covering a total outlay of Rs 5 42 lacs The scheme envisages the establishment of 3 Research Stations and laying out of Research and Experimental Plots

With the tempo of the forest development gaining momentum, it is essential that reasonable facilities are provided to the forest staff not only to maintain but also to hasten the pace of progress Without a suitable conveyance in the interior forests this is not possible In fact it is a desideratum It is also necessary to strengthen the organisation for the protection of forest resources of the State from depredation by anti-social elements The scheme for the supply of jeeps to Forest Officers and for Mobile Units for the protection of forests have, therefore, been proposed at a cost of Rs 7 and Rs 8 lacs respectively under the Plan These schemes envisage supply of 43 jeeps with trailors to the Forest Officers, establishment of 12 Mobile Squad Units, installation of wireless sets and construction of watchtowers It is also proposed to train forest staff in the use of firearms for self-protection in the fact of the hazards they have to face while patrolling the forests

This department has to be manned by trained personnel and in order to train the forest staff

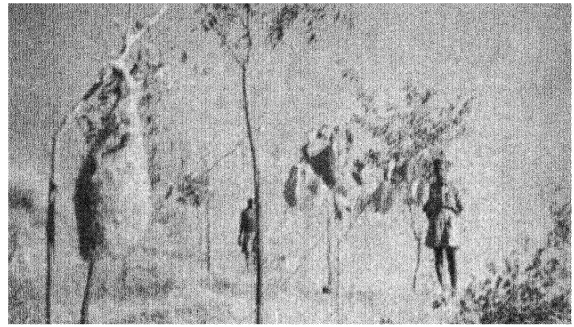
at all levels so as to improve their knowledge, ability and efficiency, the scheme "Training of Staff" is proposed at a total cost of Rs. 13·73 lacs This scheme envisages deputation of some officers abroad, establishment of a training school of Forest Guards and the training of 30 rangers and 20 officers during the Plan period.

Famine and drought are not of infrequent occurrence in different parts of this State when the need for fodder and forage is increasingly felt. The lush growth of grass in the forests which seems so plentiful during the rains as far as up to winter is found no longer as soon as summer sets in Any prospect which would help in conserving this fodder throughout the year would alleviate distress, and the helpless situation that generally attends drought or famine For this purpose a scheme known as the "Establishment of a Fodder Bank" in Dhulia District has been included in the Plan which seeks to store about 20 lacs lbs of baled grass each year This is entirely sponsored by the Government of India and has a Plan provision of Rs 11 89 lacs

Even the development of Parks and Game Sanctuaries has found a place in the 3rd Five-Year Plan of the State The schemes "Establishment of Parks and Gardens and Game Sanctuaries" and "Development of a Tourist Centre" included in the 3rd Five-Year Plan of the Transport and Communications Department have a provision of Rs 7 94 lacs for the establishment of Forest Parks and Sanctuaries at suitable places.

During the 3rd Five-Year Plan period, it is proposed to organise 165 new Forest Labourers' Co-operative Societies at a rate of 33 Societies per year According to the Revised Formula for working of coupes by the societies, the Forest Department is required to exercise effective supervision and control over the exploitation of coupes and the sales of material by the societies and to settle the amounts in the manner prescribed therein For the successful implementation of the Revised Formula and in order to cope with the increased work in this behalf, Government have sanctioned additional staff comprising one Class I Officer, 12 Assistant Conservators of Forests, 26 Range Forest Officers, 1 Head Clerk, 3 Senior Accountants, 11 Junior Accountants, 16 Clerks, 26 Orderlies and 26 Peons with effect from 1961-62 This staff will be augmented as and when necessary The total expenditure on account of appointment of this additional staff during the 3rd Five-Year Plan period is estimated at Rs 17 56 lacs The provision of this scheme has been included in the Centrally Sponsored Programme for the welfare of the Scheduled Tribes

The total Plan allocation for the development of forests in this State is Rs 320 95 lacs which includes an outlay of Rs 29 55 lacs for the Centrally Sponsored Schemes Far inadequate as this provision may seem, the pace of development is necessarily circumscribed by the limited availability of funds to begin with, but in the years to come it must take a quicker stride on account of a self-sustaining economy Let us all therefore put our shoulders to the wheel, and make it turn the faster to our goal.



Soil Conservation and Demonstration Plot, 1961-62—Jalgaon Division

"A people without children would face a hopeless future; a country without trees is almost helpless Forests which are so used that they cannot renew themselves will soon vanish and with them all their benefits A live forest is not merely a storehouse full of wood but as it were a factory of wood and at the same time a reservoir of water. When you help to preserve our forests or plant new ones you are acting the part of good citizens"

—PRESIDENT ROOSEVELT, U.S.A
on Tree Festival Day.

THE ROLE OF WORKING PLANS IN THE MANAGEMENT OF FORESTS IN THE STATE OF MAHARASHTRA

BY

R B MUJUMDAR

Conservator of Forests, Nasik

AND

V M WAGLE

Divisional Forest Officer, Working Plans, Nasik

THE role forests play in sustaining agriculture and in the development of industries can never be over-stressed In a properly managed forest we have a renewable asset Scientific and planned management of forests is therefore important, in the development of a country The total forest area in charge of Forest Department of the State is 21,966 square miles forming about 18 5 per cent of the aggregate land area Out of this, 14,101 square miles have been constituted into Reserved Forests, 6,641 square miles into Protected Forests and the remainder is in various stages of forest settlement These forests give on an average, an annual gross revenue of Rs 5 5 crores and a surplus of about Rs 3 5 crores. This revenue on a sustained basis can only be ensured by planned and scientific management.

As a first step towards forest management, the Forest Policy was enunciated by the Government of India in 1894 According to this policy, forests were to serve the agricultural interest more directly than was the case The preservation of the forests however, involved the regulation of rights and privileges of the public The rights and privileges of the individuals were, however, to be limited only to a degree as was necessary in the best interest of the people as a whole A long interval has since elapsed and developments of a far-reaching importance have taken place both in the economic as well as in the political fields. The part played by our forests in the maintenance of the physical features in the country has also come to be better realised The two World Wars stressed their dependence on the forests for the purposes of defence Accordingly the Government of India formulated a new policy in the year 1952 The salient principles of this new policy are firstly, the need for evolving a system of balanced and complementary land use , secondly, the need for checking destruction of the forests in the mountainous regions, on which depends the water supply of the river systems and for minimising soil erosion , thirdly, the need for establishing treelands wherever possible for improving the physical and climatic conditions , fourthly, the need for ensuring increasing supplies of grazing, small wood and fire-wood for rural population , fifthly, the need for sustained supply of timber and other valuable forest products for defence, communication and industry and finally, the need for realising the maximum annual revenue in perpetuity

The contents of the Forest Policy, broadly indicate, the desire of the Government regarding the management of the forests This policy is translated into action through the Forest Working Plans Forest management in a broad sense denotes the application of the knowledge which has been acquired in all branches of forestry and allied sciences Unlike agriculture, which yields annual returns, forestry is a long-term enterprise It takes years, before any particular forest attains maturity, and harvesting is often not a single operation, but extends through intermediate fellings, over a greater part of the life of the forest crop The forests represent an investment of which the annual increment (interest) is inseparable from the capital, that is, the growing stock It is therefore necessary to devise a method by which the interest can be distinguished from the capital so that only the former is removed in fellings as in the case of the businessman's bank account The simplest method to attain this end is to maintain a complete succession of equal areas of all age-gradations, so that the mature growth representing the increment on the whole, may each year be available for felling The establishment of a series of age-gradations as above is known as management for a sustained yield To cut and harvest less than our forests produce is to sacrifice wealth at hand, while to cut more, is to walk wide-eyed and conscious, into bankruptcy In the case of large forest areas where many types of forests are represented, various problems connected with forest management require solution It is clear that in such large areas the proper treatment of individual crops can only be ensured by providing

a scheme covering a number of years in which all the problems related to forest management are dealt with in adequate detail In addition to the problem relating to silviculture and yield regulation, other matters such as providing for right-holders, fire-protection, construction and maintenance of lines of communication and other works connected with the extraction of the forest produce have to be dealt with in this written scheme called Working Plan

Working Plan as the name implies, is a document prescribing the time-table and the details of forest operations for managing a forest in accordance with the wishes of the proprietor, i e Government It is a written scheme or an instrument of management aiming at the continuity of policy controlling the treatment of a forest. It is meant to carry out forest management efficiently It contains prescriptions for a whole 'rotation' or 'felling cycle' of a forest, but is revised after suitable intervals in view of changed conditions of the forests or demand It decides not only how much shall be regularly cut or extracted in each kind of produce, but where to cut or extract it and where also to regenerate It further deals with protection and improvement of the crop by "cultural and tending operations"

The first series of the Working Plans were prepared round about the beginning of this century for the accessible forests The foremost difficulty that beset these Plans was that the forests had not received the desired treatment in the past The knowledge of the characteristics of the various species was also meagre The prescriptions in all these Working Plans were therefore necessarily simple on the lines of improvement fellings With the passage of time and the working of the forests on some systems, some knowledge was gained about the silvicultural treatment required for these forests The conversion and transport facilities were improved and the demand for timber and other forest produce increased Experiments for establishing regeneration of the various species, particularly teak, were carried out and definite techniques for raising forest crops artificially as well as by natural means were developed All these prominently figured in the Working Plans that were subsequently drawn up or revised from 1925 to 1935 The earlier Working Plans were revised after a detailed study of the forests also taking into consideration the advances made in Indian Forestry and the prescriptions therein were more precise and elaborate

Unfortunately the financial depression of the early thirties limited the scope of these Plans and economy was the key-note of almost all the Plans of this time The implementation of prescriptions where cost was involved, was limited to the availability of funds All the same, these Plans put the management of forests on a sounder footing By 1939 when World War II broke out and large quantities of forest produce were required for the purpose of defence, the situation became desperate Departmental operations, conversion, transport and even despatch work had to be extended to meet the war demand, almost regardless of cost and of, what was more detrimental, silvicultural principles As the staff was limited cultural works were curtailed or indefinitely postponed Forests were felled beyond the prescribed cut In short, years of work of conservation of forests was set at naught within a short time This soon threw almost all the Working Plans out of gear

The preparation of Working Plans was however restored to its proper place in 1948 and a separate Research and Working Plans Circle under a Conservator of Forests was created, bringing all the research branches and Working Plans Divisions under unitary control This arrangement did not however last long and in the year 1956 this Circle was abolished and all the Working Plans Divisions were re-attached to the territorial Circles

The Working Plans revised or newly drawn up during the last few years have taken into account the advances that have taken place in the industrial field as well as in the silvicultural technique Most of these Working Plans now prescribe measures for the regeneration and exploitation of the various other species apart from teak, that have come into prominence The prescriptions on cultural and tending operations are also far more elaborate

Detailed Working Plans have already been drawn up for important forests of the State and in the case of some forests, the old Plans had had, two or three revisions During the last decade, large areas of the erstwhile private forests have come under State ownership Simple Working Schemes have been drawn up for these forests also At present 15,392 square miles of forests are under the sanctioned Working Plans or Working Schemes The work of revision of the old Plans and the preparation of the new Plans and Schemes for the rest of the area is entrusted to four Divisional Forest Officers in charge of Working Plans with their headquarters at Poona Nasik, Nagpur and Chanda A Divisional Forest Officer who is a highly trained and generally

a senior officer is placed in charge of each Working Plans Division, and is assisted by suitable staff

A Working Plan Code has been compiled for the guidance of the Working Plan staff Accordingly a five-year schedule for the revision of Working Plans for each territorial Circle is drawn up and followed The revision of any Working Plan is generally taken in hand about 2½ years in advance of the expiry of the period of the current Plan

The pattern on which a Working Plan is presented is standardised It is written in two parts. Part I deals with the facts on which the proposals for future management are based and Part II with the prescriptions for future management Part I describes in brief the tract dealt with, the topography, climate, geology, soil and similar other factors, which govern the forest growth, the type and ecological status of vegetation, the past systems of management and their effects on the forest The statistical details indicating the composition and distribution of various species and the rate of growth of valuable species, find their rightful place in Part I In addition to the above information, other details such as rights and concessions, customs of people of the tract, administrative set-up, etc , are also included in Part I of the Working Plans, as these items have a bearing on the future management Part II lays down the general and immediate objects of management and prescribes in detail the future management According to the systems of working, the forests are divided into different 'Working Circles' The prescriptions generally include the silvicultural system adopted, the method of yield-regulation, the rotation or felling cycle for the crop, the method of executing fellings the mode of regeneration, the cultural operations for regenerated crops and the tending operations They also include other regulations such as closure, fire protection, etc The programme of works prescribed every year is indicated in a tabular form as appendices

During the course of preparation of the Working Plans, maps are also prepared showing the details of management such as the type and nature of the growing stock, annual area to be cut, i e coupe, felling series, etc No Working Plan is complete without the management maps

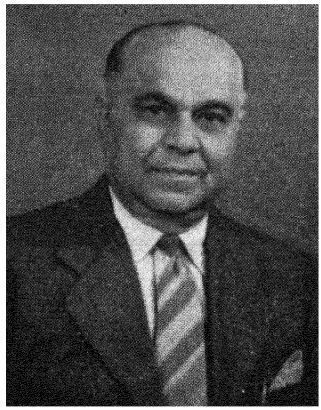
It is not enough to prepare a Working Plan without ensuring implementation of the prescriptions of the Plan For this purpose each Working Plan prescribes a series of forms, known as the control forms, to be maintained by the Divisional Forest Officers to ensure that the prescriptions are properly implemented The type of forms varies with the nature of the Working Plan prescriptions, but they are more or less on standard lines These forms are filled in by the territorial Divisional Forest Officers, annually, after completion of the forest year and subsequently scrutinised by the Working Plans branch No deviation in the prescriptions of the Working Plans is permitted If for some reasons or the other, a deviation is obligatory it is allowed under the sanction of the Chief Conservator of Forests

From the foregoing it is evident, that the Working Plan is a highly technical document The implementation of the prescriptions of the Plan rests largely with the territorial administrative staff It is, therefore, essential that the staff entrusted with the implementation of the Working Plan prescriptions should also be adequately trained in forestry For this purpose adequate training facilities are provided for the staff at various levels Welfare and the development of forest find their pivot, in the Working Plan, which holds them in balance

---

If you want to plant for one year, plant a cereal,
If you want to plant for a decade, plant a fruit tree,
If you want to plant for a century, plant a forest.

—A CHINESE PROVERB.



WILD LIFE MANAGEMENT IN MAHARASHTRA STATE

BY

J V KARAMCHANDANI

Conservator of Forests, Poona

(Retired on December 31, 1961)

Introduction

WILD life in India stands indeed in a perilous state to-day Our problem is to save the fauna from being reduced to the state of disappearance Wild Life definitely has a number of positive values to offer to man in addition to the æsthetic, cultural, and recreational values It has been recognised that an agricultural, farming and pastoral economy flourishes at its best when wild life is present and properly managed Insectivorous birds assist in maintaining the health of trees in forests Animals and birds assist in the reproduction and spread of certain species Forests and agricultural soils are kept healthy by animal burrows, droppings and remains A cultivator, afraid of damage and ready to destroy wild life to the maximum possible extent, does not realise that a balance of nature has to be maintained in the long-term interest of man for the control of harmful insects, birds and animals Genuine demands for crop protection, while being met, must eliminate the 'bogus' crop-protector and meat-hunter.

Scientific wild-life management is based on the recognition of the fact that there are inherent biological bases for management Economic, administrative, political, humanitarian and cultural considerations also play their part To-day scientific wild life management implies conservation and control History shows that game management nearly always has its beginning in the control of the hunting factor, other controls are added later This is particularly so, as long as game shortage prevails The hunting control under the circumstances is obviously to limit the kill of each species both by restricting the time and method of hunting or by incentive for the hunter to limit hunting by the voluntary exercise of restraint based on self-interest The restrictive control requires only legislation and enforcement, whereas incentive control, on the other hand, must have its origin in the enthusiasm of the hunter It follows that voluntary restraint in hunting can be depended on, mainly for 'non-mobile-game' while compulsory restraint or restriction, must mainly be relied on, for 'mobile-game' including migratory game. As we have none of what would constitute non-mobile game, it has become necessary to bring compulsory restraint requiring legislation in the form of the Bombay Wild Animals and Wild Birds Protection Act, 1951, followed on the reorganisation of States, by the Bombay Wild Animals and Wild Birds Protection (Extension and Amendment) Act, 1960 to extend with slight modifications, the provisions of the Act to the Vidarbha and Marathwada regions, in addition to the ex-Bombay areas of the Maharashtra State, from 1st June 1961

In Maharashtra State, the subject of Wild Life and Game Management, as understood and administered in the European countries and the U S A to-day, is of very recent origin and until 1953, we had no special legislation and machinery in this respect, as hunting and shooting in what constituted as Reserved and Protected forests, were controlled and regulated under the provisions of the Indian Forest Act, 1927 The reasons may be many and various but the obvious are that in India the importance of wild life is not understood, much less appreciated either individually or collectively in its different aspects. Besides, no publicity work is done on the importance of wild life and the education on this point, apart from fully realising the æsthetic value However, that may be, the ex-Bombay State had made an appreciable headway in enacting the Bombay Wild Animals and Wild Birds Protection Act, 1951, brought into force in 1953 which affords better and adequate

provisions for the preservation and protection of wild life constituting the animals and birds.

Organisation

With a view to create an effective administrative machinery to implement the provisions of the Act and the Rules made thereunder the services of the three important Departments of the State Government, viz., Police, Revenue and Forests, have been co-ordinated, both by appointing Game Wardens, Assistant Game Wardens and by delegation of powers for the registration of Arms and issue of Game Licences Appointments are controlled and regulated in accordance with the provisions of section 4 of the Act So far 81 Game Wardens and about 740 Assistant Game Wardens, in addition to Honorary Game Wardens, have been appointed and delegated with powers under the sections 10 and 11 of the Act

Hunting

Hunting of any wild animal or wild bird is prohibited except under a licence and game has been classified for the purpose, as Special Big Game, Big Game, Small Game and Vermin No licence is required to hunt Vermin Hunting is confined to the class of game and the number specified therein, subject to the period of closure The particulars in regard to the game hunted are required to be submitted in the prescribed form not later than 15 days of hunting the game The holder of the licence is prohibited to sell flesh of any game hunted by him Hunting from or by means of a wheeled or mechanically propelled vehicle is prohibited The use of nets, snares, pit-falls, poison or poison-weapons for hunting is not permissible, except in defence of human life and property Use of artificial light and hunting during the hours of night is prohibited, except while hunting carnivora on a kill Firing of vegetation and hunting game on salt-licks or water-holes or drinking places and their approaches or during close period is not permitted

Close time

In accordance with the provisions of the Act, the period for closure has been specified and the following schedule has been declared as close

(1) All Wild Birds and Wild Animals listed in Schedule II of the Act, except—	Close time— 1st April to 30th September
(a) Bustard (Including Great Indian Bustard).	
(b) Pink-headed duck.	
(2) (a) Black Panther;	
(b) Cheetah;	
(c) Indian Lion,	
(d) Indian Wild Ass;	
(3) (e) Brown-antlered Deer,	
(f) Pigmy hog,	Whole year
(g) Bustard (Including the Great Indian Bustard),	
(h) Pink-headed Duck,	
(i) Pea-fowl	
(j) White-winged Wood Duck	

Dealing in Trophy and Pets (Section 33)

Business of a trophy dealer or dealer in pets can be carried on, only under and in accordance with the Trophy Dealers' Licence or Pet Dealers' Licence granted under the provisions of this Act The terms and conditions of carrying on the business of Trophy Dealers or Dealers in Pets are specified in the Licence which is valid for one year and can be suspended or cancelled before the said period A Trophy Dealer or Dealer in Pets is required to maintain a record and submit returns in the prescribed form to the Wild Life Preservation Officer, every fortnight Export or transfer by gift, sale or otherwise, to any person of any trophy, is not permitted unless the owner is in possession of a certificate of ownership therefor The Wild Life Preservation Officer may for the purposes of this provision issue a certificate of ownership to any person who in his opinion is in lawful possession of a trophy

Government Trophy

Any game found dead or killed without the licence, in defence of life or property or by mistake or any game or trophy in respect of which breach of provisions of this section has been committed, shall be a Government trophy and the property of the State Government Any person who by any means obtains possession of a Government trophy, is required to make a report thereof to the nearest Game, Police or Forest Officer within 48 hours and shall, if so required

hand over the trophy to him No person without the permission of any of the Officers referred to above, can be in possession of a Government trophy without the permission of the Wild Life Preservation Officer or any other Officer authorised by the State Government in this behalf or transfer by gift, sale or otherwise any Government trophy to any person. In any prosecution on contravention of the provisions of this Act, until the contrary is proved, the burden of proof shall lie on the accused and it shall be presumed that the person in possession of the Government trophy was found so in unlawful possession thereof

Powers and penalties

Officers empowered under the Act, on suspicion, can demand for inspection and seize, if necessary, any animal, bird, meat, trophy, licence or permit together with any vehicle, weapon, trap or tools, used for committing an offence They can enter and search premises, land, vehicle or boat, baggage or things in possession of a suspected offender They have also the power to arrest

Courts take cognizance of the offences on a complaint or report from an Officer authorised for the purpose under the Act The prosecution has to be instituted within three months of the date of alleged offence The penalty on conviction is imprisonment upto six months and/or fine upto Rs 500 The animal, bird, meat, trophy or any weapon or trap is liable to be confiscated in addition to cancellation of the licence or permit held by the offender Provision exists, however, for compounding the offence by an Officer of a rank not below that of a Conservator of Forests on recovery of the value of the seized property in addition to compensation When a case is compounded, all the seized property is returned to the offender on payment of the value and compensation and no prosecution is then instituted

Sanctuaries and National Parks

Sanctuaries and National Parks wherein killing of wild life is totally prohibited, offer valuable possibilities for the rehabilitation of species threatened with extinction One cannot enter in these, except under a permit and in accordance with the conditions in the permit One is not allowed to carry any arms or weapons in such sanctuaries in any case. We have in Maharashtra State, the Taroba National Park and the Radhanagari Bison Sanctuary.

The Taroba National Park is situated in Chanda District and covers an area of about 45 square miles It has been treated as a Game Preserve since long and came to be converted into a National Park recently The wild life therein has received complete protection and consists of herds of cheetal, sambhar, bison, tiger, panther, wild boar, bear and wild dog There are a number of crocodiles in the Taroba Lake The Park is manned by a Park Officer and his Assistants A jeep with a driver has been specially provided for showing round the Park Two rest houses are located in the Sanctuary to provide accommodation Game can be observed also from Watch Towers specially constructed for the purpose in the sanctuary

The Bison Sanctuary at Radhanagari is situated in Kolhapur District It covers an area of 4,845 acres It formed previously, the Game Preserve of H H the Maharaja of Kolhapur, who has in the interest of Game, given up his shooting rights Bisons are found in large numbers in this sanctuary

Remarks

In conclusion, with all the provisions of the Act backed by the administrative set-up, the success of Wild Life Conservation must depend predominantly on the completeness with which wild life problems and their implications are known, or on the extent to which public opinion accepts them, and therefore, gives support to the necessary measures of conservation It is necessary that we must preserve the balance of nature between the vegetation and the animal kingdom and among the animals themselves It is only when the balance of nature is disturbed and small Game is destroyed and rendered scarce, that carnivora turn into cattle-lifters or man-eaters The only effective course, as it appears, is to create conditions in which this occurrence is reduced to the minimum This can best be influenced by education, information and publicity, and by close co-operation between the public and the private interests concerned Apart from the ethics of it, we cannot afford to neglect the scientific side of wild life constituting evolutionary, ecological, geographic and biological aspects which remain to be explored and investigated in its natural habitat

---

" In many States, a hunting licence entitles you to one deer and no more "

" Just like a marriage licence ! ".

FORESTRY TRAINING IN MAHARASHTRA STATE

BY

M Y SOWANI

Assistant to the Chief Conservator of Forests

WHILE I shall be restricting the scope of this article to describing the arrangements existing in this State for the training of professional Foresters then and now, without laying claim to omniscience, I cannot but acknowledge that what follows shall be more a compilation of information gathered from the old Administration Reports The Indian Forest Service and Bombay Forest Service Officers were trained either in Oxford, Nancy, Edinburgh, Dehra Dun or Coimbatore The training of Foresters was however entirely a State matter and on four occasions even the Rangers' training was undertaken in the State

The available records do not throw any light on the arrangements that existed in the State for the training of forest subordinates prior to 1878 Since it is hard to believe that there were no professionally trained forest subordinates in the State up to 1878, the conclusion that can be drawn is that they were trained elsewhere than in the State

In 1878, "His Excellency the Governor in a minute drew attention to the desirability of forming a training school for native Foresters and Forest Rangers, and sketched out the principles upon which the school should be founded and the course of instruction to be observed, and Government directed Mr Shuttleworth (Senior Conservator) to arrange the details of the measure and report results Accordingly, Col Waddington, Director of Public Instruction, Dr Cooke, Principal of the Civil Engineering College and Mr Shuttleworth met and considered the matter over and came to the following decisions which were approved by Government —

1st Public competition shall determine the selection of pupils for the Forest School, matriculated students of the University of Bombay or some other recognised University being alone admissible to compete.

2nd The limits of age to be fixed at 16 to 22.

3rd No student to be admitted without the prescribed certificate of physical and constitutional fitness and of being protected against smallpox.

4th An entrance examination to be held by the Principal of the Civil Engineering College, Poona, in prescribed subjects

5th The Forest Department to provide scholarships —
First year of course—
2 on 8 rupees each, and 4 on 7 rupees each
Second year of course—
2 on 9 rupees each, and 4 on 8 rupees each

6th The first six of the candidates who pass the entrance examination to receive in their order of merit the above scholarships

7th The course to extend over two years, with a test examination on the completion of the first year

8th Instruction to comprise —
(1) Mathematics
(2) Mineralogy
(3) Geology
(4) Surveying
(5) Levelling
(6) Plotting
(7) Plan drawing
(8) Chemistry
(9) Botany, both systematic and physiological
(10) Forestry
(11) Forest Law

9th A general instructor to teach the lower classes, elementary chemistry and physics, surveying and plotting and plan drawing etc on pay commencing at Rs 120 and rising to Rs 180 after 3 years' service, to be appointed to the Civil Engineering College and paid by the Public Instruction Budget

10th The Forest Senior Class to be taken on a geological tour with the senior class of the Civil Engineering College The tour to last a fortnight, and a sanction of Rs 25 per student, to a class of 10 to be allowed

11th On passing the final examination after two years' course of instruction, the following appointments in the Forest Department to be given to passed men in their order of merit —

To the 1st man—Forest Ranger on Rs 50

To the 2nd man—Forester, 1st grade on Rs 40

To the 3rd and 4th men—Forester, 2nd grade on Rs 30

To the 5th and 6th men Forester, 3rd grade on Rs 20"

A forest class was accordingly opened in the College of Science at Poona some time in 1879-80 The lectures on forestry subjects were delivered only during the rains and presumably by local officers The reports make no mention of their names except to say that Mr Vishnu Mahadeo Tilak (Forester) was one of the instructors From 1885-86 Mr T B Fry, Deputy Conservator of Forests and Working Plan Officer, Poona, acted as instructor, the arrangement continuing till 1889 By then it became increasingly clear that "the Forestry lectures which cannot be continuous throughout the several terms of the year" left much to be desired The Conservator of Forests also reported that 'the time had arrived for making special arrangement whereby this advantage will be secured, for the proprietors of estates, Inamdars as well as Native Chiefs, who are awakening to an appreciation of the value of forest conservancy and to the desirability of bringing their forest properties under scientific management and it is becoming apparent more and more every day that the maintenance and augmentation of the general prosperity of this country is dependent in a very great measure upon a widespreading system of approved forest conservancy"

The forest class was, therefore, turned into a Rangers' Class and in 1889 four candidates were selected for the course Mr Shuttleworth, prognosticated accurately when he wrote that the "forest classes have every prospect of becoming a success in the future" and that "the classes will supply all the trained subordinates required for the forest services of the Bombay Presidency" It was also contemplated "to appoint as the first-full time professor, one of the European-trained forest officers of the Presidency" The distinction fell on the shoulders of Mr Gleadow, Deputy Conservator of Forests, 3rd Grade who was appointed a full time professor from the 11th September, 1892

In 1902, Government arrived at a decision to close the class and to send the Ranger trainees to the Imperial Forest School, Dehra Dun The class was, therefore, closed some time in 1903-04 During its existence over a span of 13 or 14 years, 205 trained Rangers and Foresters passed out of the College and helped to form the bulwark of scientific forestry in the State

Although after closure of the Poona Forest Class, Ranger trainees continued to go to Dehra Dun for training, it was felt that the Department sorely required a Provincial School which could train our own Rangers and Foresters and at the same time study our local problems It was stated that "to the higher grade man for the Provincial Service, the training of Dehra Dun in exotic surroundings matters less His grade may be expected to give him initiative and adaptability but to the Ranger and Forester of whom less is to be expected and who is required to at once practise in the field what he is taught it is everything to be able to train in surroundings as similar as possible to those in which he is to be employed The present course is a theoretical smattering Practical training is impossible The time is just enough for the student to get a false appreciation of himself, whereas half the virtue of a proper technical course would be to train his character at the same time" It was, therefore, decided to start a local Forest College at Dharwar with the idea to make the College a Presidency centre for training not only Ranger and Forester probationers but also surveyors, Guards and Office clerks The College opened at Dharwar in 1919-20 but it closed after a year only sending out 9 trained Rangers Shri Pereira, who later for a number of years served with distinction as Personal Assistant to the Chief Conservator of Forests, served as instructor

In 1938, when the Government of Madras decided to close down the Rangers' College at Coimbatore, in view of the fact that there were only a limited number of seats available at Dehra Dun, it was decided to start a Rangers' class at Poona as in the past This class was again located in the College of Agriculture, Poona in order to take advantage of the various facilities for training existing there Till 1944 when the class was wound up, 3 batches of trained Rangers totalling 29 students passed out of this class Throughout the period, Shri R R Chaudhari, the present Chief Conservator of Forests of this State acted as instructor

Since the demand for trained Rangers was ever increasing, in 1949, a full-fledged Rangers' College was started at Dharwar which however closed in 1952, after training 41 Rangers in 2 batches Shri S A Hejmadi and Shri G R Mavinkurve acted as Principals of this College and were assisted by Sarvashri D A Marballi, Gulvadi, and Naik Since then, as was the case during the intervening periods between the various Rangers' classes conducted in this State, candidates for Rangers' course are being sent either to Dehra Dun or Coimbatore for their training As Coimbatore specialises in imparting training more suited for the forests types occurring in this State, a larger number of the State's Ranger candidates now goes to Coimbatore

Training of Forest Guards and Foresters

The first Forest class in Poona made no clear-cut distinction between Foresters and Rangers in that the candidate standing first was appointed as Ranger and the rest were appointed as 1st and 2nd Grade Foresters When this class was converted into a Rangers' class in 1890, the training of Foresters was suspended till 1895 when again this was revived and a separate class was run along with the Rangers in Poona Although the records are not clear on this point, it appears that about the turn of the century, training classes for Foresters were started in all the Circles of the State The classes were conducted as and when the need arose Round Guards were selected from each Division for the course which in the initial stages was conducted during the rains only Amongst the various instructors whose names occur in the records a mention must be made of Sarvashri Pethe, Gokhale, Shirali, Bhadbhade and Hattiangadi

Although in the beginning, training classes were closed down when no longer required, the class which started at Vadi in 1925-26 has continued without a break till today The duration of the course was initially 6 months and 30 students used to be trained in every course In 1929 this class was shifted to Mandvi in West Thana Division where it continued till 1948, when it was shifted to Bordi An Assistant Conservator of Forests was then placed in charge of the class as an instructor Since then, about 30 forest Guards have been trained in this Class in each course lasting a period of 8 months Training courses similar to Bordi were started at Haliyal in North Kanara in 1940 and later in Chota Udepur in Baroda district.

After the re-organisation of States in 1956, Foresters from the Vidarbha region were continued to be trained in the Foresters' class at Balaghat and the Guards, in the School at Betul in Madhya Pradesh The necessity of starting a full-fledged Foresters' and Guards' Training school became more and more apparent during this period and under the 2nd Five-Year Plan, Development Schemes, a Foresters' and Guards' Training School was started at Chanda from 1st February 1960 Initially it was proposed to train 30 Foresters and 60 Forest Guards during a year However to remove the inconvenience caused by running two different classes simultaneously, it was decided to restrict the training at Chanda School for Forester trainees only and to arrange for the training of Guards at the former Foresters' class at Bordi 64 Forester trainees amongst whom will be direct recruits to the cadre of Foresters as well as selected departmental candidates would hereafter receive training in the Chanda School in a course lasting a year, while at Bordi 2 batches of 30 Forest Guards each, would be trained in a year under 6 monthly courses

The major difficulty in running foresters' classes had been lack of proper accommodation for the trainees staff etc The Chanda School is however fully equipped and is provided with adequate residential quarters for the students, as well as other buildings like teaching halls, a library, a museum dispensary, gymnasium, staff quarters etc To facilitate touring the school also possesses two big passenger buses The Divisional Forest Officer, West Chanda acts as Director of the School and is assisted by an independent instructor of the grade of Assistant Conservator of Forests There are three assistant instructors of the grade of Range Forest Officers and in addition, the staff includes a house master, a curator etc The total expenditure incurred on the Chanda School by the end of the 2nd Five-Year Plan was Rs 6,27,324

Although as early as 1907, it was remarked that "the want of a vernacular text book for the course is much felt and should be prepared first in English by an Imperial Officer and then translated into different vernaculars", no attempt was apparently made towards this end and it was only in the last decade that the following text books meant for the use of subordinate staff came to be written —

1	Survey and Drawing	Shri B F Brito, Dy Conservator of Forests.

2	Utilization	Shri B S Bhathena, Deputy Conservator of Forests
3	Silviculture	Shri I M Qureshi, Deputy Conservator of Forests
4	Engineering	Shri N S Sabnis, Deputy Forest Engineer

These text books were written in English and later translated by various other Officers into Marathi, Gujarathi and Kannada languages

The earlier reports all along present a very glum picture about the candidates They are reported as of poor physique and intelligence I will quote in detail from one of the early reports which aptly describes the difficulties about recruitment (which are faced by the department even now) " Ever increasing difficulty was felt in obtaining from the existing subordinate protective staff men of sufficient educational qualifications to profit by the instruction, and the nomination of outside candidates will probably become inevitable, unfortunately such candidates cannot be guaranteed immediate appointments on passing, and without such guarantee they are loath to come forward And as few educated men are willing to take up forest guards' appointments and to learn their work in those low-paid grades future prospects are not hopeful Recruitment is everywhere most difficult of the class of man that present day conditions demand " It was admitted that " literate men are not attracted by the life of prospects of a Beat Guard, and the end is, not only is the supply inadequate of men suitable for advancement to the grade of Round Forester or Guards in which literacy is essential, but also stagnation in promotion is so great amongst the illiterate men, that incentives to good work are almost entirely wanting How the difficulty is to be got over is not clear ; the Forester's classes are of use in training the better men amongst the Beat Guards for eventual advancement to Round Forester, but with literate men unwilling to come forward to serve in the Beat Guards' grades, even for the limited time necessary for them to acquire a practical knowledge of forest work and to be able to assimilate the teaching given at the class, the supply does not keep pace with the demand " The position remains much the same even now It is only very lately that matriculates and other fairly educated men are coming forward to work as Beat Guards Direct recruitment to Forester's grade is also resorted to now The only change this seems to have made is that the difficulties faced by the department in the nineties are before us in a changed form now The educated boy who works as a beat guard is only biding his time till he gets promotion to the Foresters' grade, he is averse to tough field work and more capable of committing mischief than his uneducated but hardworking, faithful predecessor He loathes staying in interior villages The flimsiest of excuses are given for avoiding work

Training of Clerks

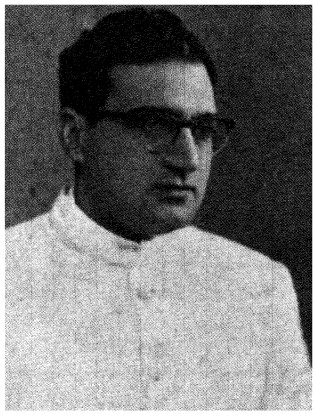
I am aware that I have been quoting too liberally from the old records However, the temptation to quote an excerpt from the 1915-16 Administration reports is irresistible even though it is not exactly concerned with forestry training

> ' Even for clerks some methodical instruction is required apart from any system of examination of selection for first appointment A material portion of present routine work of all offices is the correction of mistakes or the disposal of work caused by them due to the fact that experience ' is the only instructor our clerks have in their business Day after day and year after year the same mistakes, silly, ignorant, careless mistakes, are made just because new clerks must make those mistakes before they know better A six months' training in Office routine would add vastly to the value of each individual in the Office, and by giving intelligence to an automation save an infinity of unnecessary work and friction "

The conditions do not seem to have changed materially even now and most of us would agree that such a training class would go a long way towards improving the efficiency of this Department No leeway has yet been made towards giving training to young clerks and experience alone remains their teacher It was also the experience of the department that not all clerks who have passed the departmental examination are able to shoulder account work independently In order to give them some practical training, during 1959 and 1960 two fairly senior clerks from each division were given advanced training under experienced head clerks This scheme has since been discontinued mainly due to financial stringency

There is no other door to knowledge than the door nature opens ; there is no truth except the truths—we discover in nature.

—LUTHER BURBANK.



FOREST FLORA OF MAHARASHTRA STATE

BY

I M. QURESHI

Divisional Forest Officer, Kolaba

Introduction

To see is to believe, and the forests of the Maharashtra State must be seen to be fully appreciated This State, which is spread over about 1,15,857 square miles of land, has about 25,958 square miles of forests situated in widely varying climatic and edaphic conditions With an annual rainfall in the vicinity of about 15 inches in parts of south-eastern districts of Sholapur, Sangli, etc and rising to as much as 300 inches on the Western Ghats e g Mahableshwar, or 250 inches at Matheran, and with altitudes varying from sea level to about 4700 feet (the highest peaks which are 5000' high are in Nasik District), the forest flora differs enormously in different regions. In short, the vegetation ranges from the stunted xerophytes to the lofty evergreens, passing through the intermediate forms of mesophytes, which represent the bulk of the forest trees To describe this rich and varied forest flora of Maharashtra State in a popular treatise of this nature, for the Centenary Souvenir, I find myself on the horns of a dilemma as to which approach to follow, which system to adopt, which aspects to present, and where to stop. Botanists will be displeased if only the more valuable economic trees are described, leaving the academically important other forms of vegetation, not only from the *Phanerogama* but also from the humble evolutionary *Cryptogams* -the *Thallophyta*, representatives of which have contributed some of the mightiest medicines of the day e g the penicillin--from the fungus *Penicillium* Likewise, an ecologist will be surprised if the various forest formations, forest communities, and stages in vegetational succession are left out. Similarly, a Forester will not feel happy if the forest types so familiar to him are not brought out Sages, saints, philosophers and poets, for whom forests have since ages been a great source of inspiration, an abode of meditation, and a Messiah to the sufferer, will meticulously search for the mention of forest influences, forest wealth and medicinal herbs However, in a democracy, the popular will should prevail The article is meant for the public and must cater to popular taste I have therefore, decided to approach the subject in a general way, touching as many aspects of floristics as possible, but taking care to see that it remains well within the interests of the common man Consequently, the term "forest flora" will be used in the limited sense covering only the ligneous vegetation

The Forest Regions

If we look at the map of the Maharashtra State, three distinct geophysical regions are conspicuous These are the (i) the *Konkan*, (ii) the *Western Ghats* or the *Sahyadri range of hills*, and (iii) the *Deccan Plateau* The climate and vegetation in the three regions also present characteristic features of their own

The Konkan Region -The Konkan is a narrow belt of land extending from the sea-shore to the base of the Western Ghats and running North to South in the three coastal districts of Thana, Kolaba and Ratnagiri It is flanked on the West by the Arabian Sea and guarded on the east by the mammoth mass of volcanic eruption viz the Western Ghats With a rainfall of about 100 inches, a humid moist coastal climate, and cut up by many creeks and rivers, the Konkan is a picturesque land of undulating country, which forms the rice bowl of the Maharashtra State The forests are relegated to the upper reaches of the series of hills, all available lower slopes and valleys and

plains being cultivated either for nagli (*Eleusine coracana*) or for paddy Interspersed with those cultivations which are nearer the coast, are the stately coconut and betel nut gardens, lending extra charm and grace to the already beautiful lush-green paddy fields The forests on the upper slopes, whether Government or private, stand as defiant but much-needed sentries for the protection of these fields, from destructive effects of erosion, run-off, floods, storms and other calamities The soil varies from murum (disintegrated trap), lateritic red soils to sandy alluvium

The principal forest trees of the Konkan along the lower slopes of the hills are teak (*Tectona grandis*), ain (*Terminalia tomentosa*), *dhavda* (*Anogeissus latifolia*) bibla (*Pterocarpus marsupium*), shisham (*Dalbergia latifolia*), hed (*Adina cordifolia*) kalam (*Stephegyne parvifolia*), sawar (*Salmalia malabarica*) khair (*Acacia catechu*) kusum (*Schleichera trijuga*), nana (*Lagerstroemia lanceolata*), siris, (*Albizzia procera and A Lebbek*) Asana (*Bridelia retusa*), apta (*Bauhinia racemosa*), tembhurni (*Diospyros melanoxylon*), dhaman (*Grewia tiliaefolia*), kindal (*Terminalia paniculata*), *mhowa* (*Madhuca latifolia*), pangara (*Erythrina indica*), ritha (*Sapindus emarginata*), satwin (*Alstonia scholaris*), shemat (*Lannea grandis*), kakad (*Garuga pinnata*), Awla (*Phyllanthus emblica*), amba (*Mangifera indica*), Wavala (*Holoptelea integrifolia*), amaltas or Indian laburnum (*Cassia fistula*), and behera (*Terminalia belerica*)

Amongst the important medicinal plants found in this region are sarpagandha (*Rauwolfia serpentina*) useful against high-blood pressure, dhaval (*Lobelia nicotinaefolia*) useful against asthma and bronchitis and which is found to be four times stronger in its active principle "Lobeline" than its American counterpart *Lobelia inflata*, rudanti (*Capparis moonii*) which is much valued for the cure of tuberculosis, dikamali (*Gardenia lucida*), *kuda* or *kudchi* (*Holarrhena antidysenterica*), *murudsing* (*Helicteres isora*), anantmul or Indian sarsaparilla (*Hemidesmus indicus*), wagnik (*Gloriosa superba*), shendvel (*Dioscorea pentaphylla*), ashwal (*Asparagus racemosus*), gotvel (*Smilax macrophylla, S vaginata* etc), pangli (*Pogostemon parviflorus*), the stems and leaves of which are used as cure for snake-bite, adulsa (*Adhatoda vasica*), manjit (*Rubia cordifolia*), kadamb (*Anthocephalus kadamba*), brahmi (*Hydrocotyle asiatica*), gulwel (*Tinospora cordifolia*), kangoni (*Celastrus paniculata*), rohin (*Soymida febrifuga*), pandhri (*Murraya exotica*), kadilimb (*Murraya koenigii*), etc

The principal bamboos found are dowga or katas bamboo (*Bambusa arundinacea*), medar or manwel bamboo (*Dendrocalamus strictus*) and chiva (*Oxytenanthera monostigma*)

Along the creeks and littoral areas, the typical mangrove species are found Important ones are *Rhizophora* spp, *Ceriops* spp, *Bruguiera* spp, *Kandelia* spp, *Avicennia officinalis, Excoecaria agallocha, Cerbera odollam, Carapa moluccensis, Lumnitzera racemosa, and Sonneratia apetala Acanthus ilicifolius* is a common small shrubby plant found growing in muddy fore-shores and partially inundated marshy area Other species found are *Scævola spp, Aegiceras majus, Hibiscus tiliaceus, Derris uliginosa, D scandens, Atriplex stocksii, Sueda nudiflora, S maritima* and also some coarse grasses and Cyperaceæ The fern *Acrostichum aureum* is found in places where the muddy ground is somewhat consolidated

The Western Ghats or the main Sahyadri Hills – Amongst this category are included the main range of Sahyadri hills forming the eastern boundary of the Konkan belt and having a rainfall from over 100" to over 300" They form a series of hills, either in long stretches (as are found from Khandala to Bhimashankar) or in disconnected patches, or somewhat isolated hills like those of Mahableshwar (4500' high), Matheran (2500' high) and Shivneri (3000' high), the latter being the birth place of Chhatrapati Shivaji The vegetation on the lower slopes of Western Ghats, some of which extends down into the Konkan, is of the moist deciduous type already described under the Konkan region while the upper slopes, the plateau and tops, from an elevation of about 2000' upwards, contain a mixed flora with a preponderance of the stunted montane semi-evergreen type of growth, where teak is almost absent This altitudinal zonation in vegetation is distinctly marked even in the isolated hills in the interior of the Konkan belt itself, e g, the forests included in the Umta and Ramraj Rounds of the Fuel Working Circle and also in the Protection Working Circle in Alibag Range of Kolaba Division, within a short distance from the sea The upper slopes in general are very steep, due to volcanic origin of the entire formation of the Deccan Trap The typical step-like appearance of the weathered hills of basalt is the result of weathering of horizontally bedded lavas, giving the characteristic "landing stair" form of slopes.

The prominent semi-evergreen to evergreen species in the tops and plateaus of these hills, as typified by Matheran, Mahableshwar, Khandala, Bhimashankar and other similar locations are the following -

Syzygium jambolana (jamun), *Memecylon edule* (anjani), *Olea dioica* (parjambul), *Terminalia chebula* (hirda), more common at Mahableshwar than at Matheran, katekumbel or *Sideroxylon tomentosum* more common at Matheran, *Actinodaphne Hookeri* (pisa), *Diospyros assimilis* (male) *Diospyros montana* (goinda) *Garcinia indica* (kokam), *Glochidion lanceolarium* (bhoma), *Canthium umbellatum* (tupe), *Mappia foetida* (ganera), *Mimusops elengi* (bakul), *Mangifera indica* (amba), *Mallotus philippinensis* (shendri or kum-kum), *Artocarpus hirsuta* (ran phanas) *Artocarpus integrifolia* (phanas), *Ixora parviflora* (makdi), *Ixora nigricans* (katkura), *Ligustrum neilgherrense* (lokhandi), *Borassus flabellifer* (mad), *Caryota urens* (fish-tail palm), *Chickrassia tabularis* (paba), *Cedrela toona* (tun), *Cinnamomum tamala* (tejpat) found at Matheran, *Ochrocarpus longifolius* (surangi), *Evodia Roxburghiana* (tikatna), found at Mahableshwar, *Toddalia aculeata, Atlantia monophylla* (makad limboo), *Hippocratea Grahami* (yeoti), *Hemigyrose canescens* (lokhandi, karpa), *Schleichera trijuga* (kusum), *Nephelium longana* (lurgani), found near Koyna Valley, *Carallia integerrima* (phansi) –only tree of the mangrove family Rhizophoraceae found on the hill tops, *Drosera indica* (the insectivorous plant called Indian Sundew) found in Koyna valley, *Bryophyllum calycinum* (kanphuti), *Albizzia stipulata* (luci, adal), *Rubus lasiocarpus* (raspberry), *Cotoneaster frigida* (found above Rambag, Matheran), *Anagallis arvensis* (pimpernel) found near Panchgani, *Gymnema sylvestre* (pitani) the leaves of which when chewed neutralise temporarily the taste of sugar, *Lavendula Gibsoni* (Indian lavender) found on the Wai Ghat, *Piper Hookeri*, Mig (Ran mirvel or wild pepper), *Piper sylvestre*, Lamb (dongri mirchi) *Peperomia pentulacoides* (Mirwel) *Myristica attenuata* (Matheran nutmeg), *Litsea stocksii* (syn *Actinodaphne lanceolata* Dalzell), etc

The occurrence of about seven species of *Strobilanthes*, some of which flower septennially (e g S *asperimus*, Nees) while others triennially (e g S *perfoliatus* T Andus) and some annually is the characteristic feature of the undergrowth together with other shrubby growth like *Colebrookia oppositifolia, Callicarpa lanata, Lasiosiphon eriocephalus, Carissa carandas, Barleria* spp *Ixora* spp , *Psychotria truncata* etc

There are also quite a number of orchids, ferns and mosses on these hills As many as 24 species of orchids and 36 species of ferns and 9 species of mosses have been reported as far back as in 1897 by H M Birdwood, in his Catalogue of the Flora of Matheran and Mahableshwar, the total number of all types of plants included being 676 species Dr Theodore Cooke who had undertaken a special study of the Flora of Mahableshwar and Matheran and who had presented his Mahableshwar Herbarium to the Bombay Natural History Society, estimated that excluding grasses, there are 140 flowering plants which are found at Matheran but are not seen at Mahableshwar, while there are 130 plants at Mahableshwar which are not seen at Matheran Plateau

Partial stem-parasites like *Viscum angulatum* (Indian mistletoe) and *Dendrophthoe falcata* of Loranthaceae family are also found It may appear a surprise to know that there is no *Loranthus* in our forests This is quite true since all earlier references, of occurrence of *Loranthus* species on mango, teak etc , are in fact infestations of *Dendrophthoe falcata* and seven other genera of *Loranthaceae family* but not of any species belonging to the genus *Loranthus* Hence *Loranthus* is absent from our forests, but we have other parasites to face, of the same family Root-parasite *Striga orobanchoides*, which flowers in October-November can be easily located by its dark, reddish, purple stem and branches, its scale-like leaves, and its terminal spike of pink flowers Another root-parasite found, is *Balanophora indica* in Mahableshwar

Hitchenia caulina (chavar or the arrow-root plant) is the common undergrowth found flowering at Panchgani and Mahableshwar between October-November *Osmunda* fern *Bracken* tern are other common plants at Mahableshwar

The stinging nettle, *Girardina heterophylla* is common to both Matheran and Mahableshwar

Amongst climbers, *Anodendron paniculatum* (lamtani or the " Seed traveller " of Dr Macdonald, *vide* page 237 vol I of Journal of Bombay Natural History Society), *Entada scandens* (garbi), with huge pods, *Calycopteris floribunda* (ukshi), *Gnetum scandens* (wumbli) near Lonavla-Khandala, *Dalbergia sympathetica, Combretum ovalifolium* (madhavel), *Woodfordia floribunda* (dhayati), *Wagatea spicata, Canavalia ensiformis* (a handsome climber with large showy lilac flowers—found on the Western escarp of Mahableshwar), *Celastrus paniculata* (Kangoni) and *Hiptage madablota* (madhvel) need a mention

There are no true Tropical Evergreen Rain Forests, with many-storeyed flora, left in the State after the transfer of Southern Circle (East Kanara forests in Sirsi-Siddarpur Talukas etc.) to the Mysore State consequent to the reorganization of States in 1956. Whatever evergreen vegetation is seen along the Ghats and on the higher reaches of hills can at best be termed as the montane, dwarf, semi-evergreen vegetation. The real representatives of low-level tropical evergreens found in Telgiri-Kan near Yellapur or near Gersoppa falls of E. D. Kanara Division are absent from our montane stunted evergreen vegetation.

The Deccan Plateau. This area covers almost the three-fourths of the total forest area of the State and includes all forests on the main table-land to the east of the Western Ghats. It has an average elevation of about 1,500 feet which rises to about 3,000 feet in the table-land of Mysore. Considering it in its entirety, the plateau is flanked in the east by the Eastern Ghats, and in the north by the Vindhyas, the Satpuras, and the Kaimurs which are characterised by flat-topped hills. The Deccan plateau is the oldest geologically, the principal rocks being of archaean origin, viz. granite and gneiss with basaltic lava overlying them in the north-west corner. The Plateau has a general slope towards East, the Eastern Ghats being themselves about a 1,000 feet above sea-level against the Western Ghats which rise up to 8,000 feet in the Nilgiris.

The rainfall in this region is variable. It decreases considerably as one proceeds from west to the east, after leaving the Western Ghats. This can be seen from the wide variation in rainfall between Khandala and Poona. Even though the latter is only 42 miles away from Khandala, the average rainfall at Poona is about 30 inches as against 150 inches on the Khandala Ghat. With this difference in rainfall, the vegetation also changes considerably. Though teak is met with throughout the Deccan Plateau, it falls down both in height and size with the decrease in rainfall. Similar is the case with its associates. The floristic composition in the Deccan Plateau varies from dry deciduous to moist deciduous vegetation, depending upon rainfall, soil, biotic factors and local microclimate.

Four broad rainfall zones can be easily distinguished in this region:

(*i*) Scanty rainfall zone. — Below 20 inches of rain.

(*ii*) Low rainfall zone — Over 20 and upto 30″

(*iii*) Medium rainfall zone. — Over 30″ and upto 50″

(*iv*) High rainfall zone — Over 50″ and upto 75 inches

The vegetation in (*i*) consists mostly of the dry thorn forest type, in (*ii*) of the dry deciduous type, in (*iii*) of the intermediate deciduous type, and in (*iv*) of the moist deciduous type. In many cases, a transition from one form to another is found due to many extraneous influences like fire, grazing and destruction of forests.

In the dry thorn forests and the dry deciduous forests of the Deccan Plateau, a number of distinct drought-resisting species belonging to *Burseraceae*, *Euphorbiaceae*, *Mimoseae* and *Rubiaceae* are noticed. Apart from teak which may be found in stunted form, the principal species found in these two categories of forests may include the following :-

Prosopis spicigera, Hardwickia binata, Mimusops hexandra, Sterculia urens, Mundulea suberosa, Rhus mysorensis, Gymnosporia montana, Dodonaea viscosa, Chloroxylon swietenia, Acacia arabica, A. eburnea, A. leucophloea, A. suma, A. catechu, A. ferruginea, A. latronum, Carissa spinarum, Boswellia serrata, Balanites Roxburghii, Anogeissus latifolia, Gardenia turgida, Grewia salvifolia, G. populifolia, Cochlospermum gossypium, Capparis grandis, C. aphylla, Euphorbia Tirucalli, E. nerifolia, I. antiquorum, Ailanthus excelsa, Lagerstroemia parviflora, Diospyros melanoxylon, Bauhinia spp. etc. etc.

In the remaining two categories viz. Intermediate Deciduous (or mixed moist deciduous) and Moist Deciduous types of forests, the growth of teak and its associates as mentioned under the moist deciduous forests of the Konkan region, improves and more luxuriant type of vegetation, both in the top-canopy and on the ground, is seen than that found in the dry deciduous zone. One of the best growth of teak is found in the rainfall zone of 50 to 70 inches, together with other associates of teak. The more important species of this region are *Tectona grandis* (teak), *Terminalia tomentosa* (ain), *Salmalia malabarica* (sawar), *Anogeissus latifolia* (dhavda), *Madhuca latifolia* (mhowa), *Pterocarpus marsupium* (bibla), *Odgeinia dalbergioides* (tiwas), *Sterculia urens* (kadai), *Terminalia belerica* (beheda), *Dalbergia latifolia* (shisham), *Grewia tiliaefolia* (dhaman), *Lagerstroemia lanceolata* (nana), *Albizzia Lebbek* (siris), *Albizzia procera*, *Acacia catechu* (khair),

Buchanania latifolia (charoli), *Butea monosperma* (palas), *Diospyros melanoxylon* (temburni) and others

Amongst bamboos, *Dendrocalamus strictus* (medar or manvel bamboo) is more common on the slopes and well-drained sites than the dowga or katas bamboo (*Bambusa arundinacea*) which is confined to low-level, moist, depressions and along nalas and rivers

A number of grasses are also found in the forests throughout the Deccan Plateau, the prominent ones being the Rosha grass (*Andropogon martini* var motia and sofia), *Andropogon muricatus* (valerum, valla), *Heteropogon contortus* (Kusal or spear grass), *Ischaemum pilosum* (kunda), *I laxum* (sukal), *Anthistiria ciliata* (batani), *Apluda aristata* (bungrat), Cynodon dactylon (haryali) *Chloris barbata* (goshya) *Eragrostis ciliaris* (undir-pancho), etc

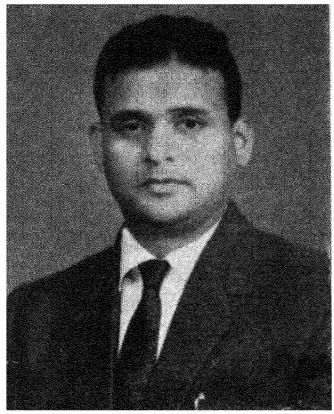
The variety and richness of vegetation - Our vegetation is as rich and varied in composition as it is in value and scenic beauty It is roughly estimated by the Botanical Survey of India Poona, that we have in Maharashtra State about 3,500 species of *Angiosperms* alone, representing 1,200 genera belonging to 150 families. This number will be much more if the species belonging to *Gymnosperms*, and *Cryptogams* are also included. Further, new records of as many as 80 species have been noted by the B S I, Poona, and it is stated that there are certainly many more which are still under scrutiny

Panacea of all evils as the tree is plants combine beauty with utility and in the service of man right from the cradle to the grave, there is nothing in our daily life for which we do not go to trees, in one way or the other, directly or indirectly Surely, doubly blessed is he who can identify and discover plants, or introduce new species in the forests both for his own use or for posterity There is no healthier profession than that of a forester or a botanist exploring the hidden and unknown sylvan treasures of the wild And, finally, if Shakespeare could find tongues in trees, let us find more uses for our vast multitude of species which are at present only of academic importance

THE KINDS OF TREES

1. The tree that manufactures .. . . F. ... .. .
2. The tree that speaks eloquently . .. O. .. . .
3. The tree that is a club member .. .. R ... .
4. The tree that lets you go in . . . E. . . . . ..
5. The tree that always keeps a watch .. S. ... . .
6. The tree that adorns .. . . T . ...
7. The tree that cricketers love . . C. . . .
8. The tree that is in its prime . E . .
9. The tree that certifies deeds .. .. N. ....
10. The tree that is an ornamental fabric .. T. . . . . .
11. The tree that calls out . . . E. ... .
12. The tree that sets at naught .. N. . . ..
13. The tree that is artistic .. A. .. .. . .
14. The tree that is obstinate . R. .. ..
15. The tree that makes good bows . .. . Y . .....TREE

For answers please see page No. 161.



SILVICULTURAL RESEARCH IN MAHARASHTRA STATE

BY

D A MARBALLI

Silviculturist, M S, Poona

Silviculture its meaning and genesis

MAHARASHTRA State comprises three regions viz, the Marathi-speaking Districts of the erstwhile Bombay State, Vidarbha and Marathwada, the latter two of which, were the parts of the former States of Madhya Pradesh and Hyderabad respectively The Silvicultural Branch came to be established as early as in 1922 in Madhya Pradesh, in 1939 in Bombay State and in the year 1943 in Hyderabad State The Silviculturist, M S, Poona is assisted by the Assistant Silviculturist, M S, Nagpur in directing silvicultural research, in the Maharashtra State

The question is often asked even by knowledgeable persons as to, "What does the Silvicultural Branch do?" It is therefore appropriate, to set forth here the aims and objects of the Silvicultural Branch To begin with, it is necessary to define Silviculture itself It is the art and science of cultivating forest crops, either by natural or artificial means and tending them up to the time of final harvesting There is practically no science which Silviculture has not to draw upon in the solution of some problem or other Silvicultural research is not concerned only with the introduction of exotics though that may form an integral part of the programme There is so much fundamental work to be done as regards the indigenous species and the associations of species Even in countries where forestry has been practised for centuries, the need for continuous research is recognised Research in any science is very slow, particularly so in Silviculture, which by its very nature is a science dealing with long-term crops.

The actual work done

Sample Plots mark the beginning of forestry research and have been established in most of the advanced countries of the world. The oldest Permanent Sample Plots in some countries are over a century old Systematic Sample Plot work, for the collection of crop statistics for plantation teak, was first started in Vidarbha region from 1922 onwards and similar work commenced in the other regions after the establishment of the Silvicultural Branch In fact as many as 47 Sample Plots were laid out mostly in the Kanara Forests of the former Bombay State during the year 1940-41, with the assistance of the Forest Research Institute, Sample Plot Party Of these, 35 plots were meant for compilation of Multiple Yield Tables and the remaining were meant for comparative Thinning Experiments

The Sample Plot data collected in the State, has been included in the compilation of the Yield and Stand Tables for Plantation Teak in India, published by the Silvicultural Branch. Forest Research Institute, Dehra Dun, in 1959. This is a standard reference book on plantation teak, containing all the fundamental information on the subject.

For the collection of crop-statistics of non-teak species, four Linear Tree Increment Plots were laid out in 1939 in the evergreen forests of Kanara Divisions which now form part of Mysore State At present there are no Linear Increment Plots in Maharashtra State

The Silvicultural Division also undertook the work of laying out Tree Increment Plots for sandalwood in the predominantly sandalwood-bearing areas of the Belgaum Circle (now in Mysore State) and the increment data collected was usefully applied in laying down the prescriptions of the Sandalwood Working Circle

On the suggestion of the Inspector General of Forests, Teak Seed Plots were also laid out in the High Forest areas of Kanara in 1939 with a view to get select teak seed of high quality parent trees

Preservation Plots, representative of the more important types of forests were also laid out by the Silvicultural Division Sample Plots, Natural Regeneration Plots in Evergreen Forests, Teak

Coppice Thinning Plots, Management Plots etc were also laid out from time to time by the Silvicultural Branch but the increment data needs to be collected for some time more for practical application in the field A detailed list of the various Plots laid out to-date in the State is as below —

List of Forest Research Institute Sample Plots, Provincial Sample Plots, Experimental Plots, Tree Incremental Plots, etc maintained in the Maharashtra State

Sr No	Particulars	No of Plots
1	2	3
I.	*F R I Sample Plots*	Nil
II	*Provincial Sample Plots*—	
	Acacia arabica	13
	Tectona grandis	70
	Casuarina equisetifolia .	1
	Cleistanthus collinus	1
	Ailanthus excelsa	1
	Semul Sample Plots	1
	Mixed species	1
	Evergreen forests	8
III	*Provincial Experimental Plots*—	
	Tectona grandis (Coppice thinning)	5
	Terminalia chebula (study into natural regeneration and periodicity of fruiting)	2
	Bamboo (best growing conditions)	1
	Deciduous forests (to study the rate of growth).	3
	Dry areas (to study the effect of contour trenching and closure upon the development of plants and grasses)	3
IV	*Provincial Tree Incremental Plots* –	
	Tectona grandis	2
	Tectona grandis and other hardwood species.	4
	Pterocarpus marsupium .	1
	Gardenia latifolia ..	1
	Mixed deciduous forest .	4
V	*Provincial Preservation Plots*—	
	Dry Teak	4
	Hardwickia binata .	1
	Bombay Sub-tropical evergreen	?
	To study the forest under natural conditions	4
	Botanical Garden established by Dr Gibson	1

In addition to the investigations of a statistical nature, mentioned above, the Silviculturist is also required to experiment on the methods and techniques relating to suitable tending and regeneration of the forests.

In the Silvicultural Garden, routine tests such as the collection of data on seed weights, germination and plant per cent on a variety of species is carried out from time to time and recorded in the Annual Silvicultural Reports. The data is of fundamental importance to a forester in planning his Plantation and Afforestation Programme well in advance, by indenting the right quantity of seed required to provide adequate planting stock It is proposed by the I R I , Dehra Dun to publish a booklet incorporating the latest information on this fundamental data, collected both by it as well as the States for use in India

The seed pre-treatment studies of a number of species such as *Terminalia chebula, Tectona grandis, Anogeissus latifolia, Acrocarpus fraxinifolius*, etc referred to by the territorial Officers are undertaken by the Silvicultural Division Besides, other nursery investigation such as the outturn of useable stumps, using different quantities of teak seed in a standard nursery bed, have also been carried out In the Research Garden besides raising the planting stock required for experimental planting of the various species, planting trials are also undertaken there on a small scale

The results of planting trials undertaken in the Research Garden need to be confirmed under natural forest conditions of the Research station, where the amount of care possible is much less The important investigations undertaken are –

(1) The best methods of artificial regeneration of the various indigenous and non-indigenous species of economic importance

(2) Introduction and the acclimatisation of exotics of special value.

Besides Silvicultural Stations, the experiments are also located in more representative parts of the forest itself.

So far, the Silvicultural Branch has studied the planting methods of a number of indigenous and non-indigenous species and the results have been published in the various Annual Silvicultural Reports Amongst the important species taken up for study by the Silvicultural Branch are *Tectona grandis, Acacia arabica, Acacia catechu, Anacardium occidentale, Cassia siamea, Gmelina arborea, Anogeissus acuminata, Terminalia*

chebula, Santalum album, Saccopetalum tomentosum, Terminalia tomentosa, Dalbergia sissoo, Terminalia belerica, Ougeinia dalbergioides, Pterocarpus marsupium, Madhuca latifolia, Hardwickia binata, Hitchenia caulina, Adina cordifolia, Schleichera trijuga, Acrocarpus fraxinifolius, Ailanthus excelsa, Salmalia malabarica, Thespesia populnea, Diospyros melanoxylon, Pterocarpus santalinus, Chloroxylon swietenia, Dendrocalamus strictus, Melocanna bambusoides, Bambusa arundinacea, Oxytenanthera nigrociliata, Arundo donax, Vateria indica, Hopea parviflora etc The teak plantation technique in the former Bombay State was specially developed after raising experimental plantation of teak in the Kanara Forests under the direction of the Silviculturist

Amongst the exotics taken up for study are *Prosopis juliflora, Swietenia macrophylla, Swietenia Mahagoni, Chlorophora excelsa, Khaya grandifolia, Khaya senegalensis, Eucalyptus paniculata, Eucalyptus calophylla, Eucalyptus camaldulensis Ceratonia siliqua, Cocos coronata, Acacia mollissima* etc

In Silvicultural Research not only the positive results but even the negative results are a useful guide to the research workers for future trials Therefore the value and importance of Silvicultural Research work carried out in our State, cannot only be judged, by the positive results having immediate practical application but also by the volume of fundamental experimental work having great potential value Thus the routine experimental study on *Anacardium occidentale* and *Prosopis juliflora* was undertaken as early as from 1939 to 1941 and though it did not seem to be of much importance or of immediate advantage then, the knowledge gained has been found to be of immense value now when we have embarked upon large-scale plantations of cashew and various afforestation schemes, under the Five-Year Plans So also the fundamental data collected on the planting techniques of a number of indigenous, non-indigenous and exotic species, has been a valuable guide in undertaking, large-scale plantations of matchwoods, such as *Salmalia malabarica, Ailanthus excelsa,* of bamboos such as *Dendrocalamus strictus, Bambusa arundinacea* and more recently *Arundo donax* and for Afforestation Schemes where a number of species like *Dalbergia sissoo, Acacia catechu, Cassia siamea, Chloroxylon swietenia, Azardirachta indica, Madhuca latifolia, Hardwickia binata, Santalum album* have been succesfully introduced Amongst the exotics, *Acacia mollissima* showed promising results in Londa and Taregalli areas in Kanara Divisions and *Eucalyptus citriodora* came up very well at Kandilikop putting a height of about 15 ft in two years Eucalyptus (hybrid) is very hardy and appears to be one of the most promising and versatile species for afforestation *Khaya senegalensis* has established very well in the Shahapur area *Swietenia Mahagoni* and *Swietenia macrophylla* have established well but were found to be very susceptible to attack by shoot-borers and hence their extension could not be undertaken

In recent years the study of Silviculture of important medicinal and aromatic plants and spices has also been entrusted to the Silviculturist Experimental studies on a number of species of economic importance such as *Rauwolfia serpentina Mentha piperata, Mentha arvensis, Strophanthus kombe, Anacyclus pyrethrum, Ammi majus, Ammi visnaga, Chenopodium ambrosoides, Lobelia nicotianaefolia, Cassia angustifolia, Acorus calamus, Derris elliptica, Cissemplos pareira, Hemidesmus indica, Glycyrrhiza glabra, Ocimum kilimandscharicum, Bursera delpechiana, Myristica fragrans, Hyoscyamus niger, Eugenia caryophyllata,* etc , have been initiated The difficulty in procuring seed of some of the foreign medicinal plants, non-availability of the seed and the want of irrigation facilities required for some of the species are the major handicaps that beset this research Since the active alkaloidal content of the medicinal plants varies with the season, and the method of collection, manuring, altitude, climate of the area, etc , a large number of replications is needed At present there is sufficient seed and planting stock of *Rauwolfia serpentina* yielding the reputed drug for high blood-pressure treatment and *Acorus calamus* (vekhand), *Anacyclus pyrethrum* and *Withania somnifera*, with the Silviculturist for supply to the Divisional Forest Officers for propagation The first two species come up well in the semi-evergreen forests and will greatly help in increasing the potential value of these forests, which at present just yield fuelwood

In addition to the normal experimental investigations, the Silvicultural Branch is required to tackle a number of varied problems set before it During the 2nd World War there was a great demand for solid bamboos for use as tent pins Experiments were therefore initiated to increase the solidity of *Dendrocalamus strictus* by clear-felling and setting a light fire A significant increase in the solidity of the culms was observed During the 2nd World War there was a great

clamour for an alternative source of rubber The credit for the correct identification and supply of a large quantity of seed of *Cryptostegia grandiflora* went to the Silvicultural Branch. The Silvicultural Branch also took active interest in the " Grow More Food " Campaign by initiating cultivation of *Manihot utilissima* and hill paddy for propagation in between the lines of teak plantations With a view to combat the scarcity of jute and camphor, the introduction of *Corchorus capsularis, Corchorus olitorius and Ocimum kilimandscharicum* was also undertaken both in the Research Stations and also in the intervening space in teak plantations under the technical guidance of the Silviculturist These are only a few instances where silviculture was geared up, to produce immediate results under special circumstances then prevailing.

Suggestions for Development

To enable maximum use of the research work done by the Silvicultural Division, there is an urgent need for co-ordination between the Research and the executive wings, where the research items could be discussed in their entirety and a programme envolved for the conduct of research and the practical utilisation of the data collected A Permanent Research Co-ordination Committee at the State level with the Chief Conservator of Forests as its Chairman is therefore suggested At present the Silviculturist is entrusted with a number of miscellaneous works which take up a good deal of his time Even in the matter of research works, he is required to deal with a number of problems for which specialised knowledge of various sciences is essential It is well nigh impossible for the Silviculturist to be well versed in all sciences It is therefore necessary to create a team of specialist Officers, as is done in the Agricultural Department, so that the pace of research work carried out in the Forest Department could be significantly hastened There is need for Specialist Officers to deal with Soil Conservation and Afforestation, Grassland Research and Soil Studies

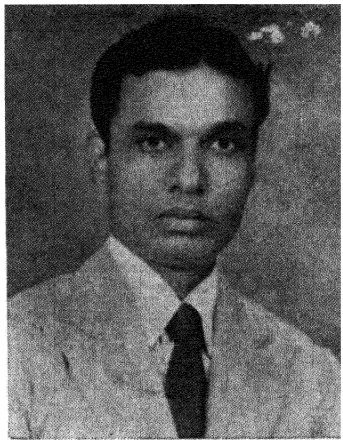
In recent years the role of forests in the industrialisation of our country is being increasingly felt and Government is looking to the Forest Department to cater to the supply of raw material to a number of forest-based industries. It is therefore necessary to enunciate a broad Industrial Forest Policy for the State so that the various Five-Year Plan Schemes are implemented systematically, with bias on industrial development

With industrial bias in forestry planning, the value of the scattered, small-scale plantations of the economically important species such as the soft-woods, bamboos, etc , may not be of much avail in the rapid industrialisation of our State It is therefore necessary to investigate the needs of the various wood-based industries and to earmark suitable areas for raising large-scale plantations to provide the raw material in a sustained manner At present very little is done in raising plantations of indigenous bobbin woods like *Adina cordifolia* which would serve to stop the import of foreign woods and thus conserve foreign exchange Perhaps the crux of the problem lies in the ability of the Forest Department to supply raw material of the indigenous species at competitive rates so that the import of wood from foreign countries would not become economic At the same time efforts need to be made to augment the supply of indigenous timbers for the textile requisites from the natural forests, by undertaking plantation of haldu, the planting technique of which has been studied in the Silvicultural Division

Though the results of the Silvicultural research work done during the last decade of its existence may not be very spectacular, it cannot be denied that considerable work of fundamental importance has been done, despite a number of limitations in carrying out such research work of a complex nature There appears considerable scope for the expansion of silvicultural research if only the Branch is strengthened by a team of Specialist Officers, and the research work is orientated towards achieving rapid industrialisation of the State without intruding on the welfare of the rural communities.

EFFICIENCY !

How beautiful the weeding, the thinning it's so fine,
Then be sure, Sir, every thing here, is all mine.
But the cleaning, the rabs, the planting are'nt so nice,
Be sure, Sir, it's all my subordinates ; they are not so wise.



THE ROLE OF STATISTICS IN FORESTRY

BY

V K MOKASHI

Forest Statistician, Poona

THE great paradox of the present era of planning is that the greater the demand for statistics, the more maligned it becomes. There is yet another paradox. Statistics are needed, not the statistician. Or the statisticians are needed, not, the statistics originating from them The Statistician is sometimes at a loss to know the reason He has to steer clear of these paradoxes and extricate himself and his statistics from the difficult situation he is confronted with The reason for such a paradox is not far to seek Lack of appreciation of the role of statistics in a proper and wider perspective has led to misconceptions When the statistician is called to explore answers to new situations that arise in the course of planning the statistician appears to control all the decisions In fact, his role is of a collaborator and not of a master He need not and indeed, does not go beyond his advisory functions The experimenter or the planner with a smattering of statistics many times arrogates to himself all the functions and knowledge of a statistician. His (planner's) planning, therefore, gives a semblance of statistical planning and his seemingly cheaper plans, in the ultimate analysis, turn out to be costly and fail to answer the real problems. Admission of such notions of planning, amounts to putting a premium on perfunctory statistical planning Statistics and statisticians have got a very prominent place in the development of forestry sector provided we wield these tools with deeper understanding of the role of statistics. It is proposed here to pinpoint this role of statistics and statisticians within the limits of available space

The most important document dealing with forest and forestry is the Working Plan. The Working Plan is a precise quantitative formulation of certain socio-economic objectives which the forests are contemplated to serve with due regard to the sustained improvement of forests for the greater and greater benefit of the community Such a quantitative formulation is achieved by rational synthesis of principles of forestry and their obligations to the society. The gaps between such quantitative formulation and its projection in future, need to be plugged by continuous quantitative assessment of the functioning of a Working Plan Thus, the role of a Working Plan is a continuous process. If this premise is accepted, the role of Statistics and Statisticians as the vehicles of quantitative thinking, needs hardly any special emphasis Any hotch-potch formulation is the very negation of a Working Plan Every activity of Forest Department, stems from this concept of a Working Plan Translation of this concept into practice is the second important stage which may be called implementation of the plan The forest administration, management, protection, utilization, research and development are all ramifications of the concept of Working Plan given above All these activities are conceived so as to give the real content and meaning to the implementation of a Working Plan It is only the Statistician, in collaboration with the Working Plan Officer, who can ensure that the minimum ingredients of a quantitative planning are present in a Working Plan and help the Working Plan Officer to see that the implementation is in tune with formulation by providing yardsticks for continuous assessment of the achievements of Working Plan The per capita consumption of wood is very low in India. We are on the threshold of a planned development With the increase in national income, there will be greater demand on wood and with the increase in population the consumption of wood per capita will still be reduced unless the production is augmented to a level commen-

surate with the demand. If forest production remains stagnant, socio-economic status of the community will dwindle to that extent What are the essential prerequisites for the fulfilment of these objectives ? If sustained forest production is the goal of forestry we should have (1) proper age-distribution of trees, achieved by improving the process of regeneration and adequate cutting of stands (2) maximum quality growth achieved by good stocking with trees of desirable species and quality and (3) maintenance of this favourable development of forest growth to meet the demand for wood and jobs Forests would meet the needs of people for wood and at the same time keep themselves producing only if we formulate a plan based on precise resources data To know the forest resources, one must know the areas by types, volume of species, size, quality, actual and potential growth, and the permissible quantum of fellings It is only through these basic facts which constitute a coherent whole for a Working Plan that a phased programme of forest cutting and reproduction and rehabilitation can evolve itself If the above statements are not matters of polemics and in fact, they should not be, the role of statistics is immediately brought into sharp focus.

Complete enumerations of forest stands are not economically feasible and indeed are rarely called for Sampling, therefore, forms the backbone of all forest inventories The problems of sampling are primarily statistical in character and the need for scientific collection of statistics through a well-planned resources inventory for quantitative formulation of a Working Plan becomes obvious The main criteria for a sampling plan are (1) intensity of sampling, (2) method of selection, (3) size of the plot, (4) method of estimation and analysis and (5) amenability to sound interpretation A great advantage of statistical sampling method is that they not only provide estimates of resources but also the precision of these estimates If the Working Plan is to achieve its laudable objects, statistical methods constitute its sheet anchor, both in its formulation and implementation Thus, the two must co-exist If statistical planning is absent in the formulation of a Working Plan, the assessment of its implementation at periodic intervals is rendered difficult as the formulation of a plan and the assessment of its achievements should form an integral part of statistical planning At the time of revision of the Working Plan which had no statistical footing, it is usually found difficult to evaluate the achievements aimed at because of the absence of a yardstick for comparison Thus, the whole plan is to be formulated *de novo* Sometimes it is argued that so much stress on statistical aspects is unwanted in the interest of practical forestry We do not know the sacrifices involved in such advocacy because we have not attempted to evaluate our achievement by acceptable yardsticks. It is only when we set up a machinery for assessment of the progress of our plans at shorter intervals that we would know the shortcomings in our statistical measures and realise the need to strengthen these measures Thus, where the general treatment prescribed in a Working Plan is Conversion to Uniform High Forests with regeneration by compartments or sub-compartments, the need for assessment of natural regeneration by objective statistical methods is obvious Natural regeneration will have to be supplemented by artificial means in case of inadequacy It therefore, appears necessary that the efficacy of the treatment must be evaluated in terms of the influx of natural regeneration on which hinges the whole edifice of management of such areas If the pace of regeneration is not commensurate with the rate of exploitation, the object in view may be partially achieved Hence our dependence on natural regeneration or the amount of effort needed for augmenting the regeneration by artificial means will have to be determined by proper assessment of natural regeneration by sampling methods The feasibility of combining such surveys with main tree enumeration surveys can be worked by the Statistician in collaboration with the Working Plan Officer without materially compromising the efficiency of either of them

The second important prerequisite of a Working Plan conforming to the concept given at the outset is the availability of scientifically collected data from silvicultural research The Working Plan has to specify the extent of artificial regeneration, the species to be selected and criteria for selection of sites for individual species The system of silvicultural management of a particular area needs to be laid down These are matters of silvicultural research which can be carried out only on modern statistical lines, to be believed For want of these details the Working Plan Officer is handicapped and the progress in his planning is halting The result of silvicultural research must be backed by statistical tests otherwise the results will be accepted by a third party with a pinch of salt

Any experiment planned without the required principles of statistical designs and layouts is a wasteful attempt and would, in fact, become

an object of derision Especially, forest experiments, which take a long time to yield conclusive results, must be planned on comprehensive statistical basis Otherwise valuable time of a generation may be frittered away

If the satisfaction of certain socio-economic needs of the community is the function of forest working, the quality of our produce and their conversion into products of acceptable quality need adequate attention The natural results of growth of income, in the wake of our economic planning would be the demand for wood, larger in quantity and better in quality Quality control methods, based on theories of probability sampling, can be of great use in sawmills, plywood industries, seasoning kilns, wood preservation plants and furniture and wood-working factories

Similarly the preparation of yield and volume tables which are usually in demand for a Working Plan is invariably based on statistical methods We are still adhering to the traditional methods of preparing volume and yield tables In fact, many times we do not have even the traditional tables also Regression and correlation methods which are gifts of modern statistical development, are the most powerful tools for preparation of scientifically tested tables for volume and yield We display the same outlook towards the layout of increment plots Increment plots are nothing but a miniature form of enumeration plots But personal knowledge and experience in preference to objective statistical methods, are still the guiding factors for selection of increment plots The application of sampling methods for the layout of increment plots is yet not in sight The result is that we have not so far in hand a well-planned project of laying increment plots and we have no readily available answers to the essential needs of quantitative formulation of a Working Plan

In the foregoing paragraphs, the concept of a Working Plan is crystallized and has been made sufficiently transparent so that we see behind it a powerful bearing of statistics It has been shown that every operation stems from this concept of a Working Plan It is not possible to discuss the detailed statistical applications within the limits of this article Broad but a penetrating analysis of the role of statistics is vividly made Various statistical techniques are available There are no cast-iron definitions of statistical applications Adaptation of these techniques under a given set of conditions is the function of a Statistician Sometimes, the experimenter or the planner plans his statistical techniques discarding the Statistician at the primary stage However, when he gets lost in the conflicting interpretations of his results, he wants the Statistician to interpret the results for him The Statistician, finding that the planning has been defective or the experimental design is short of certain requirements, declares through his post-mortem that the experiment or the plan has met with death due to ill-planning Because so many statistical techniques are available, it does not mean the Statistician's role is belittled It is, in fact, otherwise The greater and wider the choice that can be made between various available techniques, the need for consulting the Statistician becomes all the more imperative Many standard medicines are available with the chemists for common diseases Does it amount to saying, that there is no need for a doctor ? Common minor diseases have many times potentially dangerous symptoms, which, if undetected and treated with routine medicines may lead to disasters beyond measure Let us, therefore, see the role of Statistics and Statisticians in the proper perspective and associate them in our efforts of securing forestry a pride of place in our national economy

A Statistician comes on the scene, where figures " lie " for themselves !





FOREST PRODUCTS OF MAHARASHTRA STATE THEIR DEVELOPMENT AND UTILIZATION

BY

L H A REGO

Forest Utilization Officer, Maharashtra State,

Forests a bounty of nature and their role in the economy of the State

FORESTS have always served mankind in multitudinous ways Nothing has met its varied needs in as universal a manner as the forests In whatever forests fulfil, the touch-stone and measure of their value is human weal and satisfaction The values derived from forests are essentially twofold, on the one hand directly related to wood and the various forest products of inestimable value, and on the other, the various social and physical effects, which are indirect and frequently known as "forest influences" As instances of the latter, forests form a protective vegetal cover which secures the maximum absorption of rainfall, regulates streamflow, and conditions the climate They improve the efficiency with which water resources are harnessed for almost all of man's activities—irrigation, domestic water-supply, industry, hydroelectric works, to mention but a few To agriculture they are an indispensable complement not only by way of providing timber, fuel and pasture to the farmer but also by ensuring protection to his lands from the ravages of flood and erosion So well has the famous playwright George Bernard Shaw said that, "except during the nine months before he draws his first breath man never manages his affairs so well as a tree does"

It is becoming increasingly manifest that forest development integrated with agricultural and industrial progress is forming an essential part of measures to promote self-sustaining economic growth, and significantly a useful potential for absorbing unemployed and under-employed manpower This encouraging feature is clearly discerned when we see that the forests are now on the attainment of independence, called upon to provide semul for matches, haldu and kalam for bobbins, bamboo for paper and pulp and select woods for the plywood industry Agriculture has come to lean more and more heavily on forest produce This apart, there is a growing demand for a variety of minor forest products of great economic importance such as tan-stuffs, gums, drugs, herbs, non-edible oil-seeds, fibres and lac to mention a few In spite of competition from other structural materials wood finds a large utilitarian demand throughout the State Technological research every day gives practical shape to the dictum that wood is the most versatile raw material and has brought into being, evolved forms of wood such as fibre-boards, particle boards, chip-boards, plywood etc which have made a notable advance in effecting fuller utilization of the forests and in substituting solid wood

The need for a survey of forest resources

Forest industrial planning forms a part of overall economic planning For sound planning any industry must establish itself only after a proper assessment of the resources which can sustain it This however has not been the case with many a forest-based industry in this State, where so to say, the cart has been put before the horse, more as an outcome of an off-hand over-ambitious enterprise than anything else

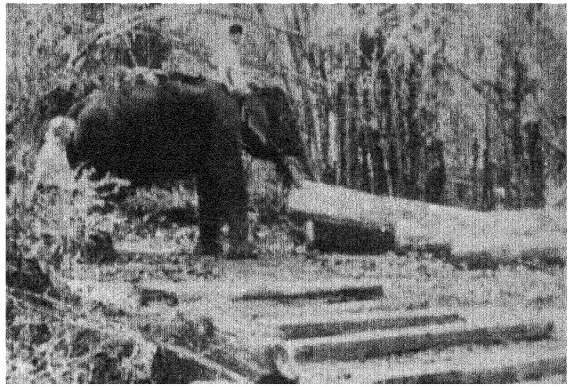
In accordance with the technical assistance agreement between the Government of India and the Food and Agriculture Organization of the United Nations, Dr J A von Monroy was

assigned to this country to advise the Government on the development and integration of forest industries, the assessment of existing and potential resources for this purpose and on technical and forest implications for meeting the growing requirements of the country in the context of a growing economy Dr. von Monroy who toured the country including this State in the year 1959-60 has submitted recently a report to the Government of India on the basic aspects of industrial planning for India as a whole and on the modern technical methods of implementation More detailed schemes for the individual States are being prepared by him.

A Scheme known as the "Forest Resources Survey" has been proposed by the Forest Department of this State under the Third Five-Year Plan This will serve as a useful adjunct to the broad reconnaissance carried out by Dr. von Monroy in this regard, will help in drawing up a comprehensive inventory, both qualitative and quantitative of the various forest resources in the State and will thus enable planned and rational development of the forests in the industrial sphere.

The deficiency of our forests and the measures taken to overcome them.

The contribution of our forests to the national income today, is flagrantly low being an infinitesimal 0 6 per cent as compared to that of agriculture, which is as high as 50 2 per cent. The dearth of standing timber, the relatively slow rate of growth of the favoured timber species and the heavy demand as compared with the supply have tended to keep the *per capita* consumption of timber and other forest products at a relatively low figure The extent of forests in this State is 25,958 sq miles inclusive of those in charge of the Revenue Department This forms barely 22 per cent of the land area as against the minimum of 33 per cent laid down by the National Forest Policy as required to be under forest cover The forest boundaries have not a little receded over the years, on account of the pressure of cultivation and increasing population. Whatever little forests we have now are not all productive Inaccessible, barren, steep and precipitous terrain further add to the diminution of the forests that can actually be utilized With a developing economy in this State and its varied and fast increasing requirements it has now come to be recognised more than ever before, that the forests should produce the highest, within the shortest period at the lowest possible cost. Of necessity



An elephant dragging and arranging logs—Khandu Amravati Division.

therefore forestry practice has to be reorientated towards intensification and closer integration into the expanding industrial economy which alone can assure the perpetuation of our forests at a high level of productivity The numerous values obtained from forests before they are harvested are every bit as important in our economy as the final products derived from wood.

The programme for the development of our forests under the Third Five-Year Plan of this State, the overall financial outlay of which is Rs 301 74 lakhs, lays accent on the basic need to step up substantially and on a continuing basis the forest output and also to increase the area on which forests are restored or maintained in order to exercise their protective influence The afforestation of the denuded areas, development of village woodlands, forest pastures, and minor forest produce, improvement of the existing wasteful logging practices, building of forest roads and communications and the improved utilization of the non-commercial and low-grade timbers, are some of the schemes, which form an essential part of this programme The scheme on the improvement of the present primitive logging practices in this State and on the development and supply of substitutes for teak deserve particular mention here, being closely knit with the promotion of forest industries The logging tools and techniques that are in vogue in the forests of this State are outmoded, inefficient and wasteful as result in a considerable loss of timber both in felling and conversion, which not only fritters away money returns but creates dearth of timber which the State can ill-afford in the face of increasing demand These are proposed to be replaced by modern, scientific and efficient logging equipment and techniques, which apart from reducing the cost on logging will minimise a great deal the substantial loss in timber that occurs at present from the existing

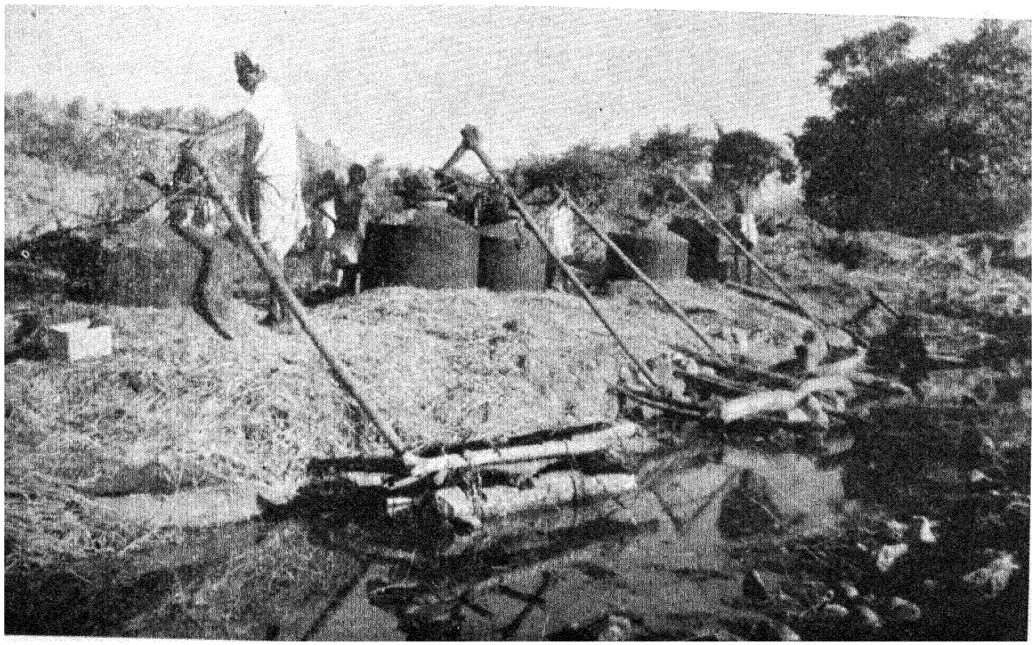
primitive methods This Scheme which covers a financial outlay of Rs. 40 lakhs is expected to record a sizeable increase in forest output To begin with, this project will be concentrated in the forests of Amravati and Central Chanda Divisions where the departmental exploitation of forests is on a comparatively larger scale and on the results achieved, will be extended to the other forests.

The Scheme on the development and supply of substitutes for Teak with a financial allotment of Rs 50 lakhs under the Third Five-Year Plan, seeks to upgrade the properties of the secondary timbers such as shisham—(*Dalbergia latifolia*), ain—(*Terminalia tomentosa*), bija—(*Pterocarpus marsupium*), haldu—(*Adina cordifolia*), kalam—(*Mitragyna parvifolia*), nana—(*Lagerstræmia lanceolata*), dhaman—(*Grewia tiliæfolia*), mhowa—(*Madhuca latifolia*) and such others, by the application of the techniques of seasoning and preservation, as a result of which they could easily vie with teak, the most favoured commercial timber in many of the properties, if not excel This would not only serve to popularise these timbers, and step up the output from the forests, but will also make good, the dearth of teak, the demand for which at present, has outgrown supply Under this Scheme it is proposed to install an integrated unit comprising a Saw Mill with an annual intake of about 3000 tons of these secondary timbers in the round, Wood Seasoning Kilns and a Wood Preservation Plant of an annual capacity, each of about 1,500 tons of timber sawn therefrom, at each of the principal centres of timber supply namely Dahanu Road, Ballarshah and Paratwada These Units will cater to the requirement of the various timber-consuming Departments such as the Public Works, Railways, Defence, Housing Boards and the like They will serve to bring down significantly the price of structural timbers and make building construction work, as a whole economical It is estimated that for urban constructions the average requirement of timber is about 50 c ft whereas in rural areas it is about 8 c ft

The existing forest-based industries.

A variety of industries drawing their resources from the forests, flourish in this State today, some of which have made remarkable progress. They have passed through varied stages of development each featured by gradual expansion and growth The principal, among these industries are narrated below :—

(1) *The Saw Mill Industry*—Though still in its infancy, it is a basic forest industry that initiates conversion of timber to be processed into numberless products Considering the large volume of timber it employs and the great



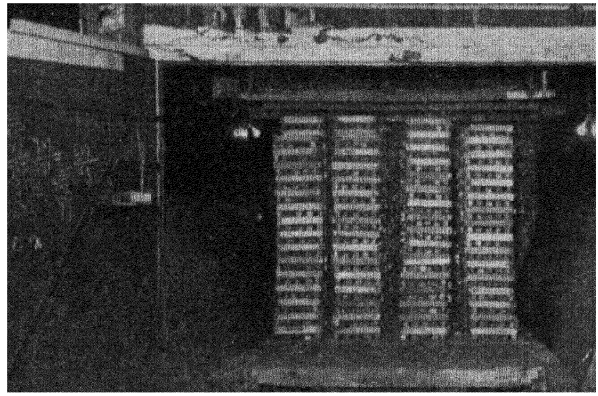
Rosha grass distillation at Behali—Chikhalda Range—Amravati Division.

potential of employment it affords, it plays a vital role in the economy of the State The total number of Saw Mill Units in this State is about 165, their total installed saw milling capacity being 40,000 tons of sawn timber per year The industry however is not as advanced as in the Western Countries and is comparatively on a small scale, most of the saw mills being equipped only for primary conversion. Some of the bigger saw mills in Bombay have the facilities for secondary conversion and reconversion These Units are usually integrated with other major wood-based industries such as the bobbin, boat-building, wagon and coach-building industries.

Teak is the principal species sawn in these saw mills Wood-waste such as off-cuts and saw-dust which find a profitable outlet in the manufacture of various types of boards and composition products in the Western countries is not well utilized in this State, though off-cuts in some places are used in small carpentry, electrical cappings, etc The rest of the waste is thrown away The profitable utilization of the wood waste therefore needs to be given an earnest thought by the industry

(2) *The Textile Requisites Industry* By far this is the most important wood-based industry in the State. Of the total 57 bobbin factories in the country as many as 9 are located in this State. The production of bobbins and shuttles in this State is steadily on the increase About 20,000 tons of timber are estimated as required at present, by the industry for this purpose The industry however prefers imported birch, beech and maple as these are available in cut size, ready-to-use, seasoned and selected blanks Of late due to the gradual restriction on the import of these timbers the industry has to some extent switched over to indigenous timbers like haldu (*Adina cordifolia*), and kalam (*Mitragyne parvifolia*) This augurs well for the wider utilization of the local timbers and for dispensing with the imported woods which have acted as an increasingly serious drain on our currency reserves It is the inveterate prejudice on the part of the consumers that has been more than anything else averse to patronizing the indigenous timbers With further restriction on imports it is expected that the industry will itself blaze the trail and organize an agency whereby its requirement of seasoned haldu and kalam blanks could be satisfactorily met with from indigenous sources

(3) *The Match Industry*—This industry is well known for the universal use of its product, as



A view of the Seasoning Kiln at Rajurkar's Saw Mill, Poona.

matches are a commodity required by every household in urban as well as rural areas. Indirectly or directly, it provides employment on a large scale Besides, it fetches a sizeable excise duty to the Central Government. At present there are two match factories in this State, the more important of which is the Western India Match Manufacturing Co Ltd , at Ambernath in Thana District producing about 20,000 gross matches per day The other Unit namely M/s Narayan Match Factory, Nagpur is a much smaller one producing only about 10,000 gross matches a year In addition there are a number of smaller Units operating on a cottage-industry basis under the aegis of the Khadi and Village Industries Commission, utilizing bamboo for splints and card-board for boxes On account of its suitability both for the splints and boxes semal—(*Salmalia malabarica*), is favoured but the availability of this timber in the State is at present limited The future of this industry therefore is mainly a question of ensured raw material The industry at present therefore has to import sizeable quantities of suitable matchwood timbers from Andamans and South India to keep it going Under the Five-Year Plans the growing of semal has been given due importance and in course of time it is expected that the industry would obtain a fair proportion of its requirement of timber from the stock so raised

(4) *The Paper and Paper Board Industry.*—This industry has made great strides in the post-independence era which is an index of economic growth and advancement Supply of adequate quantities of paper at a reasonable price is indispensable for the improvement of literacy, information, packaging and many other uses Though not entirely forest-based, the industry is

now increasingly dependent on forest produce, mainly bamboos and grasses Bamboo specially is a versatile raw material for this industry Industrial research has revealed that the bulk of commercial papers can be produced from 80 per cent short-fibre hardwood pulp mixed with 20 per cent long-fibre pulp from conifers or bamboo There is also a possibility of utilizing bagasse as a raw material for paper, which abounds in Kolhapur, Sangli, Ahmednagar, and Nasik Districts In that case a suitable alternative fuel for bagasse will have to be found out, as bagasse is at present used as fuel in the furnaces of the sugar factories, and there is acute shortage of firewood. The use of oil-fired furnaces may perhaps be a solution to the problem

The Ballarpur Paper and Straw Board Mills, Ltd , Ballarpur in Chanda District is the largest Unit utilizing bamboo for the production of paper in the State . Its present rated capacity is about 30 tons of paper per day excluding wrapping paper The Mill manufactures high quality writing and printing paper The species of bamboos utilized is medar—(*Dendrocalamus strictus*) The Forest Department of this State annually supplies about 25,000 tons of bamboo to this mill from the forests of Chanda Divisions The mill is contemplating to expand its production to about 120 tons of paper per day.

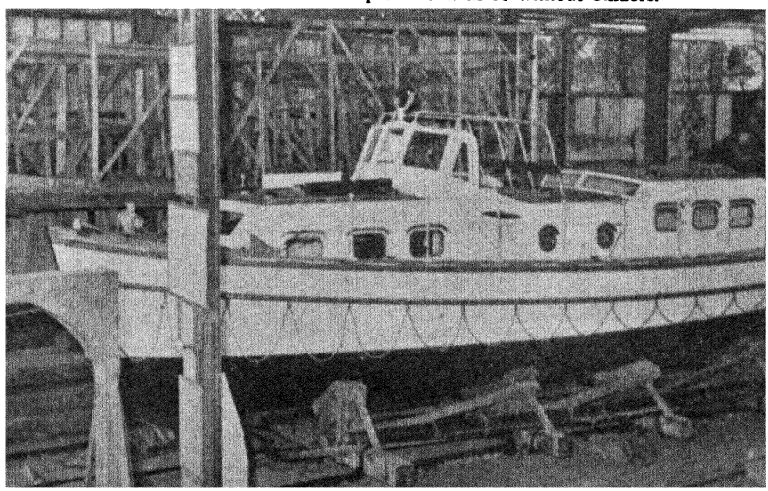
Another Unit namely that of M/s Paper and Pulp Conversions Ltd , is at Khopoli in Kolaba District which manufactures various grades of paper and boards to the extent of about 4,000 tons a year

The forests of this State abound in coarse grasses A recent survey has shown that there is a scope for the establishment of straw board factories of about 10 tons daily production each at Nawapur and Sangvi in Dhulia District and at Tansa in Thana District, where there is an abundance of these grasses with the necessary facilities for the industry.

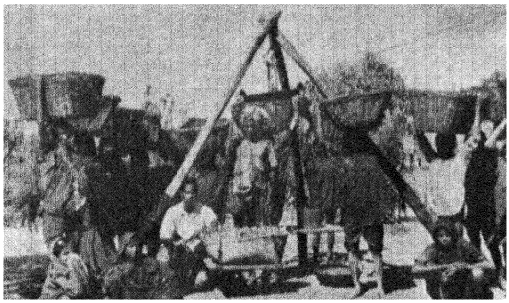
(5) *The Plywood Industry*- As an evolved form of wood, plywood is finding increasing utility all round, for furniture, boat-building, doors and even structural units. It imparts dimensional stability and equalizes the unbalanced internal stresses inherent in solid wood It allows the fabrication of curved and irregular surfaces, impossible to achieve with solid wood. Development of commercial plywood took a considerable spurt after the attainment of independence

This industry however has a limited scope in this State after the rich forests of the North Kanara District on which it was flourishing went over to the Mysore State on the reorganization of States. The Indian Plywood Manufacturing Company Ltd , which has its factory at Dandeli in Mysore State has a veneer slicing Unit installed recently at Bombay This Unit utilizes some quantity of teak from Ballarshah in this State as also teak imported from Burma and Thailand along with small quantities of vellapine—(*Vateria indica*), mahogany—(*Swietenia spp.*) poon—(*Calophyllum tomentosum*), and rosewood (*Dalbergia latifolia*) obtained mostly from South India It supplies the bulk of the veneers to its factory at Dandeli for the manufacture of flush-doors, block-boards, and coachply, the last of which is largely consumed by the railways

(6) *The Fibre-board Industry* —This industry is of recent origin and is the outcome of modern technological research It is of no little importance in ensuring more complete utilization of wood and in replacing solid timber the resources of which are inadequate to meet the increasing demand The manufacture of fibre-boards as in the case of paper, involves the disintegration of wood-fibres and their integration into sheets under heat and pressure with or without binders.



A. F. Co , Boat-Building Yard, Madh Island, Bombay.



Purchase of raw myrabolams collected from the forests by the local villagers for supply to Amba Tannin and Pharmaceutical Factory at Amba, Kolhapur.

It is considered to be the most important component of the larger technical uses of wood-waste and low-grade timber for the main reason that it does not dictate an exacting demand on the raw material and ensures the making of high quality standard products with a wide range of applicability.

At present there are only two fibre-board factories in India, one, that of M/s Anil Hard-boards Ltd, at Bhandup in this State with a capacity of about 30 tons daily and the other in Kerala with a provisional capacity of 15 tons to be enlarged upto 30 tons daily The former Unit uses about 30 hardwood species in mixture The Forest Department of this State arranges to supply the annual requirement of raw material to this factory to the extent possible.

The coming of this industry into existence i the country has helped in conserving foreign exchange which hitherto was being spent on th import of as many as 15,000 to 20,000 tons of fibre-board annually

(7) *The Rayon Pulp Industry.*—The demand for rayon in the country is fast increasing Dr Von Monroy who took a representative survey of the forests in this State as mentioned earlier is of the opinion, that there is a scope for establishing this industry in the vicinity of Chanda and Melghat forests, as rayon grade pulp can be manufactured from short fibres obtained from almost all the tropical hardwoods except those containing an excessive content of tannin The requirement of this industry for an economic Unit is considered to be about 25,000 tons of hardwoods annually.

(8) *The Tan-extract Industry* —Of the secondary tanning materials chebulic myrabolans from the hirda fruit of Terminalia chebula is the most important in this State There is a factory, that of M/s Amba Tannin and Pharmaceuticals Ltd at Amba in Kolhapur District which manufactures tan extract therefrom with a daily production of 10 tons. The annual requirement of this Unit is about 6,000 tons of hirda Government have granted concession to it for the collection of chebulic myrabolans from the forests of Kolhapur Division at a fixed rate of royalty As the myrabolan tan extract is generally used as a blend with other tan-stuffs, there is of late, a growing demand for the powdered extract of myrabolan. The factory accordingly has now been producing both the solid and the powdered tan extracts

A survey of the forests in Poona District has revealed a possibility of opening another tan-extract factory at Bhatghar, utilizing chebulic myrabolan, the annual availability of which is estimated to be about 4,000 tons, considered adequate for an economic Unit

The other secondary tanning materials, derived from tarwad bark—(*Cassia auriculata*), konan bark—(*Cassia fistula*), karada—(*Cleistanthus collinus*), etc are available in limited quantities on account of the scattered occurrence of the species They have however a good scope for development on a cottage-scale.

(9) *Katha Industry* —As a cottage industry the manufacture of "katha" has been practised in this State, since the long past, though on a crude process where the valuable cutch-tannin is lost This method is still in vogue in some parts of the State "Katha" is used as an ingredient in "pan" while cutch is used as a dyeing and preserving agent

There is only one Unit in this State at present namely that of M/s Swastik Katha Manufacturers Ltd, at Dahanu Road in Thana District which manufactures katha on a scientific technique where in addition to katha, tannins are also recovered as a bye-product This Unit has entered into an agreement with the State Government for the supply of 1,200 khair trees a year for a period of 30 years.

(10) *The other Industries* —The above are the more important of the forest-based industries Besides there are a host of others which though minor in themselves, not only contribute to the revenue of this State, but conduce to the gainful employment of the rural populace to ameliorate their backward economic status As an avocation on a cottage-scale they open up an avenue for the development of the forests Among these industries may be mentioned, the boat-building, manufacture of sports goods and tool-handles, bamboo and cane weaving, toy making, manufacture of slate and picture frames, making of ropes,

carpets, mats, etc , from fibres, collection of honey and non-edible oil seeds, the latter for the soap industry, cultivation and collection of lac and many others which make use of the produce from the forests in one form or another.

The forests therefore have much to offer The wood-using industries project their stabilizing influence on the economy of this State The direct benefits derived from them are from the useful goods they produce and the employment they provide to many Less direct and again rather closely affiliated with the forests themselves are the opportunities they afford in balancing the economic and social development of the rural communities Whoever therefore would help preserve our forests or plant them anew would sure deserve better of mankind

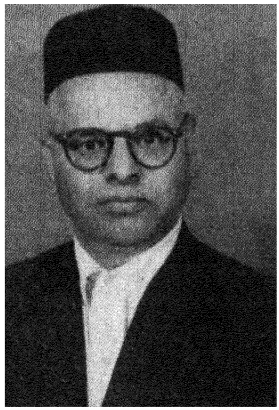
We cannot fail in following Nature

—MONTAIGNE.

What do bees do with their honey ?

Cell it.

How many kinds of wood are used in making a match ? asked Rama. "Two kinds" replied Sita, "He would" and "She would".



FOREST ENGINEERING IN MAHARASHTRA STATE

BY

N S SABNIS

Deputy Forest Engineer, Nasik

FOREST Engineering has played a significant role in the development of forests in the Maharashtra State, over the 100 years, by way of opening up lines of communication and transport, to increase effectively the output from the forests, construction of residential buildings and wells for the forest staff to provide them the essential amenities of life, building of Forest Rest Houses to render touring both convenient and efficient, and such other features intimately connected with the welfare of the forests as a whole. Works under Forest Engineering mainly relate to construction and maintenance of forest roads which apart from being the main arteries of transport of forest produce serve as a useful network of tracks for day-to-day inspection and supervision of the forests Forest roads in this State are in main, of two types—(i) "Katcha" and (ii) "Pucca" These are further classified as (a) fair weather and (b) all weather roads The roads traversing most of the forests in the Maharashtra State are "katcha" fair-weather roads only as the transport of forest produce is generally confined to the fair season from November to June For a greater part, many of the forest roads, cater to the working of a coupe or compartments only, during the period they are under exploitation, at other times being mostly in desuetude from the point of view of transport of forest produce These roads are therefore not regular channels of transport and are at best a practicable mean between a truly ideal and a really bad road and therefore are not constructed at great cost as in the case of the 'pucca" roads More than 95 per cent. of the total length of forest roads comes under "katcha" roads, as a huge capital outlay on the construction of "pucca" metalled roads with cross-drainage works is without warrant for the reasons given above The width of such "katcha" roads varies from 8′ to 12′ generally; however such roads are now-a-days being widened to 16′ so as to conform to the P W D pattern of "Village Roads" Some of the new roads undertaken recently in some Divisions are estimated on "Other District Road Standard" with 20′ base-width, as such roads lead to or open out in the limits of the adjoining Districts. Such roads have been taken up recently under the First and Second Five-Year Plans in West Chanda, Central Chanda, Yeotmal, Amravati, North Thana, West Nasik and North Dhulia Divisions The road leading to Taroba National Park (West Chanda Division) is being developed into a regular all-weather "pucca" road with black-topped wearing surface. The O D R Standard Roads mentioned above, are proposed as water-bound macadam roads (metal-coat in full and rubble soling in muddy portions only) In the days of yore when the value of timber was at its ebb, the cross-drainage works on forest roads were invariably constructed of timber Evidently such works used to cost much less, took little time and also did not require very skilled labour Many such works have been carried out in Belgaum Division and all the Kanara Divisions in the Southern Circle, now forming part of Mysore State as a result of the formation of the linguistic States A very useful, illustrative hand-book containing various Type Designs of such timber drains and bridges was drawn up by Mr T S Pipe Superintending Engineer in the erstwhile Bombay State The same author has compiled another useful publication on

Standard Forest Roads, and Earth Work Tables Both these have been published by Government in 1931 for general use Some roads termed as "skidding roads" to serve as drag paths for the transport of valuable timber on steep slopes have also been constructed in the forest areas in the Kanara Divisions now transferred to Mysore State In some of the forests which now form part of the Mysore State, Suspension Bridges (with wire ropes) have been erected by the Forest Department, for pedestrian traffic, across narrow and deep gorges gushing with torrential waters Ropeways to haul timber up and down in the hilly terrain have been put up in Kolaba Division on a small scale on the principle of counterpoise on the incline Bridle paths have been constructed in many Forest Divisions for use by pack animals for the transport of forest produce and also for the purpose of inspection Some very useful roads are under construction at present under the Five-Year Plans in Akrani Mahal of North Dhulia Division to provide transport and communication facilities in the areas undeveloped so far Toranmal a hill station in North Dhulia Division with a fairly big perennial lake on the plateau, exceptionally salubrious climate and situated at an altitude of about 3500′ above m s l has recently been made accessible to the general public by the construction of a hill road which was originally designed by the Forest Department

Cross-drainage works on forest roads are generally not provided as the roads are rarely used during monsoons, however where necessary the same are proposed either as (a) percolation drains, (b) small dips called "Irish Bridges" with a curtain wall on the down-stream end and flush with the up-stream side, nalla bed level, (c) small drains or culverts and (d) bridges with spans between 10′ to 20′ or low-level causeways to let the flood-water pass over and only the post-monsoon flow to pass through the outlets according to the requirement of each case "Mile-Coolies" as in the case of the P W D are not employed permanently for the maintenance of forest roads But they are maintained from the grants under pre and post-monsoon repairs by engaging seasonal labour Most of the forest roads are closed to all vehicular traffic during the rains from June to October, and water tables all along the full width of the road are put up at suitable intervals depending on the grade of the incline These forest roads though of the "katcha" type are covered from time to time with an adequate layer of murram from the borrow pits at the sides, with a view to keep the wearing surface true, particularly for the present day fast-moving vehicles The work of maintenance of forest roads usually consists of filling in ruts and pot-holes, clearing old or excavating new side-drains and excavating catch-water drains on the hill side to divert the flow of water from the hills High banks and valley-side edges of roads are protected by putting up dry rubble retaining walls as are necessary Mile and furlong stones are not fixed on the ground according to the regular P W D design, but wooden stakes and stones are implanted to conveniently indicate the distance Similarly indicator boards to show the names of villages, Ghat sections and the prominent road-signs are also put up on some of the roads

Residential accommodation both for the Gazetted and the Subordinate staff has been provided according to the availability of funds within and outside the Five-Year Plans and to the priority in each case Recently a building housing the office of the Divisional Forest Officer, Dangs Division (now forming part of Gujarat State as a result of bifurcation) and office and residential bungalow for the D F Os, East Thana and Dangs Divisions have also been constructed Several cheap-type inspection huts in the remote interior of the forests have been erected by this Department to facilitate inspection of the forests and thereby to increase efficiency of their supervision In the year 1957, a full-fledged school for training foresters recruited annually for this Department has been built at Chanda, with the auxiliary structures such as the Hostel, Kitchen and Mess Block, a Dispensary, Quarters for the Medical Officer, the Director of the School, the Curator, the Range Forest Officer, the menial staff etc Other accessories such as the water-supply system with overhead-tank, the drainage system, gymnasium, play ground, pavilion etc, have also been provided Besides this, a Public Park of much recreational and scenic value, has been laid out, at Mahabaleshwar (Satara Division) consisting of a botanical garden, a children's corner, a herbarium, a fountain and a fishpond A useful guide dealing with Standard Designs for forest buildings complete with detailed estimates by Mr T S Pipe, Superintending Engineer, Forest Department in the erstwhile Bombay State, has been published by Government The Forest Engineering Branch has recently drawn up a set of designs for residential buildings, Rest Houses, schools, etc, by striking a golden mean between the P W D Type Designs with restricted

accommodation and the then Madhya Pradesh Forest Department Designs These designs are awaiting Government sanction

Most of the construction work pertaining to forest buildings or roads is generally done departmentally or through piece-workers, on task-work basis, as more often than not, contractors are reluctant to undertake the work in the interior of the forests, on account of the difficulty in procuring building material, labour etc

The Forest Engineering Branch of the State has also an achievement to its credit in the erection operation and maintenance of a complete Saw Mill Unit on a fairly large scale at Dandeli (North Kanara Division, now transferred to Mysore State), and at Waghai (Dangs Division now transferred to Gujarat State) along with appurtenant works such as the installation of the Wood Seasoning Kilns, the Wood Preservation Plant, Fire-fighting System and Sheds for storage of treated and untreated timber Only one Government Saw Mill at Allapalli in Central Chanda Division is functioning at present in Maharashtra State Expansion of this Mill and establishment of another Saw Mill on a bigger scale integrated with Seasoning Kilns and a Wood Preservation Plant at Dahanu Road in North Thana Division is under consideration of Government for the present The Forest Department in Maharashtra State has recently acquired a fleet of diesel motor trucks to speed up the transport of timber from the departmentally exploited coupes, diesel and steam road rollers for road works and tractors, and a Hay Press under the Fodder Bank Scheme in operation in West Dhulia Division The Forest Engineering Branch has thus acquitted itself with credit in the development of the forests in this State and will continue to to so in the years to come

God made the country (Nature) and man made the town

-WILLIAM COWPER

What is the difference between an aeroplane and a tree ?
The aeroplane leaves the shed, while the tree sheds the leaves





GRAZING, GRASS AND FODDER, IN THE FORESTS OF MAHARASHTRA STATE

By

C M JOSHI

Divisional Forest Officer, West Nasik

UNLIKE in some of the advanced countries, where the live-stock is generally stall-fed or grazed on organised pasture, in the State of Maharashtra and in fact over a greater part of India, cattle are mostly dependent on the grazing available in forests or waste lands and on the fodder available from the agricultural crops

The grazing policy followed in the forests of Maharashtra State is different in the three regions comprising it viz the areas forming *ex*-Bombay State, the areas of Vidarbha and the areas of Marathwada

Before discussing the merits and demerits of the grazing policy, at present followed in the different parts and suggesting measures for evolving a uniform policy, it will not be out of place to state in brief the grazing position and the control existing in the different parts of the State.

Grazing position in the forests of the *ex*-Bombay State.

Prior to 1st July 1937, grazing fees were charged for cattle of forest and non-forest villages and cattle from the Indian States The grazing fees for forest village cattle were annas four per buffalo, cow, oxen, horses, donkeys and mules and annas two for sheep and goats if allowed Double this rate was charged for cattle from non-forest villages and four times this rate was charged for cattle coming for grazing from outside the State limits

Since 1st July 1937, the grazing fees have been totally abolished in the State and only cattle from the other States are to be charged grazing fees as indicated above Although standard acreage of grazing has been fixed for cattle in different districts, it has no bearing on the carrying capacity of the forest Certain restrictions regarding admission of cattle to grazing areas, requirement of a free permit for grazing, appointment of responsible herdsmen, closure of areas, allowing sufficient time for regeneration to establish etc., continue to exist, but many of them have remained on paper only, due to inadequate grazing position

Grazing and cutting *kurans* are generally formed out of the areas which are surplus to grazing requirements of the local village cattle after provision is made for their free grazing The total area under grazing and cutting *kuran* is about 200 sq miles These areas provide sufficient grass during normal years and serve as a standby during the years of insufficient rainfall

In accordance with the existing Government orders, grazing and cutting *kurans* are first offered to the Village Panchayats or other Public Bodies or where no such Panchayats or Public Bodies are functioning, to genuine cattle-breeders at the prevailing market rates This is annually done by publicising the *kurans* to be sold on grazing and cutting terms and inviting applications accompanied by an E. M D of Rs 200 per *kuran* from all the concerned Panchayats and other Public Bodies etc Only such *kurans* which are not required by Village Panchayats or other Public Bodies etc or when they are not agreeable to purchase the *kurans* at the price fixed by he Forests Department, are subsequently sold by auction In the matter of allotment of *kurans*, Panchayats are given priority over other

Public Bodies and the Public Bodies over other cattle-breeders.

Grazing position in the forests of Vidarbha

The grazing in reserved, protected and unclassed forests in Vidarbha is regulated as per the Madhya Pradesh Forest Policy, the main points of which are as under :—

There is limited free grazing i e all agriculturists having four or less than four cattle units are allowed free grazing while cattle in excess of this limit are charged either at privileged or commercial rates as shown below —

(1) 8 Units or less are charged —
  (i) 4 Units-Free.
  (ii) The rest at privileged rates.
(2) More than 8 Units are charged —
  (i) 6 Units per plough at privileged rates
  (ii) Remainder at commercial rates.

At the time of framing a new plan or revising the old one, the Working Plans Officer has to distinguish the forests into one of the following classes taking into account all the factors pertaining to the object of management —

(1) Protection Forests,
(2) Tree Forests,
(3) Minor Forests,
(4) Pasture Forests, and
(5) Grass Reserves

Whereas grazing is completely prohibited in Protection Forests and Grass Reserves, the incidence of grazing varies from one cattle unit for every three acres in Tree Forests to 1 cattle unit per acre in Pasture Forests The areas open to grazing are divided into blocks (grazing units) and each block is sub-divided into 2 to 4 sections one of which is closed in rotation to grazing during monsoon.

The privileged and commercial rates charged are as below :—

Cows and bulls under 3 years	Cows and bulls above 3 years	Buffaloes under 3 years.	Buffaloes above 3 years
Rs a p.	Rs a p	Rs a p	Rs a p
	Privileged Rates		
0 2 0	0 4 0	0 4 0	0 8 0
	Commercial Rates.		
0 12 0	1 8 0	1 8 0	3 0 0



Baling and pressing of hay with tractor—Lalling kuran—West Dhulia Division.

Grazing position in Marathwada

There are no grazing *kurans* as such, but some forest blocks are sold annually as cutting *kurans* These *kurans* are neither fenced nor any improvement works are done therein According to the prescription of the working plans, all exploited areas are closed to grazing for a period of 10 years The incidence of grazing is prescribed for each block which varies from 1·5 to 4 4 acres per cow unit Grazing is regulated as per Hyderabad Grazing Rules Grazing fees are recovered as per the following scale —

(A) *Agricultural cattle* —
  (1) For cows and bull-ocks — 0-8-0 per head per annum.
  (2) For buffaloes. .. — 1-0-0 per head per annum

(B) *Non-agricultural cattle*—
  (1) For cows and bull-ocks — 0-13-0 per head per annum
  (2) For buffaloes — 1-8-0 per head per annum.

The grazing rates for other cattle are :—
  (1) Elephant ... — Rs 6 per head per annum.
  (2) Camel — Rs 3 per head per annum.
  (3) Ponies — 0-12-0 per head per annum
  (4) Sheep .. — 1-0-0 per head per annum

Goat grazing is allowed only in the forest areas specifically set apart for the purpose

From the grazing practice followed in the three different regions, it can be seen that whereas there exists a fairly regulated grazing policy in the forests of Vidarbha, a rational change in the outlook and policy in the matter of grazing control is needed in respect of the

ex-Bombay State areas Prior to 1937, though grazing fees levied were extremely low, they had at least some controlling effect on the number of animals resorting to grazing in the forest areas By abolition of grazing fees, their number has increased very considerably Over-grazing is practised almost everywhere with the result that retrogression is evident in almost all the open forests Even the closures under the prescription of working plans cannot be satisfactorily maintained and numerous cases of illicit grazing are detected with the result that the period of rest which the closed areas get does not produce the required results The grass-lands in the reserved forests, waste lands, revenue *gurcharans* etc have deteriorated to such an extent that it will take a considerably long period to build up conditions favourable for the development of grasses

Though the grazing policy followed in the Vidarbha area is generally sound, in practice the grazing control had to be relaxed by executive orders of Government as a concession to keen public demand to admit unrestricted grazing The fees charged for grazing in the reserved forest appear to be low and out of proportion to the value of grazing offered in return On the other hand, the number of animals considered as essential to the agriculturist viz eight per working plough and therefore charged nominal grazing fees appears very high These two factors which react on each other are primarily responsible for the present low utility value of the stock There is no incentive to keep a fewer number of more efficient cattle

Separate statistical figures for the composite State in respect of grazing lands, and cattle stock are not available The total forest area in charge of the Forests Department of the State inclusive of Reserved, Protected and Unclassed forests is 21,966 sq miles Out of this the total pasture area is about 1,504 sq miles and the area kept open for grazing in accordance with the prescriptions of the working plans is about 16,000 sq miles About 5,000 sq miles of this area may be considered as unfit for grazing partly because of the location in inaccessible area and partly because the area covers steep slopes of hills beyond the reach of domestic cattle The exact extent of area comprising waste lands, revenue *gurcharans* and fallow lands is not available but is estimated to be in the neighbourhood of 7,000 sq miles The latest figures of total cattle population of the State are not available However, according to the 1956 cattle census figure, the horned cattle and sheep in the State would be in the neighbourhood of 2,10,00,000 and 20,00,000 respectively According to the existing grazing incidence of 2 acres per head of horned cattle and ½ acre per sheep, on an average, the total area required to provide adequate grazing would be about 67,187 sq miles The existing area of about 19,504 sq miles is therefore far too inadequate and if this condition continues, a stage may come when it would become impossible to provide necessary grazing to such a vast number of cattle The only remedy is either to reduce the number of cattle or to improve the grazing lands and resort to stall-feeding as much as possible

Under the scheme for Afforestation and rehabilitation of pasture lands sanctioned during the Second Five-Year Plan and continued during the Third Five-Year Plan and the Forests Department is doing its best to improve the existing *kurans* by fencing either with barbed wire or cattle-proof trench, and by introducing nutritious and palatable grasses and fodder species

So also to meet the fodder shortage in times of scarcity one Fodder Bank has been recently established under a Centrally sponsored scheme and is located at a distance of about 4 miles from Dhulia Lalling *Kuran* is the source of supply for the Fodder Bank and is situated at about 5½ miles south of Dhulia and at a distance of about 1½ miles from the Fodder Bank The area of the *kuran* is 10,000 acres with a perimeter of approximately 24 miles The *kuran* is fenced with barbed wire and is estimated to produce, to begin with, atleast about 50,00,000 lbs of grass Four baled hay storage sheds have been constructed Each shed costs about Rs 32,000 and is estimated to hold about 5,00,000 lbs of hay

In times of scarcity, the Collectors concerned can write to the Chief Conservator of Forests, M S, Poona, intimating their requirements so that to the extent possible, their demands can be met with, from the Fodder Bank at Dhulia

It must, however, be emphasised that the efforts made by the Forests Department can by no means be considered as adequate to solve the grazing problem What is required is a rational change in the outlook and policy and with this object in view a common grazing policy for the entire Maharashtra State, more or less on the same pattern as is followed in Vidarbha is suggested, taking into consideration the following essential requirements :—

(1) To discriminate between *essential* and *surplus* live stock and refix the limit of 8 per

working plough as is fixed in Madhya Pradesh and reduce it to the maximum extent possible with due regard to the number considered essential for agricultural needs including supply of milk and its conversion products.

(2) To impose suitable grazing fees on a higher scale for surplus live stock so as to reduce their number to the minimum

(3) To fix the grazing incidence not in terms of cattle strength for which grazing provision is required to be made but in terms of the carrying capacity of the forests

(4) To adopt rotational grazing and other methods of improvement of grazing and grass lands, such as introduction of more nutritious and palatable grasses and recovery of over-grazed areas by reseeding etc

(5) To check increase in the surplus live stock by suitable legislation

(6) To earmark the money realised from grazing fees for the improvement of grazing lands and pasture by various methods The money thus realised will ultimately go back to the villages in the form of improved and better grazing

It must, however, be pointed out that some of the measures especially regarding imposition of grazing fees, discrimination between essential and non-essential cattle and passing suitable legislation for limiting the strength of non-essential cattle though essential in the interest of live stock and the pasture lands, are likely to be met with great opposition from the public A similar set of rules was drawn up in 1938 by the Forests Department and submitted to Government When these rules were circulated to the public for eliciting opinion, they were adversely commented upon and as a result their introduction had to be indefinitely postponed

With this back-ground, and the present democratic set-up under which public co-operation is of vital importance, it would be desirable to proceed slowly and first convince the people regarding the utility of the measures sought to be introduced For this purpose a special section to deal with fodder and grazing should at once be created and put up in charge of a trained Agrostologist who should be provided with adequate staff, funds and equipment to efficiently carry out the work entrusted to him

The Agrostologist should with the help of statistical and experimental branches (1) evolve a suitable technique for assessing the productivity of grazing grounds and grass lands, (2) lay out experiments to study the effects of various treatments which are believed to increase productivity such as fire-protection, control-burning, weeding, manuring, reseeding, control of incidence rotational grazing etc and on the basis of results achieved lay down a number of demonstration plots in as many different areas as possible exhibited by films and literature for wide publicity, to convince the people that any encroachment on their privileges is in their own interest, that the number of stock in the State is excessive and if its efficiency is to be improved the remedy lies not in extensive grazing but improved and regulated grazing supported by stall-feeding Without public support, no measures however sound, can be effective

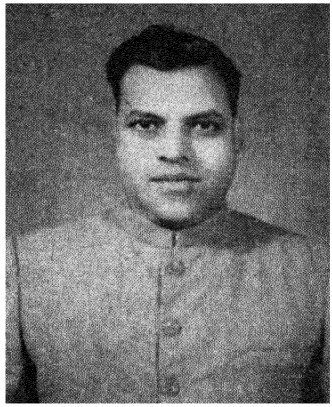
---

Therefore am I still
A lover of the meadows and the woods,
And mountains, and of all that we behold,
From this green earth ; of all the mighty world,
Of eye and ear—both what they half create,
And what perceive ; well pleased to recognize
In nature and the language of the sense,
The anchor of my purest thoughts, the nurse,
The guide, the guardian of my heart and soul,
Of all my moral being

—W WORDSWORTH
(Tintern Abbey)

Grass grows by inches — and dies by feet

—JANET ROBERTS



FOREST LABOURERS' CO-OPERATIVE MOVEMENT —PROSPECT AND RETROSPECT

BY

U R MAVINKURVE

Special Officer, Forest Labourers' Co-operative Societies, Poona

THE Government of Bombay launched the Forest Labourers' Co-operative Movement in 1947 as a novel experiment, beginning with about 10 societies of a total membership of 480 and with a share capital of about Rs 8,000 The movement has made spectacular progress during these 14 years and now in Maharashtra State alone, there are 250 societies with a membership of 25,000 and a share capital of Rs 6,50,000 They have built a reserve fund of Rs 6,25,000 and other funds amounting to Rs 9,30,200 This is by no means a small progress The movement had earlier caught the attention of the Planning Commission, which lauded the progress it had made in the erstwhile Bombay State and recommended other State Governments to emulate its example.

While looking back with some pride on this progress of the movement, what appears most necessary at this stage of its progress is some introspection and rethinking so as to revitalise the movement The relationship between forest administration and the movement has been often subjected to bitter criticism, doubts have been expressed about the fuller scope for further success of the venture, because of and an apparent conflict between the forest administration and the prospects of the movement Many have expressed despair and disillusionment Let the problem therefore, be dealt with objectively and with a free mind to do justice to the diverse points of view, even if it means calling in question certain basic assumptions

Too much has been of late made, by way of an explanation for the conflicts of the fact that the Forest Department is a commercial one But this is not the whole truth It is as much an Administrative Department, concerned even with public health and hygiene as any Department could be What perhaps is commercial about the Forest Department, is its system of disposal of the forest produce None in the Department need be apologetic even of this fact The word "commercial" has no derogatory connotation even in the realm of social ethics Even a social worker in the movement dedicating his life to the cause of down-trodden, need not fight shy of the suggestion that his own Forest Co-operative should also be commercial, no less than any other economic activity.

In order to permit an objective approach to certain problems under discussion, let me do some wild thinking Imagine a situation in which the price of cotton which a farmer grows in his field is to be determined not when he delivers his goods to the textile mill, but long after the cloth produced is sold His position would be alarming, indeed, if the price of his cotton is to be determined by the cost of manufacture of the cloth as also by the price, the cloth fetches Most naturally, the mounting anxiety of the farmer is reflected in his concern for the cost of running the mill, the cost being inversely related to the price of the cotton he supplies It would be nothing short of a calamity, if on the other hand, the cost of production of the cloth becomes uneconomical Nothing would look apparently odd so long as there is something left after the balance is struck, to be given away to the farmer as the price of the cotton But if the scale tilts a little

too much against the credit side, it would mathematically be a proposition for the value of his goods being imperceptibly consumed partly or wholly by an essential industry

The farmer, therefore, finds himself most helplessly and inextricably drawn into the affairs of the mill, a situation none too pleasant to him, and enters into conflict with the management to question the propriety of paying higher wages to the majdoors, of the need for a paid holiday, of the new wireless set to be installed in the workers' canteen and of the recent increase in the salary of the Managing Director and so on, all of which would directly affect the price of cotton he has supplied, not to mention his anxiety for the maximum selling price of cloth and the satisfactory salesmanship of the cloth merchant He gets into conflict with the management so much as to find himself in the role of a villian, giving apparently justifiable reasons for the accusations of the Trade Union and the Board of Directors He appears to destroy their independence, initiative and enterprise and creates an atmosphere of distrust and recrimination with visible adverse effects on their efficiency Neither is the farmer happy He fritters away his time and energy in the conflict and has none to attend to his real function--the cultivation of the farm and its protection

All this is as if the very economics is put in the reverse gear ! In the case of the farmer the problem is too simple—fix the farmer's price and pay him off when he supplies his goods Free the farmer and the industry from the "harassment" of each other Then it shall be no more the farmer's worry what wages are paid to the mill majdoors, why stream-lined comforts are provided to the Managing Director or why a superlative service is offered in the majdoors' canteen and so on. He is spared from the odium to which he is otherwise exposed And what is more, he knows the price of the goods as he parts with them and is sure to get it

In the case of the Forest Co-operatives, it would be necessary to study the background against which an abstruse relationship between the Forest Management and the Co-operatives developed somewhat similar to the one between the farmer and the mill The relationship was normal, that of a buyer and a seller, for the first few years of the movement, until 1952-53, when forests were being sold to the Co-operatives outright Certain price was determined once for all, in the beginning, without encumbrances. There



Cross-cutting by means of a semi-circular saw at one of the depc
Forest Labourers' Co-operative Societies, North Thana Divis

lay no pecuniary interest for the Department in the result of the societies' working in the form of a share in the resulting profits or losses There were no Management or Co-ordination Committees with official representation to guard the Department's interest, or to settle the disputes (which in the present circumstances are never settled but multiplied !). Indeed there were few or no disputes to settle, no conferences in which accusations were hurled and motives questioned. Forest Societies were taken for granted, while the Department itself was enjoying the public good-will and trust or suffering the want of them, as much as any other Department of Government.

Then came the first formula like the Satanic apple from the Garden of Eden, because of a feeling that the price fixation as is done for coupes sold in auction was not fair enough No science of Forestry can boast of a method of evaluating a standing forest within a range of accuracy desired in a transaction between the Department and the societies None the less, a formula was evolved providing for joint enumeration of the standing crop and the estimation of the yield and the market price I know of instances requiring arbitration to settle disputes even in the joint enumeration of the trees, to decide if each of the thousands of trees would yield timber or firewood, to count the boreholes in each tree which would render it unsuitable as timber, to decide whether a branch, while yet on a tree, would give a piece of 20½ or 21¼ inches girth, or whether the firewood from some other branches, if and when billeted, would yield 2½ or 2¾ cartloads and so on ! Quibbling and bickering went on for several days with no means of establishing or refuting the contention of either ! An agreement in the joint enumeration was possible only when either representative, the Forester or the Society's agent, "neglected" his work (!) with the consent of

the other and both accommodated each other's "laziness".

This was followed by another venture, the estimation of the price which would prevail months hence of the material yet to be produced ! Neither party knew more than anybody else the real prices, but all *did* know that there *was* a wide scope for disagreement And so there *was* disagreement The third stage of the process, the estimation of the expenditure for extracting the estimated material that inevitably followed, was most hazardous There were such items of expenditure which defied all laws of science or mathematics, say for instance the cost of dragging material from hill slopes and the cost of preparing *kutcha* tracks and repairing roads An agreement on these items was (and still is under the revised formula) regarded as a great event in history, the cause of which none could tell ! When the price of the forest was thus at last evolved, it still had no finality, it was linked up with the results of the Societies working, the Department and the Societies sharing the profits and losses

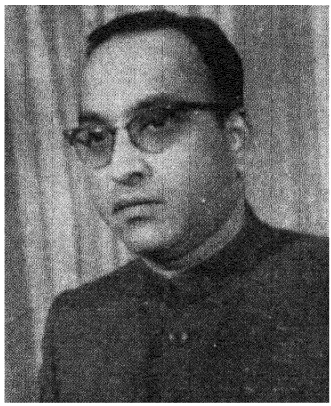
A new era dawned with the arrival of a revised formula two years ago amidst high hopes of ending all disputes So far as these hopes were concerned, this formula became a still-born child With the necessity of the estimation of yield and the market price before undertaking forest exploitation, having been dispensed with a great advance was no doubt made in restricting the scope for disagreements and disputes But in the matter of determination of expenditure method of working, the disposal of the material etc which are an essential part of the revised formula, the scope for disagreement is still wide enough to make it a veritable quicksand of disputes, the Department finding itself in the role of the farmer mixed up with the affairs of the textile mill There are the Managing Committees, the Co-ordination Committees and the Wage Boards with their respective representatives on each of them, advancing their own interests The more the elaboration of the formula, the more the hairsplitting of words and still more the disputes

To offer a neat and final solution to this conundrum is not within the scope of this writing, though I dare say one can be offered It could be a practical solution For this purpose, we may perhaps have to go back from where we started several years ago Let the price be determined once and for all before the forest is handed over to the Societies Let the Societies know the responsibilities of their undertaking Thereafter, it shall not be the function of the Forest Department to question whether the Societies pay high or low wages, whether they strive to get the maximum prices for the goods sold or whether they indulge in mal-practices The responsibilities of the Department would be restricted to enforcing the coupe agreement terms The Societies on the other hand would stand or fall, develop or deteriorate on their own inherent strength or weakness and shall have none but themselves to blame for their failures and pride themselves for their success They would in this process assume greater moral responsibilities and undertake the speculative risk of natural losses which is an essential part of any business adventure instead of attributing losses always to the unfair deal of the Forest Department'

Lastly, let the role of the Forest Department be properly understood and appreciated and let it enjoy the goodwill, trust and confidence of the public as any other Department of the Government so essential for successful Forest Management Most of all, let the Forest Officers be freed from the botheration of the affairs of the Societies so as to permit them time, as well as peace of mind to discharge their real function the regeneration, rehabilitation and protection of forests, so that the Co-operative Movement may prosper with the enrichment of the forest wealth If only in the meanwhile, I succeed in pin-pointing the cause of the malady and exposing the villainy of the formula creating irreconcilable issues and thereby help bringing about better understanding of the problems, I shall not have written these lines in vain

LADIES FIRST !

A Party of Foresters and their wives set out one evening in a car, on a visit to a Game Sanctuary Lo ! and behold they saw a full grown tiger crossing the road, not quite far away The doyen among them said "Come along, let's all have a good look Ladies first ! "



TEAK PLANTATIONS IN MAHARASHTRA STATE

BY

Shri R B KALE

Divisional Forest Officer, Working Plans, Poona

Introduction

TEAK plantations are being raised on a very extensive scale in Maharashtra State As ever before, teak reigns supreme in the field of timber utility on account of its dimensional stability all-round, and its other superior physical properties Evidently it is the most favoured commercial timber in the State and therefore a great source of revenue No little importance is therefore attached to its propagation on as large a scale as possible in our various plantation and afforestation programmes. The present supplies of teak timber in the market are to a great part, from the existing natural stand in forests Though some older teak plantations do exist, large-scale planting of teak has commenced since the last 30 years or so. Teak plantations are raised mainly by way of replacement after felling of the growing stock During the first and the second Five-Year Plans, some special teak plantations have also been raised. The poorer soils and the prevalent arid conditions do not permit raising of teak on a large scale under most of the afforestation schemes. In the teak forests, raising teak plantations is one of the most important and absorbing duties of a forester

The success achieved in raising large-scale plantations of teak has led to an accelerated increase in the annual plantation areas in all the important teak forests. Nearly 45,500 acres of teak plantations have been raised in the past ten years, in Maharashtra State. Of these, more than 28,000 acres have been raised in Thana Circle which is close to the industrial city of Bombay The figures of area planted under teak in each Forest Circle over the last decade are tabulated below.

CIRCLES

	Thana	Poona	Nasik
Area planted under teak in acres in the last ten years.	28467	6392	5207

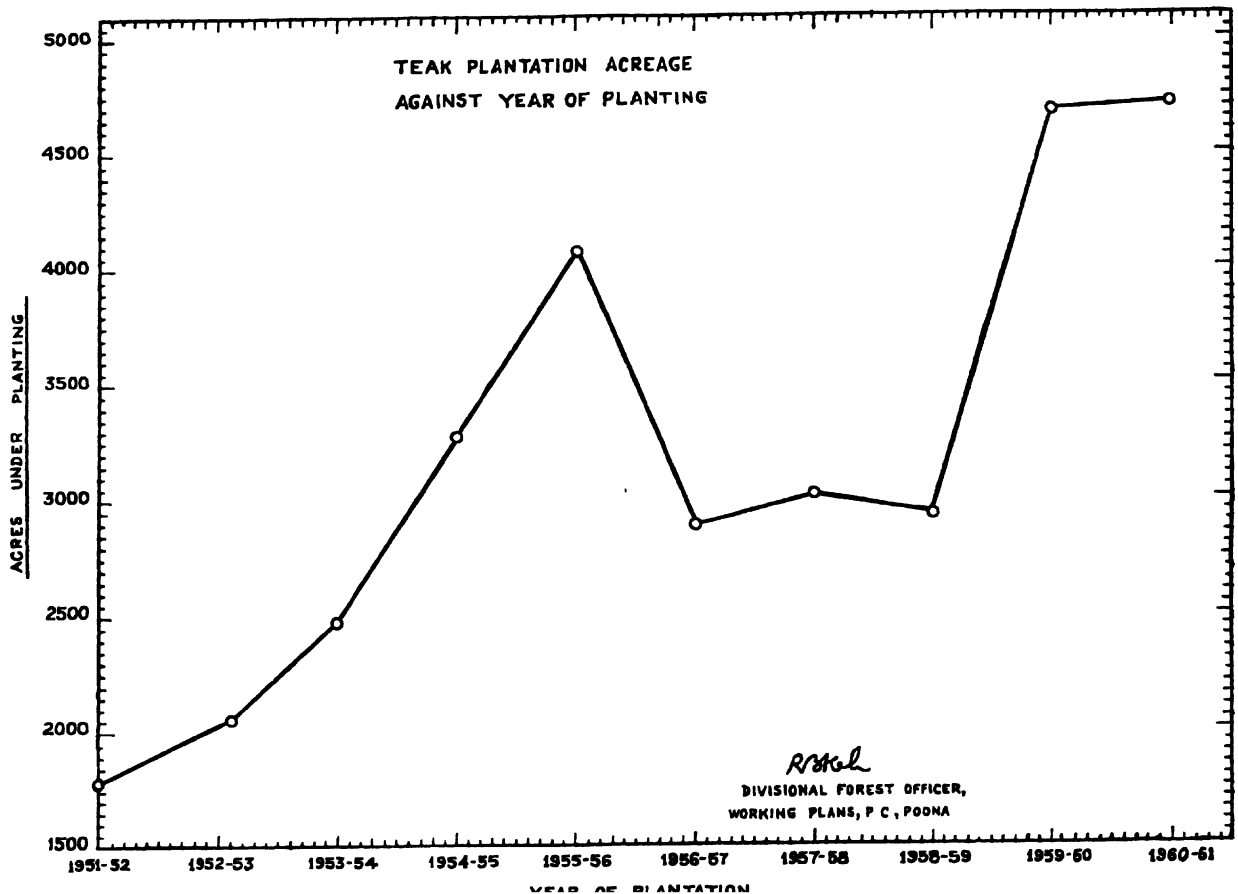
	Chanda	Amravati	Nagpur	Total
Area planted under teak in acres in the last ten years.	3446	1563	336	45411

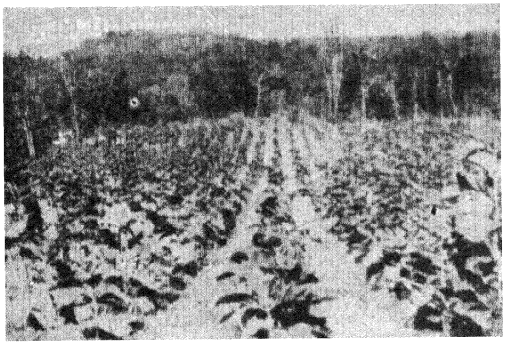
Records reveal that on the whole Rs 22,45,456 have been spent in raising all these plantations bringing the cost per acre to a little below Rs 50 The appended graph showing the acreages annually planted under teak in the State reveals that the plantation activity continued to receive impetus year after year, till 1955-56 which incidentally happened to be the last year of the 1st Five-Year Plan The period from 1956-57 to 1958-59 registered a slight decline. The teak planting efforts have been at their maximum during the years 1959-60 and 1960-61, which were the penultimate years of the 2nd Five-Year Plan.

Teak Forests

Because of its adaptability to wide temperature and rainfall ranges teak occurs in almost all the Forest Divisions of the State Very valuable teak forests are found in Chanda, Thana, Amravati, Yeotmal and Nasik Districts The bulk supply of teak for the production of teak-faced plywood comes from Chanda Forests where large-sized sound teak logs receive fabulously high prices, the highest recorded price being Rs 84 per cft in the round Teak is found on various geological formations

GRAPH SHOWING TEAK PLANTATION RAISED ANNUALLY IN THE LAST TEN YEARS IN MAHARASHTRA STATE.





One year old teak plantation at Jarida with miscellaneous forests in the background Khandu Range, Amravati Division

depending on the depth, drainage, moisture and fertility of the resulting soil. A great part of the teak forests is situated on the two types of rock viz. (1) Deccan trap and (2) Crystalline rocks (gneiss, granite, schist etc) The teak forests in the State fall under the following types according to Champion's Classification of forests —

(1) Southern Tropical Moist Deciduous, and

(2) Southern Tropical Dry Deciduous.

The rotation varies from forty years in the case of the Coppice, to 120 years as adopted in some of the High Forest Systems in Chanda Natural regeneration of teak is generally scanty in teak forests all over, with some exceptions Even in the south-eastern parts of the State where it is fairly profuse over extensive patches, it being inadequate to re-stock the forests fully, large-scale teak plantations become necessary Artificial regeneration of teak is generally resorted to, with the following objects :—

(1) To supplement natural regeneration where it is wanting or deficient.

(2) To enrich the value of forests by replacing the less valuable miscellaneous species by teak, wherever edaphic and other factors permit.

(3) To replenish the vigour of forests languished by repeated coppicing.

Plantation Sites

Teak plantations are raised on well-drained, deep and fertile soils Laterite, poor or shallow soils are avoided After clear-felling and removing the saleable material, the remaining slash and brushwood are evenly spread on the plantation site, allowed to dry and then burnt Although the species can be propagated either by direct sowing of treated seed or by transplanting, the universal method adopted is stump-planting on account of the greater success it ensures particularly in the initial stages of establishment.

Seed collection and treatment

Seed is collected from February to April generally from well-grown selected teak trees. It is treated by one of the following methods :—

(1) **Weathering of the Seed** –Spreading the seed in the open, during the monsoon and turning it over frequently.

(2) **Alternate soaking and drying.** –(a) Soaking the seed in water for 24 hours and then drying for 48 hours in the sun which is repeated for three weeks or more or (b) alternate weekly soaking and weathering done for about 6 weeks in all

(3) **Pit method.** –The pit is filled with alternate layers of seed and straw and watered for seven days and then the seed dried.

The seed treatment virtually removes the hard coat over the seed The treated seed is then sifted and big, clean and heavy seed is selected Germination tests of a representative quantity of teak seed are generally carried out before sowing In Divisions where the plantations are being raised annually for the last several years, generally, the weathering method is adopted for treating teak seed as it is very simple Seed treated by this method is ready for sowing only in the following monsoon. When seed is required for sowing in the same monsoon, the 2nd or the 3rd method of treatment is adopted

Teak nurseries

The treated seed is sown in raised beds of the standard size (40′ × 4′) in nurseries. Soil in the beds is generally dug to about 1′ depth In permanent nurseries the beds are manured In the case of irrigated i e wet nurseries generally one year old seedlings give plants of suitable size for the preparation of stumps In dry nurseries the nursery beds are dug to about 18″ and generally two year old seedlings give plants of suitable size for the preparation of stumps About 400 to 600 stumps of the plantable size become available from a standard nursery bed. When the nursery plants grow to a suitable size, stumps made up of portions of about 6″ to 9″ of root and less than 1″ of shoot are prepared just before planting Stump-planting is done just after the initial showers of the regular monsoons In localities where pre-monsoon showers are almost a regular feature, stump-planting is done immediately after the pre-monsoon showers

commence. Planting is done in crow-bar holes at the standard spacing of 6′×6′ and the earth round the stump is consolidated properly so that water may not stagnate round the stumps. Spacing of 8½′ × 8½′, 9′ × 9′ and 12′ × 12′ have also been adopted for the teak plantations in the past.

Weedings and replacement of casualties

Weedings generally vary with the intensity of weed growth which in turn depends on the intensity of burn and the rainfall Generally three weedings are carried out in the 1st year and soil-working round the plants and mulching are done along with the last weeding Weedings are carried out either in patches to a radius of about 2′ round the plants or in strips. Two weedings are done in the second year generally One weeding is generally done in the 3rd year also When the initial growth is sufficiently fast third year weeding becomes unnecessary and the plantation is merely gone over for climber-cutting in that year

Thinnings

Thinnings mainly depend on the rate of growth and initial spacing. In a fully stocked 6′ × 6′ plantation, the 1st thinning is generally carried out in the 5th or the 7th year, 2nd in the 10th or the 15th year and the 3rd in the 15th or the 25th year. The first and/or second thinnings are mechanical, generally consisting of removal of alternate diagonal and alternate rows The subsequent thinnings are silvicultural thinnings After the 3rd thinning, further thinnings are generally carried out on a ten year cycle, generally up to mid-rotation The formula $D = 3/2(d-3)$ (where 'D' is the spacing in feet and 'd' is the average diameter in inches) is adopted in some localities for working out the spacing for thinnings In some localities the spacing is arrived at by reference to the Multiple Yield Tables for teak for a particular fractional quality In some localities especially the poorer ones, the thinning spacing is adopted at 1/3rd the average height.



Two year old teak plantation Chikalda Range, Amravati Division

Plantation time-table

Though teak plantations have been raised on a large scale for the last several years, it must be said that organising a teak plantation is by no means an easy task. Generally, the seed collected is suitable for sowing after treatment in the 2nd year and the seedlings take one or two years further to grow to a size suitable for the preparation of teak stumps Thus the extent i e the acreage of teak plantations to be raised is required to be fixed for each year's plantations 3 years in advance so as to facilitate the collection of sufficient quantity of teak seed Seed treatment has to be carefully done and the treated teak seed stored in a dry and suitable place Lack of proper supervision in the work of seed collection or seed-treatment sometimes results in insufficient quantity of treated seed or inadequately treated seed stocks for sowing, and may upset the plantation programme Similarly, sowing and weeding in the nursery and planting and weeding in the field have to be carried out at the proper time at short intervals Any delay or inattention in the execution of any of these operations greatly affects the survival percentage and the rate of growth. Quite often adequate labour is not available in time both for planting or weeding as the season coincides with the cultivation of field-crops Organisation of labour therefore forms an important part in the regeneration programme

Protection

Young teak plantations need complete fire-protection. For this purpose, all teak plantations are fire-traced all around by 20′ to 40′ burnt strips Cheetal and sambhar do considerable damage to teak plantations. In certain localities where these are in large numbers, it is a problem for the forest staff to protect the teak plantations and at the same time to enforce all the provisions of the Wild Life Preservation Act Damage by the teak defoliator, Hyblaea puera, and the skeletaniser, Hapalia machæralis, is common, though not alarmist.

Cost of raising teak plantations

The cost on various operations in raising teak plantations varies from place to place depending upon the intensity of works and the

Serial No	Item	Rate	Amount	Total
		Rs	Rs	Rs
1	Collection of teak seed about 1/2 Md	12 per Md.	6	
2	Preparing standard nursery beds - 3 beds	4 per bed	12 00	
3	Support to the nursery beds and sowing	Lump	2 00	
4	Uprooting seedlings and preparation of stumps, 1,210 stumps per acre	Lump	2 00	
5	Clear felling	Lump	15 00	
6	Spreading slash, burning and reburning the plantation site	30 per acre	30 00	
7	Planting 1,210 stakes	6 per 1,000 stakes	8 00	
8	Stump planting	5 per acre	5 00	
9	Weedings, replacement of casualties along with first weeding and mulching side by side with the third weeding	5 per weeding	15 00	95 00 upto the 1st year
10	Weedings and replacement of casualties in the second year	5 per weeding	10 00	105 00 upto the 2nd year
11	Weeding or cleaning in the third year	5 per weeding.	5 00	110 00 upto the 3rd year

efficiency and availability of labour The cost analysis of raising one acre of teak plantation is more or less shown in the above table

Thus the cost of raising a teak plantation is about Rs 95 up to the end of the 1st year of the plantation, Rs 105 up to the end of the 2nd year and Rs 110 up to the end of the 3rd year by which time it can be said to have fairly well established When clear-felling and rabs are got done from the coupe contractors as a work under the terms of agreement, no expenditure is required to be borne by the department on the works mentioned above, at items 5 and 6 In various localities the rabs are got prepared through the coupe contractors and brushwood is got spread evenly and all over the plantation site which costs about Rs 60 to Rs 80 per acre to the contractor In such cases the cost of one acre of the plantation comes to only about Rs 50 to the department up to the end of the 1st year of the plantation and Rs 60 and Rs 65 respectively up to the end of the 2nd and 3rd years The expenditure on the employment of special staff for plantation is variable depending upon the locality and the extent of the plantations

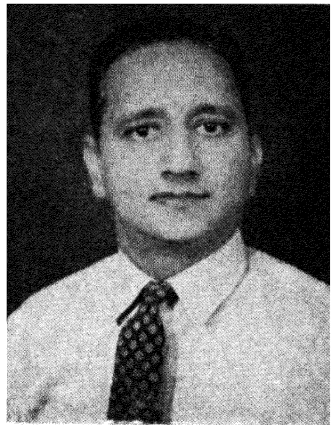
Financial aspects of teak plantations

Efforts on teak plantations have achieved much success As the technique is almost more or less standardised cases of failure are few Teak plantations at maturity are expected to pay a high monetary return even to the tune of Rs 15 000 per acre in good quality areas They, as a matter of fact, start paying intermediate returns from the 2nd thinning onwards Generally by about the third thinning the initial cost on plantations with interest is fully realised and all subsequent revenue from thinnings and final fellings can be considered as net profit Raising of teak plantations is one of the best investments in the forests in India today The demand of timber by future generations is also thereby ensured

Let me look upward into the branches of the towering tree,
And know that it grew great and strong,
Because it grew slowly and will

—HOLBORN

Who ever could make two ears of corn or two saplings to grow upon a spot of ground where only one grew before, would deserve better of mankind.



PLANTATIONS OF ECONOMIC SPECIES, OTHER THAN TEAK IN MAHARASHTRA STATE

BY

G. B DASHPUTRE

Divisional Forest Officer, Bhandara

Summary

THIS article briefly reviews the activities of the Forest Department in the State of Maharashtra in the field of raising plantations of economic species, other than teak Trends in choice of species, espacement, methods and techniques adopted of some important species including measures for protection, etc are summarised The silvicultural and management problems are discussed Items of investigation required to be undertaken and the need for intensification of the effort are indicated

Introduction

During the early years of forest conservation and management in the country, the forester was content to bestow most if not all of his attention on not more than about half a dozen species—often only one or two—in a given locality This was but natural in the circumstances as the demand for timber—practically the only commercially important forest produce then –was very limited and supplies relatively abundant The demand-supply ratio having reversed itself through the years, in the wake of a rapid decrease in forest areas and an immense increase in consumption, the time has come for planning experts to consider seriously measures to save the country from a veritable famine of essential forest products. The fact that, in its natural state, the forest crop is composed of many species of varying degree of utility, and considerable space of the forest floor is occupied by inferior or economically useless species, is of particular import to us in the tropical regions The process of discovering uses for the relatively useless species occurring in natural forests through research in utilisation has been a slow one No doubt, the need for increasing the crop, the proportion of species of known uses and economic value has been recognised and catered for through the Working plans, but the results of the cultural and tending operations which have been chiefly employed to achieve this end, have been necessarily incomplete and extremely slow in attaining Even today, of the total area managed by the Forest Department in the State of Maharashtra, less than 25 per cent consists of forests which may be considered as reasonably productive by virtue of a fair incidence of teak, which accounts for a bulk of our forest revenue The remaining vast forest area needs to be quickly developed by increasing its productivity and value by raising plantations Even though teak is the most versatile and valuable of the timbers, it cannot be grown everywhere –nor is it advisable to do so The growing demands of industries in the rapidly developing economy of the country warrant a bulk production of several other hithertofore uncared-for species The report of Dr Von Monroy is a very clear and convincing exposition, and also a grave warning, of the alarming gaps, between future needs and production trends in respect of industrial wood, pulp, match wood, packaging material, tanning material, wood fuel and other forest products of economic value.

Earlier efforts

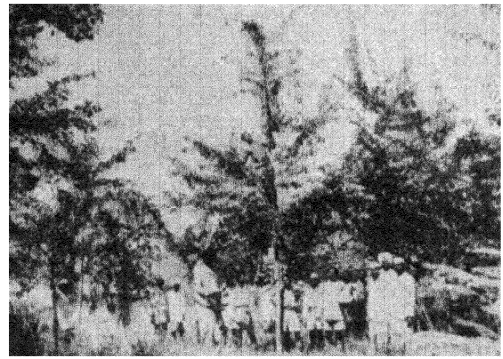
The need for growing valuable non-teak species by creating plantations has not however

been an entirely recent realisation In most States, plantations were started soon after introduction of scientific forestry, though over areas of varying extent The famous Changa Manga Plantations of Punjab were thus started in 1866. In this State, the *babul* plantations of the Loni reserve near Akola date back to 1874 In fact, soon after the publication of Dr Voelcker's report in 1893 raising of *babul* plantations by *agri-silvi* method became a regular feature of management in the Berar plains *Babul* plantations were likewise started in the early years in the Poona division Bamboo plantations were started in the Akola forests (at Yeota) as far back as 1887 Plantations, over small areas, of other species like *khair*, sandalwood, *bija*, *anjan*, etc, have also been raised in various parts of the State in the early years of this century.

During the last decade or so, more sustained efforts at raising plantation of non-teak species of economic value have been made Even though no specific scheme for this purpose was drawn up during the First Five-Year Plan period, several species were raised under the scheme of "Improvement of Denuded Areas" in the Bombay State Under this scheme, species including *khair* and *babul* were raised over an area of 3,436 acres at a total cost of Rs 1 87 lakhs The effort was, however, channelised during the Second Five-Year Plan period, when, under a proper scheme for raising plantations of economic species, targets were set out for raising new plantations of various species like *kaju*, *sawar*, bamboos, medicinal plants, etc, and a phased programme for their creation and maintenance adopted Nearly 10,000 acres of such plantations have thus been raised at a cost of Rs 7·28 lakhs under this scheme in the Maharashtra State.

Choice of species

During the pre-war period, the choice of species to be raised under the normal plantations was almost entirely limited to teak But a very wide variety of species like *khair*, *siwan*, *neem*, *karanj*, *amaltas*, *shirish*, *mahua*, *kashid*, etc were raised in the arid and open tracts as a part of soil conservation and afforestation measures Dibbling of sandal wood was also done over fairly wide areas in various divisions as a silvicultural operation *Babul* continued to be raised in the Poona division and in the plains areas of the Berar divisions. Considering its immense utility to the farmer and its general importance in the agricultural economy of the rural community, the choice of this species was indeed very sagacious There has, however, been a brief period in the recent past, when *Prosopis juliflora*, a relatively inferior species, has for no valid reasons, been introduced in the areas capable of growing *babul* successfully Similarly, *kashid* was favoured because of the ease with which it could be grown in arid regions and was thus commonly raised in the afforestation areas as well as in the compact plantations as in the Parvati Kuran area near Poona and at Jalna in the Aurangabad division, inspite of its poor utility



Two year old Sisoo plantation at Khadus, Malshiras Range, Satara Division—Sholapur District

During the post-war period, the realisation of acute shortage of fuel and fodder species and of the need for conserving cowdung for food production, gave an impetus to plantations of various species like *khair*, *anjan*, *Prosopis shirish*, *neem*, *kanchan*, *kashid*, *sissoo*, *siwan*, *karanj* etc Some species of potential industrial value like *rosha*, grass, bamboos, *sawar* etc were also raised, but over very small areas only

During the First Five-Year Plan period, soft woods came to be favoured in the plantation programmes in Vidarbha *Sawar*, *siwan* and *Ailanthus sp* thus represented the main choice In western Maharashtra, apart from fuel and fodder trees which continued to be raised under the afforestation schemes, *kaju* was raised in many places mainly by the *agri-silvi* method This latter species received a significant boost during the Second Five-Year Plan period and was raised over an area of 6,280 acres out of the total of about 10,000 acres brought under non-teak plantations during this period in Maharashtra The cost incurred over raising *kaju plantations* during this period was Rs 5 32 lakhs

One of the reasons for thus favouring *kaju* was its eminent suitability for colonising denuded areas. Big stretches of such areas occur in the foothills of Sahyadris and present a serious problem of rehabilitation The *kaju* here serves the duel purpose of reboising the degraded forests and ecuring, fairly quickly, handsome cash returns rom its seed and shell-oil, providing simultaieously an edible product in the form of its pple, for local consumption The weightage iven to this species was thus indeed fully justified. The other species which figured in the State's plantation schemes during the Second Five-Year Plan include *sawar* and other soft woods which vere raised over 3,292 acres at a cost of Rs 1 77 akhs, bamboos and medicinal plants Besides his in the moist deciduous and semi-evergreen ireas of the western ghats, evergreen species ike *jambul, lurda, nana* (*Lagerstroemia lanceolata*), *amba, biju phanas* (*Artocarpus integrifolia*), and *Mesua ferrea* have been raised in ombination with either teak or *kaju*

Techniques

The plantation techniques including espacement and other relevant matters as adopted at present in the State are summarised below in espect of some of the important species - -

(*i*) *Sawar, Anlanthus sp., siwan* Experiments on various methods of raising these species were carried out from 1948-49 to 1951-52 in he Old South Chanda Division The methods ried were as follows -

Sawar—

(*i*) (*a*) Sowing in continuous and interrupted trenches on berms of trenches, in ploughed plots, in drill-holes, and in soil worked pits

(*b*) Transplanting one year to 15 months old nursery seedlings

(*c*) Root shoot cuttings from nursery seedlings

(*d*) *Dona* transplants

(*e*) Root cuttings.

(*ii*) *Ailanthus sp* – Sowing in soil worked pits

(*iii*) *Siwan* —(*a*) Sowing in pits

(*b*) Root shoot cuttings from nursery seedlings

The experiments indicated the following methods of raising these species as most successful —

(*i*) *Sawar* —Root shoot cutting

(*ii*) *Ailanthus sp.* -Direct sowing in soil worked pits

(*iii*) *Siwan* —Root shoot cuttings

Sawar is usually planted at 36′×36′ and the other two species at 6′×6′ espacement The most convenient plan is to plant *sawar* at every seventh stake in the *siwan* or *Ailanthus* plantation Initially a mixture of *Ailanthus* and *siwan* by alternate lines or small plots was tried, but it was soon realised that owing to a significant difference in the rate of growth of the two species the mixture would present a serious management problem in future and hence the two species are best raised in separate areas

The raising of *sawai* often entails the problem of protection against porcupines in many areas The use of a general porcupine-proof fencing is ruled out on account of its prohibitive cost Various trials to test the efficacy of inexpensive individual "cages" made out of split bamboos, pot-tiles and mesh wires stretched between stout wooden pegs were therefore conducted and it was found that 18″ high triangular split bamboo cages made by driving pointed bamboo splits about one foot into the ground were the cheapest and most effective Where *siwan* is planted in areas teeming with deer, a general fencing is also necessary since the young plants are liable to be browsed and trampled In fact in the Dhaba range of the old South Chanda division, the *chitals* had taken to browsing even *Ailanthus* species so that a general bamboo fencing had to be made a rule for all the soft wood plantations in that locality Another problem in the raising of *sawai* is its susceptibility to the shoot borer *Batocera rufomaculata* Careful watching, timely collection and destruction of the grubs and prophylactic spraying are necessary to guard against this pest in the young plantations

Kaju –The common method of raising the species is by direct sowing of seed in soil-worked pits Most of the earlier plantations were raised by the *agri-silvi* method wherein *kaju* seeds were dibbled at six to ten feet interval in lines 12 to 20 feet apart as in Chandgad range of Kolhapur division The espacement has since been altered and in most of the areas it is 20′ × 20′ Pits 1 to 1½ feet cube are made and refilled with weathered soil The dibbling method has the disadvantage of the cotyledons being liable to be eaten away by rodents, monkeys and even man Transplanting two months old seedlings grown in polythene bags has therefore been found more advantageous The latter also gives a better start to the new plant Particularly in the areas along the high ridge of the

Sahyadris exposed to very heavy rain-fall and a persistent monsoon fogs (as in parts of the Chandgad and Malkapur ranges of Kolhapur or the Ghoda range of Poona Divisions) where considerable mortality occurs by etiolation and damping-off, the polythene bag seedlings are likely to withstand the adverse climatic conditions better

Bamboo (*Dendrocalamus strictus*)—While the best method of raising this, is from one to two year old nursery transplants, the technique in respect of the intensity of soil-working, espacement, tending etc is yet to be finally evolved The method currently followed in the Nagpur Circle is transplanting seedlings when they have attained a height of about 9" to 1' in 1'×1'×1' soil-worked pits at 25'×25' spacing, in open forest areas

Sandalwood The following methods are commonly adopted -

The *chandan* seed is soaked in cold water for about 12 hours, and then depulped by hand Seeds of normal size which sink in water are sorted out and stored in air-tight tins after mixing with clean river sand The sowing is done at the break of monsoon

(*a*) *Sowing in extraction pits* (From where stumps and roots of sandal trees have been uprooted and removed) The pit is filled up with good soil to form a seed bed The bed is then lined with small stones if it is on sloping ground Along with *chandan* seeds of primary hosts like *mada* (*Calotropis gigantea*) or *dhal* (*Cajanus indica*) are sown along the edges of the pits The seeds are then covered with soil and a loose layer of dead leaves or grass, in order to prevent squirrels and rats from destroying them

(*b*) *Bush planting*—Dibbling is done in soil-worked patches (about 9" × 9") in the midst of bushes or thickets This is a convenient and less expensive method of introducing the species in new areas Soil-working is done in the midst of bushes and thickets in good time before the break of monsoon The north-eastern side of the bush is preferred for sowing the seeds In selecting spots for sowing in this manner in new areas, care is taken to see that the espacement of resultant sandalwood stocking would be near about 20' × 20'

(*c*) *Polythene bag planting*—There is no special advantage in this method and the extra cost is not justified.

(*d*) *Agave*—The species preferred are *Agave sissalana, A Americana, A Cantala, A rigida, Var elongata* or *A veracruz*, though the one commonly raised is A *cantala* The current practice is to plant at 2' intervals in three raised rows, 3 feet apart Plantation is raised either from suckers after removal of the side-roots and leaves, or from 1 to 2 year old nursery transplants raised from bulbils The bulbils are collected when they begin dropping down from the flowering shoots and then planted in nurseries in lines 9" apart They are ready for transplanting when they are about 12" high and have four to eight pairs of leaves

Babul The *agri-silvi* method of raising this species has been standardised Seeds which have passed through the intestines of goats are known to give best results The sowing is done in lines 12 to 20 feet apart and the lessee is allowed to cultivate the intervening space for a period ranging from 2 to 5 years Care is required to be taken to ensure that the seeds are from the correct variety (viz *telia* or *godi*) of *babul* The young plants need attention from the third year onwards by way of spacing out in conjested lines, climber cutting and cleaning It is in the young stages that the *babul*--borer *Coelosterna scabrator* attacks the plants

Prosopis juliflora is often grown in intimate mixture with *babul* Wherever this is done (e g in Poona division), the former soon overtakes the latter and creates a management problem *Babul*, though slow grown, is a far more useful species than *Prosopis juliflora* The latter should be avoided where the soil is capable of growing the former

Other species—Almost all the firewood and fodder species commonly raised in the arid areas for afforestation purposes come up well from direct sowing in intimate mixture These include *khair, siris, neem, anjan, sisoo, karanj, Prosopis spp, Glyricidia maculata*, etc

Trials so far carried out indicate the following as the best methods of raising some of the other species which are commonly raised in the moist deciduous to semi-evergreen zones in the State - -

(a) *By transplanting hirda, karanj, shisham, bija, nana, jambul*

(b) *Direct sowing or pot planting* - *phanas, karanj*

(c) *Pot planting Mesua ferrea, amba*

The Future Programme

The Third Five-Year Plan programme of plantations of economic species envisages the raising of *Eucalyptus spp, sandalwood, khair,*

sawar, several oilseed-bearing trees, *shikekai*, nutmeg, bamboo, rubber, *kaju* etc Some of the targets are as follows —

	Acres		Acres
Kaju	4,360	Oilseed-bearing species	180
Sandalwood	1,000	Rosha grass	400
Khair	1,000	*Agave spp*	5,000 miles
Bamboo	30,000	*Shikekai*, nutmeg, rubber, etc	200

The number of permanent nurseries in the various forest divisions where the plantations will be raised is also planned to be increased to produce the required planting stock

It will be seen that the programme aims at stepping up production of the raw material to cater to the industries like paper and pulp, match wood, rubber goods etc In the context of Dr Von Monroy's report, the plan has to be considered as only a modest one The problem of forest resources is a serious one and calls for an ambitious programme The limited finances of the State however preclude this possibility Perhaps the scheme of integrated planning of forestry and forest industries as is currently being considered by the Central Government may provide an impetus and also the means to take up the work on a large scale Meanwhile, at the State level, the department has to do every thing possible to push through the programmes on hand to successful completion In this regard, a few suggestions to improve the performance and achieve better results may not be out of place

Research The slow-growing species being raised in our plantations need to be replaced by fast-growing ones of economic value like *Kydia calycina*, reeds, *Eucalyptus spp*, *Melia composita* etc Some non-indigenous species like rubber (*Hevea braziliensis*), *Dysoxylum malabaricum*, *Machilus macarantha*, *Amoora wallichi* etc need to be introduced as a trial in suitable localities in the semi-evergreen forests, with a view to increasing the productivity of the forests in the western ghat regions Our knowledge of the best methods of raising medicinal plants like *Rauwolfia serpentina* is far from complete A comprehensive research programme for evolving and standardising the planting techniques and nursery practices of all these species is therefore necessary Special research nurseries and research gardens need to be set up for this purpose The determination of the optimum periodicity and intensity of thinning operations in the various plantations will form an item of research in the later stages.

Interplanting (*i*) The space left between the plants in the case of *kaju* which is usually raised at 20′ × 20′ could be usefully utilized by planting wherever possible, a suitable variety of *Eucalyptus spp* in quincunx *Hirda* is at present being planted in some areas in this manner *Eucalyptus spp*, where it can be grown, should be preferred as it is fast growing, grows straight, and has a narrow, and a light crown

(*ii*) In most of the *babul agri-silvi* areas after the lessee has left the regeneration plot, the intervening space is quickly overrun by rank weed growth of *gokru*, *tarota*, etc The space should be utilized by sowing seeds of grasses of high fodder value after ploughing The utility and productivity of the *babul* areas could thus be increased immensely Similarly, in most *agri-silvi* regeneration areas in the western ghats, the intervening space which otherwise supports only *Strobilanthes sessiles*, *Lasiosiphon eriocephalus* and *Lantana camara*, can be utilized by planting a row of *Eucalyptus spp* of a suitable variety

Administrative Matters —(*i*) *Rates* —For raising plantations under various schemes, rates for each item of work have been laid down Though rates are fixed as reasonably as possible, they do not necessarily conform to local conditions everywhere The executive staff entrusted with the work is often handicapped as in some items the rate is inadequate though in some others it may be rather liberal To fix the rates on a rational basis, actual statistics of outturn could be usefully collected periodically, and after taking into account all other relevant data, a set of rates worked out for each Circle in the State This could best be done by an independent organisation under the Statistician, Silviculturist or the

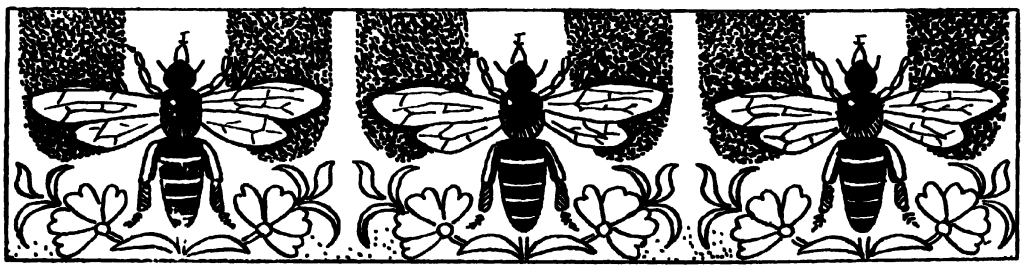
Forest Utilization Officer If the rates are not adequate, there is always a possibility that important operations like weeding, casualty replacement etc may not be done, thoroughly, especially in more inaccessible areas, some of which inspecting officers may not be in a position to visit at the proper time

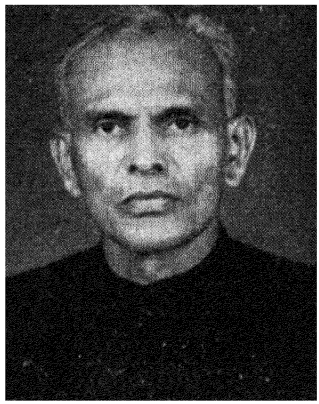
(*ii*) *Road*—It is suggested that while framing the estimate of cost for plantations, some provision should be made for making an approach road and in the case of bigger plantations, for inspection paths for the proposed plantations If the plantations are to be tended regularly and if they are to produce a reasonable yield in future, the areas must be rendered accessible with sufficient ease The road intensity in our forests at present is, for practical purposes nil, as compared, for instance, to an average of 8 miles per square mile of forest in the U K Though the general development of communications does not fall within the scope of our plantation programmes, there should be no hesitation to make approach and inspection roads on an *ad hoc* basis in plantation schemes.

(*iii*) *Management of kaju farms* In some of the earlier *kaju* plantations trees have started fruiting There is no comprehensive record of the old *kaju* plots and the number of trees which have established and started yielding fruit The big areas planted with this species during the Second Five-Year Plan period, will also before long, start producing fruit in quantities It is therefore necessary to organise efficient utilisation of the products from all *kaju* plantations, old and new, in a systematic and economic manner, or else much of the produce will be pilfered and wasted It is suggested that inventories be prepared for each division and suitable exploitation units be formed It may be necessary to provide some staff for protection and tending of trees, for guarding the produce, for its collection grading and marketing

In every wood there is no lack of trees,
To give me of their fruits, to shade the sun,
To clothe me in soft bark, and there is none,
To say me nay And here are harmonies,
Of cascades cool and sweet, I bathe in these,
And drink And in the evenings there is One
Whose silence signs His mighty orison.

—BHARTRIHARI.





BABUL "BANS" IN VIDARBHA

BY

J. C SARWATE

Divisional Forest Officer

Amravati

Introductory

BABUL "bans" are the artificially raised forests of babul varying in extent from 5 acres to 50 acres containing an almost pure crop of babul (*Acacia arabica*) These Babul "bans" are scattered over the 5 talukas of Amravati Division and are surrounded by intensively cultivated areas of the plains In some places, neem (*Azadirachta indica*) forms an important mixture with babul The quality of growth varies with the nature of the soil Many of these Babul "bans" are situated on the nala or river banks They play a very important role as stabilisers of the surface soil and are very useful in conserving the sub-soil moisture They meet the immediate require ment of small timber and fuel of the agricultural population, and in addition supply fodder and cater to grazing. The total area under the Babul "bans" is 9,935 acres 25 gunthas

Objects of Management

The main objects of management of the areas under Babul "bans" are—

(1) to preserve these forests in a normal condition with the object of preventing erosion

(2) to manage these forests so as to obtain the maximum possible sustained yield.

(3) to meet to the extent possible the local demand of small timber, firewood, other minor forest produce, grass and gazing, and

(4) to improve the stocking and quality of the tree crop and grass.

Method of treatment

Most of the areas regenerated successfully in the past contain a good crop of babul, neem, vilayati babul (*Prosopis juliflora*) and anjan In the Working Plan recently revised for the Plain Forests, more areas suitable for the plantation of babul have been included The total area of the working circle is 9,935 acres 25 gunthas It is divided into 14 felling series A rotation of 30 years is fixed and each felling series is divided into 30 equiproductive coupes. The yield is regulated by area The silvicultural system adopted is clear felling with artificial regeneration under the agri-silvicultural method As a coupe falls due for working, it is surveyed and the stock map and soil map are prepared The species to be planted are then prescribed depending upon the suitability of the soil Babul is planted in deep soil In inferior and shallow soil, neem, vilayati babul, anjan, and hiwar are planted The growth along the nala is reserved Along this strip, bamboos are invariably planted.

The growth to be felled in a coupe is marked and the area is sold by auction on a lease for 3 years In the first year, the lessee fells and uproots the tree-crop The debris is collected and burnt and the area is thoroughly ploughed and cross-ploughed The lessee is allowed to sow the crop of his own choice in the first year In the second year, forest crops are sown in lines as prescribed in the treatment map The seed of the species to be sown is supplied by the Forest Department The lines of the forest species are kept 18′ apart and leaving 2′ on either side of these lines, cotton crop is allowed to be grown in between them Weedings and replacement of casualties are carried out by the lessees under departmental supervision In the third year the lessee continues to raise the agricultural crop along with tending of the lines of the forest species, weeding and replacement of the casualties if any

The plot remains with the lessee for a period of three years after which it is taken over by the Forest Department At the end of the lease period, the lines are well established with the plants as high as 1′ to 1½′ The coupes regenerated are closed to grazing for a further period of 5 years.

In between the lines of the forest species, good quality fodder grasses are introduced and the area is sold to the Gram-Panchayat on a fixed upset price

The crops are tended at the age of 5, 10 and 20 years, in which cleanings and thinnings are carried out departmentally The produce obtained is sold to the local population for their "nistar" requirement

The crop is ready for final felling in the 30th year

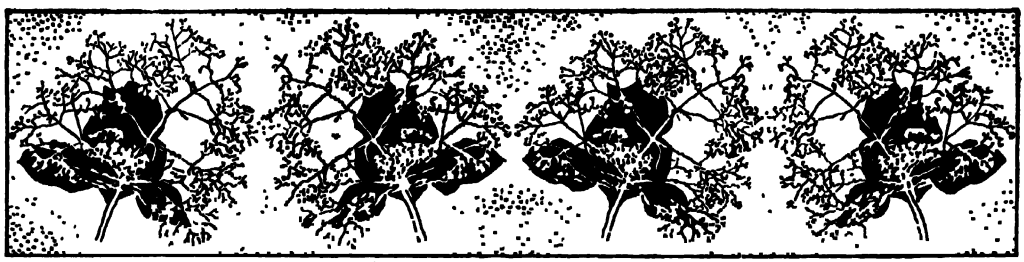
The Berar plains are intensively cultivated The climate is dry and the region has a prolonged hot weather The hot winds blowing over the area, cause a desiccating effect

A great necessity is felt of creating blocks of forests in between the cultivated areas of the plains which will act as shelter-belts and save these lands from the ill-effects of desiccation and wind erosion These belts of forest serve to moderate the rigour of the hot summer The village wood-land scheme is introduced with this object in view The other object of this scheme is to make the villagers self-sufficient in regard to their local needs of small timber, firewood and grass The availability of cheap fuel at hand could save the burning of cow-dung and divert it for use in the fields The Babul "bans" are carefully preserved and are a great asset in improving the agricultural economy of our country There is an urgent need for extending them in suitable areas all over the State so that we could become self-sufficient in food, wood and fodder

Answers :—

(1) FACTORY	(2) ORATORY	(3) ROTARY
(4) ENTRY	(5) SENTRY	(6) TRINKETRY
(7) COMMENTARY	(8) ELEMENTARY	(9) NOTARY
(10) TAPESTRY	(11) EVOCATORY	(12) NUGATORY
(13) ARTISTRY	(14) REFRACTORY	(15) YEW.

"Which weeds are easy to kill ?" asked the Beat Guard of the Forester. "Widow's weeds" replied the Forester "You have only to say 'Wilt thou' and they wilt".





FARM FORESTRY

BY

M K CHITRE

Forest Officer, on Special Duty, Poona

Farm Forestry and its benefits

TO put it in the words of Dr Randhawa, Vice-President of the Indian Council of Agricultural Research, New Delhi, Farm Forestry means an integration of farming, with forestry practices on the farm, to the benefit of agriculture It does not mean forest tree-culture at the cost of agriculture The concept in his opinion originates from the realisation that trees play a vital role in safeguarding the long-range interests of agriculture and in making agricultural economics viable.

The idea of farm forestry is not new to our country It is being practised by the villager on his farm since times immemorial You will, along the bunds of his fields, see some mango trees, bhendi (*Thespesia populnea*) trees in the Konkan region, bamboos near watering places, babul in fields with black cotton soil and so on Even now, there are various regions in the State of Maharashtra, where farm forestry is followed by the villagers for their own interest For example, parts of Yawal and Raver Talukas of Jalgaon District, parts of Barsi Taluka of Sholapur District, almost all Konkan region comprising Thana, and Ratnagiri Districts, Shirval, Nasarapur and other parts of Maval region in Poona District, almost all upghat regions of Satara, Sangli and Kolhapur Districts etc., reflect the "farm forestry sense" followed by the villagers in their farms These villagers thus know that the practice of farm forestry helps conserve soil and moisture increase food production and provide his basic agricultural and domestic requirement of small timber and fuel In short, Farm Forestry makes the individual farmer self-sufficient on his farm This farm forestry sense is however not developed all over the country In our State itself, we find long stretches of black soil farms where not a single tree is seen within easy reach to take shelter or rest There is again another snag. Even the villagers who have taken to farm forestry on their fields, do not follow it scientifically. The scientific practice of farm forestry is thus of immense importance to us in India as a whole and in Maharashtra in particular.

Evenly distributed tree-growth on farms is like a foster-mother to agriculture This is particularly true in inhospitable and dry climate Tree growth in such cases conserves soil-moisture, increases atmospheric humidity, protects field crops against the scorching and desiccating effects of winds and generally makes the climate more equable and pleasant, thereby stepping up agricultural yields To achieve these results, protective tree shelter-belts and wind-breaks are created on farms In addition to the amelioration of adverse climatic conditions, tree planting under the farm forestry programme is necessary to ensure readily available and adequate supplies of cheap fuel-wood in the villages, so that the valuable cow-dung which is still being burnt on a large scale in the village hearths could be released for use as farmyard manure—its rightful place This pernicious practice of the dissipation of cow-dung in the hearths is virtually therefore none the less egregious than the burning of food grains Farm Forestry has besides many other benefits to offer Timber and fruit are derived from trees like mango, bor, jambul, chinch, jack, date and coconut palms etc., which can be grown on the intercultivation ridges Light-crowned and deep-rooted species are favoured as they scarcely interfere with the crop-yields Farm Forestry will also mean a much higher yield of grazing and fodder from the waste lands and land not under cultivation This in turn would release a part of cultivated areas now used, for raising

fodder crops and result in increased supplies of dairy and other animal products.

The steps taken to develop Farm Forestry

Due to the phenomenal increase of population in the country, the pressure on the existing forests in the form of meeting the various privileges of the local populace has risen enormously Since there is hardly any scope to increase the area under forests, due to the present acute land-hunger, the only alternative to develop forests for the need of the general public is to practise farm forestry on the available waste lands, individual farms, river and stream banks, road sides etc.

With a view to educate the rural communities in the scientific practice of farm forestry, a Farm Forestry Demonstration Centre at Deulgaon, Taluka Shrigonda, District, Ahmednagar, was opened in 1958 A plot of 91 acres was taken up under this scheme and 25 acres out of it were assigned for the production of fruit trees and timber and firewood species, by splitting it up into 5 parts of approximately equal size The part with the best soil was planted up with fruit trees, the second part with reasonably good soil was planted with timber species, the third part with comparatively poor soil, with fuel species, while the fourth and the fifth parts containing poor soil were allocated to the production of fodder grasses one for obtaining grass by cutting and another for grazing cattle The remaining area of 66 acres was divided into six equal parts and contour bunds on the pattern adopted by the Soil Conservation Section of the Agricultural Department were prepared in consultation with that Department On the apex of the bunds suitable tree species were planted at a distance of 12' and on the slopes, Rosha and Sabai grasses were introduced In the intervening space in this area, various agricultural crops were sown and later harvested Along the periphery of the plot, Agave was planted on a flattened berm alongside of trench in three rows 2 feet apart, the distance between the two plants being 2' Apart from serving as a live hedge, it provides a sustained yield of fibre which could be utilised for rope-making, cordage etc, on a cottage-scale It will therefore be seen that farm forestry plays a vital role in the economy of the rural communities and a concerted effort on the part of the villagers will go a long way in bringing prosperity to the village.

Besides the above, the State has opened Soil Conservation Demonstration centres in some parts of the State in the vicinity of villages and towns which has among its objects the following, as help to enthuse the public to develop farm forestry .—

(*i*) to demonstrate to the local populace, the beneficial effects of soil conservation measures and periodic closure, in arresting soil run-off, in restoring the land to its productivity and also in enriching its fertility in due course

(*ii*) to augment the supply of small timber, fire-wood and pasture, to meet the basic agricultural and domestic requirements of the farmer

The following operations are undertaken at these Centres

The entire area is closed to grazing for a period of 5 to 10 years from the commencement of works At the end of the 4th year, the question of continuing the closure, beyond 5 years is reviewed and if necessary, the period of closure is extended Various measures to improve the soil, such as digging staggered contour trenches, erecting contour furrows and bunds, gully plugs etc, are taken Plantation of suitable quick growing species is raised in the trenches contour furrows (uralis) and pits, either by direct sowing, or by cuttings or by transplanting seedlings in polythene bags Various indigenous succulent and nutritive grasses are propagated by tussocks in the intervening space to ameliorate pasture for the livestock Since most of the plots taken up for these Demonstration Centres are surrounded by agricultural fields on all sides, planting of Agave on the entire boundary of the plots is done with a view to create a live-hedge all round Agave is planted in the same manner as indicated earlier

There are thirteen such plots in the State covering over 650 acres Another 650 acres have been kept as Control Plots All these plots fall under the Block areas under the Community Development Programme Some of these plots have proved a great success They have gone a long way in demonstrating to the people the correct technique of soil conservation and the raising of fast-growing species of economic importance

For the above schemes, it is essential that adequate planting stock is made available in a sustained manner For this purpose, the State has established nurseries at various places wherefrom the plants are supplied regularly for planting Two nurseries have been raised, one at Hadapsar, District Poona, with an area of 10 acres and the other at Deulgaon District Ahmednagar with an area of 20 acres Seedlings

of various species are raised and supplied to the Agricultural Department which in turn distributes them to the agriculturists It is gathered from the Soil Conservation Officers, Sholapur and Ahmednagar that there is a great demand specially for the seedlings of sissoo, bamboo and for agave in their regions and the agriculturists are gradually realising the importance of planting trees along their bunds

The Maharashtra State has also attempted farm forestry outside the block areas under the Community Development Programme Under this scheme village woodlands are proposed to be created within the boundaries of the villages on selected areas which generally belong to either of the following types

(*a*) Village waste lands in charge of the Revenue Department.

(*b*) Protected Forests in charge of the Revenue Department provided that they are not covered by any Working Plan or Working Scheme of the Forest Department

(*c*) "Parampoke" (Revenue waste lands of Marathwada)

(*d*) Ex-proprietary lands of Vidarbha Region not taken over by the Forest Department

(*e*) Reserved forests in charge of the Revenue Department such as those in Ahmednagar, Poona, Sholapur and Satara Districts, in case lands under (a) to (d) above, are not available

The cost of planting is estimated at Rs 375 per acre which includes Rs 250 per acre as the cost of fencing and the entertainment of a watchman and Rs 125 for carrying out plantation and other items of works As the Village Panchayats have usually not enough finances to invest in such plantation and the revenue derived is entirely required to meet the usual community needs of the villages, it is proposed to give a subsidy equal to 50 per cent of the cost of the wood-lands development, subject to the maximum of Rs 187 50 per acre or Rs 1,875 per village for 10 acres The subsidy is to be spread over a period of 3 years Twelve Village Panchayats have so far come forward to undertake the scheme over an area of 80 acres and the cost incurred so far is Rs 8,235

In the Block areas also, this scheme is introduced with a little variation In this case, only technical assistance is offered by the Forest Department while a subsidy of Rs 250 per acre subject to a maximum of Rs 2,500 per village for 10 acres is given by the Block Development Officers 50 per cent of the cost of the works exclusive of the staff appointed by the Forest Department is to be borne by the villagers themselves either in the form of 'shramdan" or in cash and the remaining 50 per cent is to be paid as subsidy from the Block Development Fund subject to the above limits Nearly 68 villages have taken advantage of this scheme and the area covered is 1,855 acres Some of these works such as those at Pangari and Surjapur in Barsi Taluka Sholapur District are extremely successful

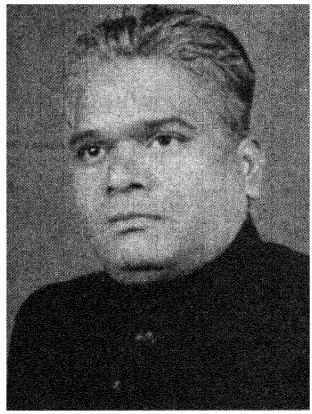
Under the Third Five-Year Plan, this scheme has been made more attractive in that financial assistance will be given in the form of grants to the extent of 2/3rd of the cost of the plantation, and loans to the extent of 1/3rd of the cost of planting and of rearing the trees and grasses A provision of Rs 5 lacs has been made for this scheme under this Plan There is however a great need for audio-visual publicity and personal contact to persuade the average villager to take active interest in farm forestry

From the above, it will be seen that the people have already caught up with the Farm Forestry sense Should this practice spread more extensively over the State, there is no doubt that rural economy will come to establish itself on a sounder basis, every bit of land will come under proper use and the entire village scene which at present makes a sad commentary will transform itself into one of contentment and prosperity

---

A tree is a nobler object than a prince in his coronation robes

—POPE.



Shri J G. Thosre

FOREST SETTLEMENT AND ITS ALLIED PROBLEMS

BY

J G THOSRE

Divisional Forest Officer, Working Plans Nagpur & Amravati, Nagpur

AND

G S CHANDRAS

Divisional Forest Officer, Working Plans Chanda

Introduction

IN 1951, the M P Abolition of Proprietary Rights Act of 1950 (1 of 1951) was passed and all the private forests in the present Vidarbha Region of the Maharashtra State, vested in the State Government To begin with, they were taken over by the Revenue Department and subsequently suitable areas were transferred to the Forest Department for management in accordance with the orders contained in M P Revenue Department No 2249-2826-XII, dated 6th April 1951 and 7177-CR-617-XII, dated 4th December 1951. To empower the forest officers adequately, to deal with forest offences, these areas were declared as Protected Forests Since in Protected Forests nothing was an offence that was not prohibited, it appeared necessary to constitute them into Reserved Forests so as to achieve better control and protection for the introduction of scientific management.

The areas which need Forest Settlement

The total area of ex-private forests taken over by the Forest Department in Vidarbha region of Maharashtra State is 5,808 Sq miles These forests vary in their potentialities from place to place and constitute a considerable percentage of the total forest area The table on the next page gives an idea about the extent of these forests, in relation to the existing Reserved Forests in each Division.

The nature of various rights with which the areas to be constituted into Reserved Forests are burdened

The ex-private forests taken over by the Forest Department fall under the following two categories —

(*i*) *Forest free from rights*—Such forests occur in "Zamindaris" and are known as "Fazil" Forests in Bhandara Division They are free from rights and are more or less similar to Reserved Forests, into which they can be constituted without much difficulty.

(*ii*) "*Nistari*" *forests* These are burdened with numerous "Nistar" and other rights Before these forests were vested in the Government, the villagers used to obtain forest produce such as timber, firewood, bamboo, grass, thorns, leaves, "bakkai" roots, fruits, flowers etc for their bonafide use and grazing for their cattle, from them according to the customs recorded in the "Wazib-ul-urz" or the village administration papers After their vesting in the Government, it was ordered *vide* Revenue Department No 314-CLR, dated 8th May 1961 that the "nistar" rights enjoyed by the villagers under the terms of the existing "Wazib-ul-urz" should not be in any way interfered with or restricted The scale of "nistar" was to be determined by the Deputy Commissioner and taking of "nistar" by villagers in the waste lands of another village was permitted according to well recognised customs

In 1954, "nistar" officers were appointed to enquire into the nature of rights and to allot the areas vested in Government for various village purposes From 1954 to 1956 they carried out enquiries and prepared "Wazib-ul-urz" and "Nistar Patrak" for each village In the "Nistar Patrak", survey numbers allotted for

Serial No.	Name of the Circle.	Name of the Forest Division	Total forest area of the Division	Area declared as Reserved Forest as on 1st April 1961	Percentage of Reserved Forests to the total forest area	Area to be covered by Forest Settlement	Percentage of ex-proprietary forest area to the total forest area	Remarks
			Sq m	Sq m		Sq. m		
I	Chanda	South Chanda Dn	2403	355	14 79	2048	85 21	
		West Chanda Dn	1095	836	76 00	259	24 00	
		East Chanda Dn	1714	421	24 75	1293	75 25	
		Central Chanda Dn	1561	851	54 84	710	45 16	
		Rajura Sub-Dn	292	292	100 00			
		Total	7065	2755	39 00	4310	61 00	
II	Nagpur	Nagpur Dn	882 88	512 11	58 00	370 77	42 00	
		Wardha Dn	333 73	199 78	59 86	133 95	40 14	
		Bhandara Dn	708 75	354 65	50 03	354 10	49 97	
		Gondia Dn	655 06	164 52	25 12	490 54	74 88	
		Total	2580 42	1231 06	47 70	1349 36	52 30	
III	Amravati	West Berar Dn	789 26	744 96	94 38	44 30	5 62	
		Amravati Dn	1428 43	1396 17	97 75	32 26	2 25	
		Yeotmal Dn	1213 97	1141 02	94 00	72 95	6 00	
		Total	3431 66	3282 15	95 65	149 51	4 35	

Total ex-private forests

(*i*)	Chanda Circle	4310	Sq miles
(*ii*)	Nagpur Circle	1349	Sq miles
(*iii*)	Amravati Circle	149	Sq miles
		5808	Sq miles

village site, burial ground, threshing ground, camping ground, bazaar and other village purposes were given Similarly, survey numbers, allotted for grazing the cattle and obtaining timber, firewood, etc were mentioned Wherever the forest area in a particular village was in excess it was amalgamated with an adjoining village which was deficit in the extent of its forest Units formed by such amalgamation were known as *grazing and "nistar" zones* In 1956, when the reorganisation of the States took place, draft "Nistar Patraks" for most of the villages were prepared but the work of their finalisation and final publication remained to be done No progress in this respect has yet been achieved and "nistar" and other rights in ex-private forests are still indefinite

Problems connected with Forest Settlement

The following are some of the important problems connected with Forest Settlement work –

(*i*) *Preparation of maps*—Printed copies of village maps are not available which makes it extremely difficult to prepare maps of the areas to be constituted into Reserved Forests At present, these areas are shown on 16″ = 1 mile "Patwari" maps of which a copy is available only in the Office of the Collectors or with the "Patwari" of the concerned village.

(*ii*) *Verification of the areas* —Since the transfer of ex-private forests by the Revenue Department to the Forest Department was to be completed within a short time, the survey numbers taken over were not verified This work was started by taking up demarcation of the areas as per 'Patwari" maps but so far only a part of the area has been demarcated and verified

(*iii*) *Suitability of the areas to be constituted into Reserved Forests* According to the instructions contained in Revenue Department Nos 2249-2826-XII, dated 6th April 1951 and 7177-CR-617-XII, dated 4th December 1951, it was decided that "nistari" and other large sized ex-private forests forming compact blocks of about 4,000 acres and smaller areas determined by the Collector in consultation with the Divisional Forest Officer were to be transferred to the Forest Department The remaining were to be managed by the Revenue Department as "Rayatwari" forests These orders were reviewed *vide* I and Reforms Department No 3450-2715/XXVIII dated 6th September 1954 which contained the following instructions –

(*i*) "All the former 'malguzari' and 'zamindari' forests, which are contiguous to the Government forests or 'malguzari' and 'zamindari' forests which have been taken over for management by the Forest Department should be taken over for management by the Forest Department".

(*ii*) "All scattered 'malguzari' and 'zamindari' forests which contain valuable timber and which in the opinion of the Deputy Commissioner and the Divisional Forest Officer should be taken over for management by the Forest Department, shall also be taken over by the Forest Department for management".

(*iii*) "All forests which have already been taken over by the Forest Department or which will be taken over in future should be declared as Protected Forests under the Indian Forests Act".

(*iv*) "The forests under the management of the Forest Department shall be subject to the 'nistar' of the villages The 'nistar' shall be regulated in accordance with the scheme prepared by the 'Nistar' Officers The existing arrangement shall be allowed to continue until the problems are re-settled by the 'Nistar' Officers",

(*v*) "The Forest Department shall take over all the forests in accordance with these decisions by the 31st December, 1954 at the latest".

From the above Government orders, it is clear that only big compact blocks or the areas forming compact blocks with the forests under the Forest Department and suitable for protection and management were to be taken over by the Forest Department But actually, numerous small scattered areas were transferred to Forest Department, perhaps, for want of time for verification and due to non-availability of maps to check up whether the areas transferred from the villages were situated in compact blocks or not Therefore it is essential, first to select the areas fit to be efficiently protected and managed by the Forest Department and then to select areas for constituting them into Reserved Forests taking into consideration the various rights which they are burdened with

Proposals as to when and how the Forest Settlement work should start

Under the circumstances mentioned above, before initiating Forest Settlement work the following pre-requisites should be completed –

(*i*) A copy of the 'Patwari" map showing the survey numbers proposed to be constituted into Reserved Forests should be provided to the Forest Settlement Officer

(*ii*) The areas should be verified in the field from the village maps and any encroachment or allotment for cultivation or for other purposes should be found out

(*iii*) Areas fit to be retained with the Forest Department and fit to be constituted into Reserved Forests, taking into consideration the points, namely —

(*a*) the extent
(*b*) situation
(*c*) forest crop
(*d*) rights
(*e*) suitability from the point of view of protection and management, should be selected

(*iv*) "Nistar" enquiries should be completed, "Nistar Patraks" finalised and a copy of the "Nistar Patraks" and "Wazib-ul-urz" should be provided to the Forest Settlement Officer

(*v*) Notification under section 4 of the Indian Forest Act should be correctly issued

After the above maps and records are made available the Forest Settlement Officers appointed would be able to complete Forest Settlement work expeditiously



DEPARTMENTAL WORKING OF FORESTS AND SAW MILLING IN MAHARASHTRA STATE

BY

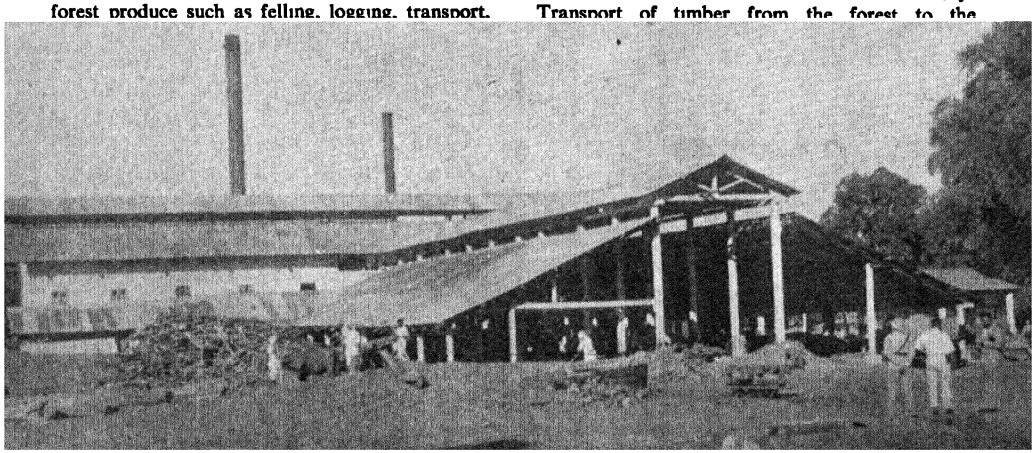
S. M. KALBAG

Divisional Forest Officer
West Chanda

IN the general sense, Departmental Working implies the execution of forestry operations and disposal of forest produce through the agency of the Forest Department In its restricted sense, it is confined to extraction and disposal of forest produce such as felling, logging, transport, grading and sale of timber through the agency of the Department without in any way bringing the middleman in the form of a contractor between the producer, viz. the Forest Department on the one hand and the purchaser on the other

Departmental Working was first confined to the remote but valuable teak forests in the North Kanara and Dangs Districts After the formation of Maharashtra, these areas vested with Mysore and Gujerath States This system has worked well and has definite advantages over outright sale of standing coupes The valuable forests of Chanda District extending over an area of 223 square miles and most of the Melghat area of the Amravati District having very sparse population of Adivasis and other scheduled tribes, are worked in this manner In Chanda Divisions with Allapalli as a hub, and the railhead at Ballarshah, 62 miles therefrom, a well-knit unit of departmental working with the facility of a scavenging sawmill exists

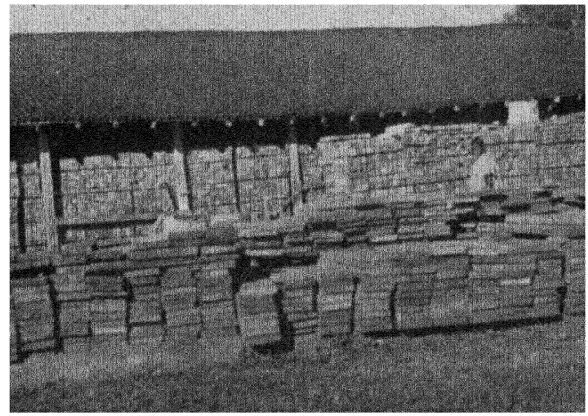
Paucity of labour for departmental working is made up by the formation of Forest Villages or Forest Settlements serving as labour camps. All the forest operations such as felling, logging and extraction to the jungle depots are carried out under the supervision of the forest staff The settlers in these Settlements go to the respective coupes, every Monday and return to their villages every Saturday The trees are felled by means of an axe and their further conversion is done with the aid of a hand-saw In hilly areas the logs are rolled down by manual labour and further dragged by elephants up to the limit where the bullock carts can ply Transport of timber from the forest to the



Government Saw Mill at Allapalli—Central Chanda Division.

forest depots is done through bullock carts. All the large-sized timber is taken in trucks to the Government Timber Depot at Ballarshah about 62 miles distant from Allapalli, through the agency of haulage contractors. The timber is auctioned at Ballarshah, which is attended by big consumers from all over India

The following Statement shows the outturn of timber and the amount realised during the last 3 years —



Storage Shed containing sawn teak timber awaiting transport to Ballarshah Depot.

	1957-58		1958-59		1959-60	
	Cft	Value.	Cft.	Value.	Cft.	Value
		Rs.		Rs		Rs
Teak and miscellaneous .	1,25,644	10,88,990	3,18,288	21,88,952	3,55,832	27,23,440

A brief review of the financial aspect of departmental working is revealing and is summarised below :—

	Round timber	Sawn timber.
	Rs	Rs
Total realisation including sales and closing stock	43,65,435	9,64,062
Expenditure including royalty of timber and depreciation	37,33,830	7,63,562
Net Profit	6,22,605*	2,00,500*

*Total profits Rs. 8,23,105 exclusive of royalty.

Looking to the experience gained in departmental working in these areas over the last so many years as also to the financial results, it seems certain that wherever possible, departmental working will be the only solution for proper exploitation and utilisation of the forest wealth It is more so, for the remote areas containing valuable forests which have remained untapped for lack of communication facilities and dearth of labour due to undeveloped economy and backwardness of the tract

TONGUE TWISTER

If a wood-chuck could chuck wood, how much wood, would a wood-chuck chuck, if a wood-chuck could and would ?

But if a wood-chuck could, and would chuck wood, no reason why he should, how much wood, could a wood-chuck chuck, if a wood-chuck could, and would chuck wood ?

I will make a palace fit for you and me,
of green days in the forest and blue days at sea.

—STEVENSON.



PRATAPSINH PARK, MAHABALESHWAR

BY

T S BORGAONKAR

Sub-Divisional Forest Officer, Satara

Introduction

MAHABALESHWAR is one of the most fascinating hill stations of Maharashtra State and is visited each year by a large number of tourists and distinguished personalities not only from Bombay but also from all over the country It also attracts school children and college students during their academic and pleasure excursions Since the local flora is limited to a few kinds of trees like jamun, hirda, pisa, anjani, etc, there had been a long-felt need to introduce various, suitable ornamental and economic trees both to break the monotony of the indigenous vegetation and also to increase the economic potential of these forests This needed research to find out the species most suitable to the characteristic shallow and lateritic soil and the high rainfall of the plateau Consequently, experimental plantations of various exotic and non-indigenous species were undertaken by the Forest Department since 1943 In order to combine this aesthetic and economic development with the recreation and education of the public, the idea to establish a Forest Park at Mahabaleshwar was first conceived in 1955 by Shri Y B Chavan, the present Chief Minister, Maharashtra State, who was then the Minister for Forests and Local-Self Government. Accordingly a scheme costing Rs. 45,060 and spread over a period of five years was drawn up in June 1956 under the Second Five-Year Plan The actual work was started from October, 1956, and today the Park is five years old

The objects of the Park

The following may be mentioned as some of the main objects of the park —

(*i*) to conduct research on the introduction of various exotic and non-indigenous species of economic and ornamental value,

(*ii*) to break the monotony of the existing limited flora, which consists mainly of hirda, jamun, pisa, gela and anjani, by introducing new tree species of ornamental and economic value

(*iii*) to make the public forest-minded and to inculcate in them the interest in and appreciation of trees, their uses and benefits.

(*iv*) to afford opportunities to school and college students to study nature and the growth of trees

(*v*) to increase the aesthetic beauty of the hill station, and

(*vi*) to increase the recreational value of the hill station

The situation of the Park

The Park is situated opposite the Hindu Gymkhana in Coupe No. 20, Block No 1, overlooking the graceful Vena Lake and has the advantage of a first class tar road leading from the Mahabaleshwar Municipal Naka at Vena Lake to its East, and the metalled Temple Road to its North The area of the Park is 20 acres, and is fenced on all sides. The water pumped from Vena Lake facilitates water supply to the seasonal garden in the Park.

The name of the Park

Mahabaleshwar and its surroundings situated as they are along the Western Ghats and replete with history, have held a privileged place in the Maratha kingdom

In the year 1810, Shahu the Raja of Satara died, and was succeeded by his son Pratapsinh, who not only fought gallantly with the British but was also an enlightened ruler till 1839 when he was succeeded by Shahaji (1839-48), his younger brother Pratapsinh tried his best to regain possession from the British, of the entire

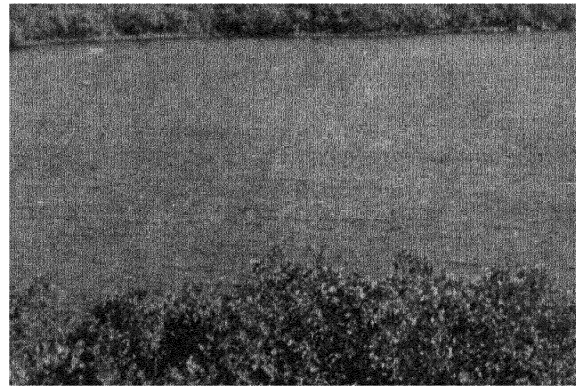
territory which had been under the last Peshwa Bajirao Pratapsinh had made things so hot for the British that the British wanted him to bind himself strictly and in good faith to act up to the articles of 1819. Pratapsinh refused to promise even this. To agree, he said, would lower him to the position of a Mamlatdar. On the 5th September, 1839, Pratapsinh was deposed and the Court of Directors decided to give his kingdom into the hands of the Raja's younger brother, Shahaji

Even the British confess that, "till the end, Pratapsinh's management of the State was excellent" His strength and practical sense as a Governor were acknowledged by all, so much so that they confessed, "his schemes, however unlikely to succeed, were neither the blind folly of an ignorant fool nor the empty aspirations of a visionary".

The Forest Park at Mahabaleshwar therefore was fittingly named as the "Pratapsinh Park" after the great and noble patriot Raja Pratapsinh who ruled the District of Satara from 1819-1839.

The description of the Park

The Park is situated on the South of the Vena Lake along a declivitous terrain on either side of a perennial water-course which flows towards the Vena Lake On its east, it is skirted by the main tar road viz the Mahabaleshwar-Panchgani Road On its west, is the pretty expanse of natural forest leased to the Golf Club On its south-east is the Hindu Gymkhana, while on its south-west is the Hirda Forest Bungalow just a couple of furlongs away. The general elevation of the Mahabaleshwar plateau is about 4,000 feet, above sea level, while the highest point is reckoned to be as high as a little over 4,500 feet The Pratapsinh Park therefore is a hill-station park, blessed with a salubrity of climate of its own, and with plentiful rain which pours well over 200 inches, so conducive to the characteristic evergreen vegetation, the emerald beauty of which enhances the pleasant verdure of the Park Inside the Park, has been laid out, a neat labrynth of walks and winding paths, passing through the luxuriant vegetation of jamun, hirda, ferns and epiphytic orchids festooning the trees, of interest not only to the lover of Nature or a student of Botany or a camera enthusiast, but also to a common man seeking communion with nature in its peace and tranquillity The Park is a spot, radiating charm, all its own, amidst an enchanting idyllic



View of Vena Lake overlooking Pratapsinh Park at Mahabaleshwar– Satara Division

setting, the sweet lilt of melody from the birds, and a pleasing array of multi-coloured flowers

There is also in the Park a natural cave below the old road joining the Vena Lake with the metalled road, which in the primeval times must have been a cherished haunt of a wily denizen of the forest It is now going to be the vicarious abode of an inanimate specimen of a panther which will be the cynosure of many eyes

There are two attractive rustic bridges provided over the nallah, to link the road laid out on the western side of the Park The total length of the roads in the Park is over 1,800 ft. and the width of the roads is 16 ft. There are six walks 6 ft wide with a total length over 4,000 ft

The Park has been divided into various sections both for conducting research for raising economic and ornamental exotic plants and medicinal herbs and also for providing recreational facilities to the public and school children. Thus, there are flower beds, nurseries of forest species and a section of medicinal plants both of local and exotic origin There is a Children's Corner overlooking the Vena Lake with facilities for the children to play and gambol and a row of seats amidst an attractive flower garden, for others A fountain on the lower terrace of the Children's Corner adds to the charm of the place This Children's Corner is virtually thronged by the visitors specially during the May season every year Rustic benches and chairs are provided at vantage points in the Park

A Botanical section is established in an area of 6 acres on the southern side of the main nallah where exotics like cupressus, eucalyptus,

casuarina, pines, jacaranda etc are planted as an experiment

The busts of the late Chatrapati Shivaji Maharaj, the founder of the Maratha Empire and the late Chatrapati Pratapsinh Maharaj of Satara after whom the Park is named, have been installed lately and are an arresting landmark in this Park.

The Forest Museum and Herbarium

A Forest Museum and a Herbarium opened recently in this Park is providing to be of much educative value and interest, to one and all, by way of enlightenment on the various trees and shrubs occurring in the Maharashtra State, and the part the forests play in the economy of the State and of the country as a whole It will thus serve also as a centre for the dissemination of knowledge and information on forestry The Herbarium will serve not only the student of Nature and Botany, but also the common man, in whom the love for nature is nascent but could be activated by a visit to a treasure-house of the like It is hoped that the Pratapsinh Park with its Childrens' Corner, Forest Museum and Herbarium will prove a well-knit centre not only for recreation, but also for the education of the common man, on forests. At present more than 500 mounted specimens of different tree species are displayed in show cases in the Herbarium Various forest products too are exhibited in show cases with a suitable write-up for the benefit of the public. These exhibits are grouped into various categories as have a bearing on large-scale industries, small-scale industries, cottage industries, the forest products of Mahabaleshwar etc so as to present to the visitor in a vivid manner, the utilitarian aspects of the forests which make them a national asset.

The Chief Minister of Maharashtra State Shri Y B Chavan has evinced keen interest in the creation and development of this Park, which can be seen from the fact that though hard-pressed for time he has presided over the inaugural functions on the following occasions :

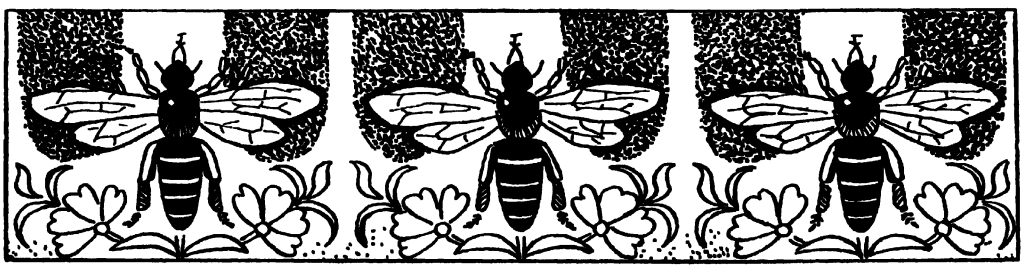
(1) On 8th March 1957, the Pratapsinh Park was declared open

(2) On 22nd May 1958, the 'Balodhyan' was declared open

(3) On 21st May, 1961, the two Statues were unveiled and the Forest Museum and Herbarium was declared open.

The Pratapsinh Park is becoming increasingly popular with one and all and is carrying the message of the forests far and wide May it continue to spread this gospel to preserve our forests to prosperity

So grows a tree,
The bursting of the seed,
The then probing shoot, pale from Earth's darkness,
Curled like a crozier. The sharpness of the bud,
The quick unfolding of the first paired leaf,
So grows a tree,
On which one day a child may sway,
Or lovers carve their names, bright blossoms below,
Or autumn fruit ripen,
A Buddha may meditate under its shade to give Enlightenment to humanity.





TAROBA NATIONAL PARK

BY

J S. BURKULE

Technical Assistant to the Chief Conservator of Forests

THE Taroba National Park extending over approximately 45 square miles is situated in a picturesque country well-clothed with forests, at a distance of about 45 kilometers from Chanda town, which is a railway station on the Central Railway This Park made a humble beginning as far back as in 1905 when as a shooting block it was closed for shooting except carnivora, for which special permits were issued from time to time Since 1931, shooting of all types of game including carnivora was totally prohibited and the area was declared a Sanctuary in 1935. Subsequently along with Kanha area of Mandla District it was declared as a "National Park" by the former Madhya Pradesh Government in 1955

The National Park area is situated in Moharli Range of West Chanda Division The area is plain except for a few undulating hills There is a beautiful lake known as "Taroba Lake" situated in the midst of the park area The water-spread of this lake is about 3000 acres

The Park contains two temples, one of "Taroba Deo" and another of "Maruti". Taroba Deo is worshipped by the local adivasis Though it is a deity of the "Gonds", the villagers of Chanda District and also those of the adjoining districts worship this deity Every Sunday, in the month of "Pausha", a fair is held at Taroba where hundreds of people gather and offer their prayers The water from the Taroba Lake is also taken by the people to sprinkle on their crops as there is a wide-spread belief that by the sprinkling of this water on the crops, the crops remain protected from the attack of insects and fungi

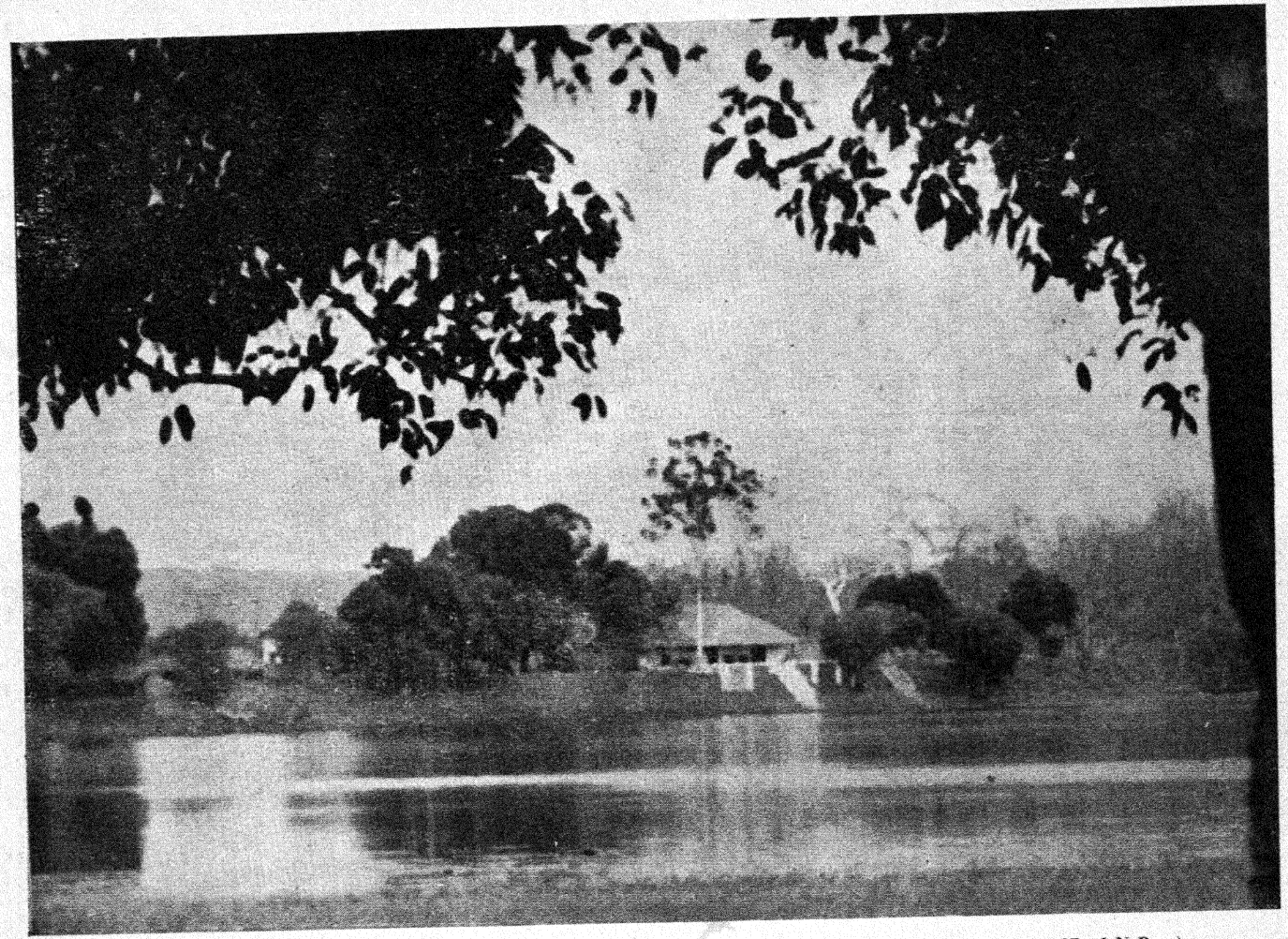
The herds of cheetal, sambhar, bluebull, bison, and bear are often seen in the late afternoon, evening and early morning round the lake The animals may be seen in the grassy area along the nala, below the embankment through which passes the "Cheetal Road". The other animals commonly met with in this National Park are as under —

Common name.	Latin name
Tiger	*Panthera tigris*
Panther.	*Panthera pardus.*
Bison.	*Bibos gaurus.*
Sloth bear.	*Melursus ursinus*
Hyaena.	*Hyaena hyaena*
Jackal	*Canis aureus.*
Wild dog.	*Cuon alpinus*
Bluebull.	*Boselaphus tragocamelus.*
Sambhar	*Rusa unicolor*
Cheetal	*Axis axis*
Barking deer.	*Muntiacus muntjack*
Four-horned antelope	*Tetracerus quadricornis*
Chinkara	*Gazella bennettii*
Hare	*Lepus ruficaudatus*
Porcupine	*Hystrix leucura*
Langur.	*Semnopithicus entellus*

Among the birds, ducks, and teals of several species are found in the cold weather in the tank, together with some snipes (Gallinae spp) Among the game birds, Pea-fowl (Pavo cristatus) and the Grey jungle fowl are abundant, the jungle fowl preferring dense bamboo areas These birds are most commonly seen during the early mornings and evenings just after the sun-rise and before sun-set

In the Taroba Lake proper, there are crocodiles and different varieties of fish During the winter months, the crocodiles can be seen on the banks of the Lake sun-bathing

The Park can be visited during the fair weather, i e, from November to June The best time for observing wild life clearly and fully in its natural habitat, is from February till the onset of monsoon, though the wild life can be observed during other seasons as well, but with some difficulty and inconvenience During the hot-



Taroba National Park with the Forest Rest House overlooking the Taroba Lake—West Chanda Division (through the kind courtesy of Dr. J. N. Berry).

weather, all nallas dry up and Taroba Lake is the only source of drinking water for the wild animals This provides unique opportunities for observing them in their natural state

Inside the Park, there is a net-work of 88 Km of motorable fair-weather murrum roads The one around the Lake known as the Circular Road" is 5 Km in length and completely encircles the lake It is one of the favourite roads of the visitors for observing wild life The new 'Cheetal Road" which crosses many game tracks and grassy lawns has also become quite popular, because of the large herds of cheetal that can be seen along this road Herds of bison are also seen grazing in the open grassy patches

There are four watch-towers (machans) constructed along the edge of the Taroba Lake at four vantage points, where animals often come out for drinking water and for rest Artificial salt-licks have been formed near the Towers to attract wild animals which can be easily viewed from the Towers for long periods to one's heart's content

In order to afford additional protection to the wild animals in Taroba National Park a buffer zone of 22 square miles has been left around where shooting of wild life is totally prohibited In order to regulate vehicular traffic and control poaching two gates have been erected one at Khatoda on Chanda-Taroda Road and another at the forest village, Ramdegi on Moharli-Khadsingi Road Visitors intending to visit the Park are not permitted to carry any fire-arms or ammunition in the Part and are required to deposit fire-arms they may have, with the Guards at these checking posts Besides these measures, there is a jeep provided to check and detect poaching if any, in and around the National Park A Park Officer and a Park Guard are stationed at Taroba to look after the wild animals They also guide and help the visitors in the Park

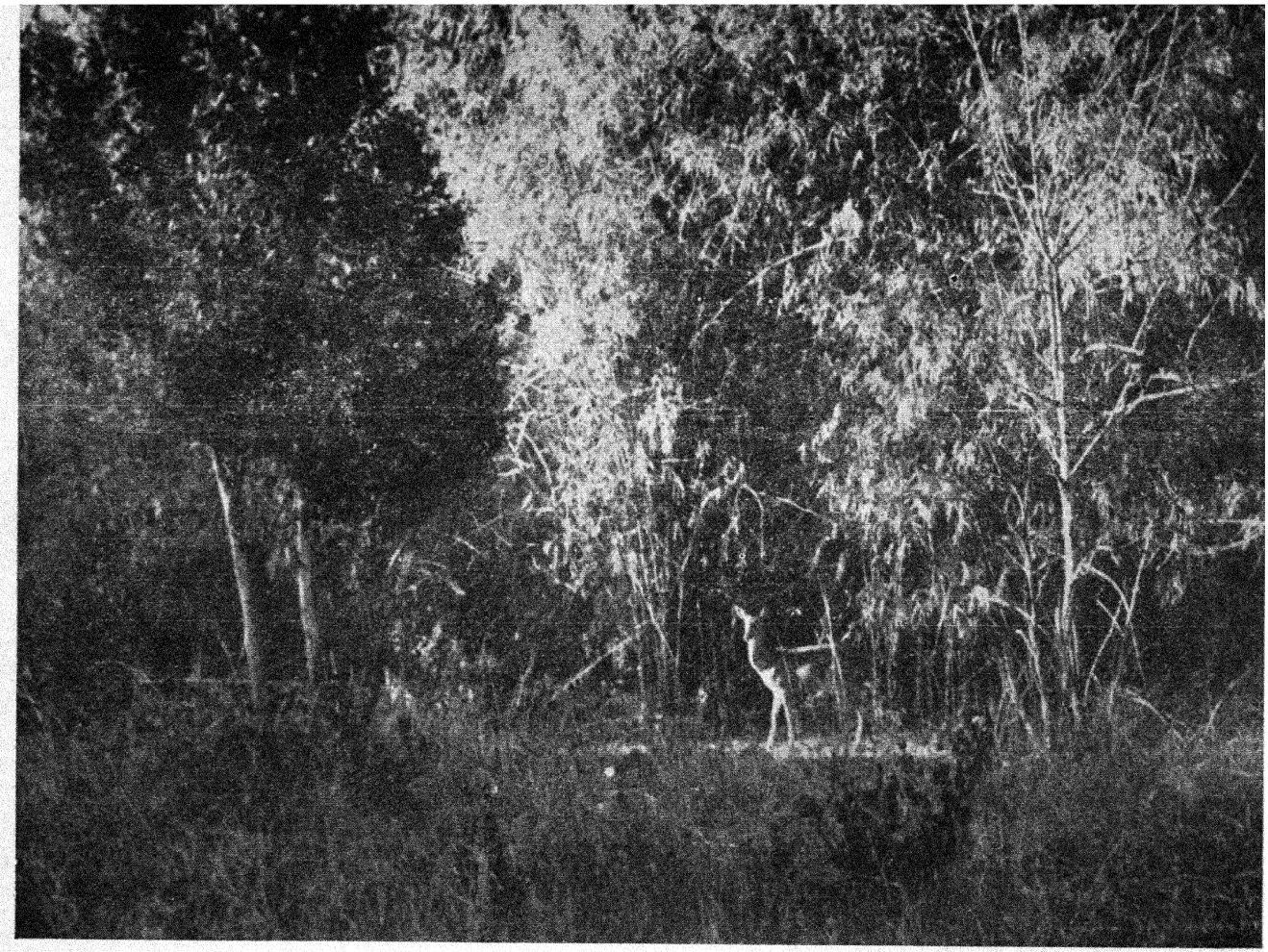
There is a well-furnished Forest Rest House with two suites, in the centre of the Park which commands a beautiful view of the lake, the grassy lawns and the tree-clad hills There is an inspection hut with two suites On the small hillock adjoining the lake, a new Rest House has recently been constructed and it is proposed to furnish it suitably for the comfort of the visitors This is being named as the Centenary Rest House

A care-taker-*cum*-cook is provided for the Forest Rest House at Taroba, whose services are available to the visitors However, rations and other provisions including milk, etc are required to be brought by the visitors

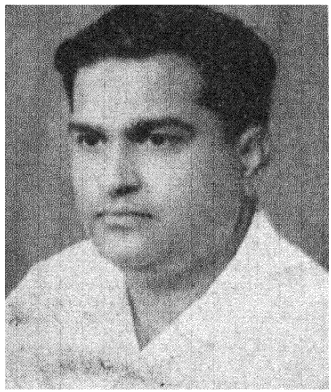
Outside the Park, there are two Forest Rest Houses, partly furnished, one at Moharli and the other at Khadsingi, which are available for camping

In order to popularise the Park, a scheme for the improvement of the Park was taken up and executed during the Second Five-Year Plan Under this scheme, considerable improvements over the existing road in the Park were carried out A circular road around the edge of the tank was completed A Park Officer was appointed to assist the visitors, the old Forest Rest House was improved and a khansama" was appointed A shack consisting of two units was completed in order to cater to the visitors of low-income group and to the students who wish to stay overnight in the Park area Nalas were bunded at suitable places in order to provide wild life with plentiful water These bunds also permit the water-holes to retain water for a longer period Salt-licks were provided at a number of places In 1959-60, further amenities were provided for the visitors A Rest House on a hillock providing a scenic view of the Taroba Lake and of the Park was constructed For protection of the Park from poachers, two Nakas have been constructed at either end of the Park along the only approach roads at Khatoda and Ramdegi Gates have been erected and a jeep provided These measures have proved effective The total expenditure incurred on the Park during the Second Five-Year Plan was Rs 1,56,973 50 for its maintenance and improvement

The State Government have an ambitious scheme of introducing an observation coach, on a Mercedes full-length truck chassis of 165' which is estimated to cost about Rs 71,000 00 This 'observation coach" will be luxuriously fitted with a raised deck to accommodate about 24 visitors and fitted up with a loud-speaker inside, which will be operated through a microphone and an amplifier system by the Park Officer who will be seated by the side of the driver and will give a running commentary of the flora and fauna, as they motor through the Sanctuary It is expected that this would be ready next year There is also a proposal to broaden and to asphalt the 28 miles stretch of approach road from Chanda, at an estimated cost of Rs 7 86 lacs The Park would be developed further, during the Third Five-Year Plan, for which a sum of Rs 1 55 lacs is provided



Taroba National Park—West Chanda Division (through the kind courtesy of Dr. J. N. Berry).



GLORY OF ALLAPALLI

BY

G S CHANDRAS

Divisional Forest Officer
Working Plans, Chanda

NATURE has its own course Whereas she pours all her motherly care and affection on the denizens nestling in her embracing folds, she turns her back completely on renegades and even nurses hostility towards them From the time, man has deserted her cosy shelter, she has expressed her resentment in no uncertain terms whenever he has tried to meddle in her affairs There is a saying "*Naturam expellas furcâ, tamen usque recurret*" You may expel Nature with a pitchfork, yet she will always return. To cite, take the case of the forests She has expressed her resentment by greatly attenuating the cosy and protective forest belt around human habitation As a result, man has to brave the depredations of strong gales, unmitigated floods and the hazards of soil wash-off, which the luxuriant forest cover, in no little measure, would have served to stave off

In keeping with the above, "Nature" excels where man's interference is the least She is pompous in her array and flaunts a pageant of colour and beauty now and again She has also sprinkled her show-pieces all over Some of these are in the form of picturesque landscape, magnificent cataracts, stupendous gorges and canyons, all forming part of a great panorama of "Goddess Sylva", of restless contrasts and ethereal beauty

One of such show-pieces of "Goddess Sylva" exists near Allapalli, a Forest Settlement in the Southern portion of Chanda District, situated in a far away corner of Maharashtra State. Ere, we behold the splendour of this show-piece let us familiarise ourselves with the place, where it is situated, its clime and the terrain

There is a yawning gulf of about 72 miles between this show-piece and the nearest railhead, i e Ballarshah This gulf is spanned mostly by a P.W D metalled road on which buses ply regularly between Chanda (the District Headquarters) and Allapalli The climate is extreme, summer temperatures shooting as high as 118° F or so and the winter is chilly but without frost The annual rainfall averages between 60" to 70", the bulk of which precipitates during the months -July to October The tract around Allapalli is sparsely populated and extensive areas bear luxuriant forest growth, almost untrammelled by human interference The above show-piece is situated about 9 miles from Allapalli which is easy of access by a forest road

This show-piece has been constituted into a "Permanent Preservation Plot" in 1953 and fittingly named as the "Glory of Allapalli" The aim underlying the constitution of a Preservation Plot is to study the growth of a forest under natural conditions, undisturbed by biotic factors such as human interference, grazing, fires etc The plot has been demarcated and important tree species, over 3' in girth at breast-height, have been serially numbered and their girth at breast-height as well as their height are recorded The species in the top canopy, in the order of abundance are : *Tectona grandis, Terminalia tomentosa, Madhuca latifolia, Adina cordifolia, Stephegyne parvifolia, Diospyros melanoxylon, Schleichera oleosa, Diospyros montana, Dalbergia latifolia, Careya arborea, Tamarindus indica, Lagerstroemia parviflora, Salmalia malabarica, Pterocarpus marsupium, Albizzia odoratissima, Stereospermum suaveolens etc*

The measurement of height and girth of some of the predominantly tall trees is reproduced below —

A **In descending order of height :**

Serial No.	Species	Height in feet	Girth at breast-height, in feet and inches.	
		Ft.	Ft	ins
1	Tectona grandis	141	13	0
2	Tectona grandis	136	6	7
3	Tectona grandis	116	8	11
4	Tamarindus indica	115	11	9

Serial No.	Species	Height in feet	Girth at breast-height, in feet and inches
		Ft.	Ft. ins
5	Adina cordifolia	115	10 3
6	Tectona grandis	114	17 0
7	Tectona grandis	114	11 10½
8	Tectona grandis	113	14 0
9	Tectona grandis	113	13 10
10	Tectona grandis	113	12 7
13	**In descending order of girth at breast-height :**		
1	Adina cordifolia ..	112	17 4
2	Tectona grandis .	114	17 0
3	Tectona grandis	113	14 0
4	Tectona grandis	110	13 11
5	Tectona grandis	113	13 10
6	Tectona grandis	108	13 9
7	Adina cordifolia	80	13 1
8	Tectona grandis	141	13 0
9	Stephegyne parvifolia.	91	13 0
10	Tectona grandis ..	113	12 7

To one, seeking comparison of the measurement of these trees with some of the towering trees recorded in India, it may seem that these stand nowhere in contrast to those recorded giants But it would be worthwhile to note, that all such recorded giants were invariably found in areas with heavy rainfall, whereas the "Glory of Allapalli" is situated in a comparatively drier tract This apart, those giants were found lone and sequestered, from the surrounding crop, but here in the "Glory of Allapalli" these big trees in distinct contrast, are found to thrive in a compact society of their own

Here are the veritable giants of the forests, not the loose-limbed, pot-bellied monsters, but the well-grown, sinewy athletes, vying with each other, soaring to the heavens and spanning the *terra firma* Their clean, straight boles, scarcely with any taper, fills one with excitement and delight Nature has been lavish here on her cherished ones, in providing the best of everything, a rich bed of soil, and a fountain of water and exhilarating warmth in good measure, that these loved ones, have worn their years, in all their towering majesty One has literally to take one's hat off, to admire their loftiness on the background of the azure vault of the sky and one almost unwittingly, yet deservedly, makes obeisance to "Nature"

Whereas nature has exuded her milk of kind ness on the flora, she has not been oblivious to others of her offspring, the fauna She has



Glory of Allapalli—Preservation Plot, Allapalli Range, Central Chanda Division.

equally been generous to them too The almost primeval forest and the proximity of a tank (there is a tank called "Mirkal tank" about 2 furlongs from the plot) perennial even in summer, make it an ideal haunt for wild life

The most majestic of all is the "King of the Jungle", the tiger On its nocturnal prowls, it roams over the forest in search of prey, as a monarch of all it surveys In vivid contrast, is the "blacksmith" the bison, with blood-shot eyes, flaunting its prized horns, which beats the forest-floor with its sledgehammer-like hooves, in gay abandon Then there are the panther, the bear, the wildboar and a host of others which add to the colour and charm of wild life in this tract

The forests teem with deer and on a winter morning, it is common, to come across a herd of cheetal (the spotted deer), sambar and other deer basking themselves in sunny glades, nibbling at grass and occasionally sniffing the air to scent any danger They know, that in nature, there is no alternative to alertness and caution. Relegation of these, is to go against nature itself, the only retribution for which is the banishment to the "Deadly Hunting Grounds"

This plot in the yester-times was named as the "Glory of Allapalli" But in the present Maharashtra State it stands out as an unique piece, resplendent in its grandeur, both for the majesty of its trees and its diverse beauty It therefore deserves its meed, more than its present name gives it. Would it not be therefore in the fitness of things to rename it as the "Forest Glory of Maharashtra"?

Art is consummate when it seems to be Nature.

—LONGINUS.

PART IV

NOTES ON FOREST DIVISIONS

SHAVE AND CUT !

The budget meeting had been going on for the previous 3 days and on the day in question dragged on till 10 p m A certain D F O, dead tired, ravenously hungry and his brains addled with surrenders, excess expenditure, explanations, admonitions and warnings saw to his dismay, when he came out of the Office that all restaurants were closed. He however saw a ray of hope in a seemingly brightly lit shop, which he entered thinking it to be some kind of a hotel Much to his chagrin, he discovered that he had stepped into a barber's saloon ! With some presence of mind he sat in the chair proffered by the barber in attendance.

" Sir " said the barber, " What is your Honour's desire, a cut or a shave ? "

" A cut " came the curt reply from the D F O, who reclining comfortably in the chair was already back in his own world of " cuts " and " grants "

" A close-cut, Sir ? "

" No, five per cent would do."

" Five per cent, Sir ? "

" Oh ! You can go upto 10 per cent "

" Ten per cent .... . cut Sir ? I don't quite follow.

How shall I proceed, Sir ? "

" Proceed ! Ten per cent, over the ears, five per cent rest "

" How about a shave, Sir ? "

" Yes, of course I want all the saving you could give We need it badly you know "

" Shall I shave first and then proceed with the cutting, Sir ? "

" Which deuce made you a D F O ? Don't you know that you must have a cut first in order to save ? "

" Sir, I am not a D. F. O but an humble barber."

" Same, same ! That one and the same."

The barber then went on with the hair-cut and shave fancying that the 5 per cent and 10 per cent cuts were perhaps the tonsorial novelties !

Ardent as he was, he was egged on to enquire of the D. F O who was leaving the saloon, as to what all these latest trends in hair-styles meant

" Sir, " he said " I hope you are satisfied with the cut and shave ! "

" Yes, yes, but you must attend to such works personally, you know."

" Sir, may I venture to ask you, in which saloon could I learn about these 5 per cent and 10 per cent cuts ? "

" Learn ! My dear chap ! The place is just round the corner . . .."

POONA CIRCLE

POONA FOREST DIVISION

The Poona Forest Division, besides covering the Poona Collectorate, extends over parts of Ahmednagar, Sholapur, Satara and Osmanabad Districts and comprises 657 square miles of forest area This Division, forms an extensive catchment area of a number of rivers and streams which originate in the Western Ghats and flow eastwards The forest areas occur mostly along the higher slopes and on the top of the spurs and ridges and in the higher portions of the valleys Very narrow strips along some rivers, bear some valuable babul forests. The eastern portion of this Division, is devoid of any vegetation due to very hot and arid conditions and poor soil

The forests of this Division forming about 13 per cent of the total land area fall into 4 distinct types as under —

(*a*) *Sub-Tropical Evergreen Type* —This type occurs on the higher elevations of the Western Ghats Jambul (*Syzigium jambolana*), pisa (*Actinodaphne Hookeri*), anjani (*Memecylon edule*), hirda (*Terminalia chebula*) and ain (*Terminalia tomentosa*) are some of the important tree species with undergrowth of Karvi (*Strobilanthes callosus*), pandhari (*Murraya exotica*), bhoma (*Glochidion lanceolarium*), etc

(*b*) *The Deciduous type* —It can be sub-divided into the moist deciduous and the dry deciduous types The former comprises ain (*Terminalia tomentosa*), hed (*Adina cordifolia*), kalam (*Mitragyna parviflolia*), amba (*Mangifera indica*), nana (*Lagerstræmia lanceolata*), sawar (*Salmalia malabarica*), dhaman (*Grewia tiliæfolia*), etc and contains smaller proportion of teak (*Tectona grandis*) This type further changes into the dry deciduous type with mainly teak (*Tectona grandis*), dhavda (*Anogeissus latifolia*), khair (*Acacia catechu*), moina (*Lannea grandis*), mhowa (*Madhuca latifolia*), etc., which form the valuable forests of this Division, though the quality of teak is very poor

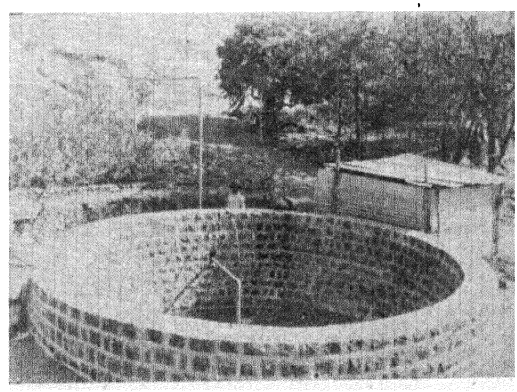
(*c*) *Thorn and Scrub type* —The eastern most part of the Division carries scrub forest comprising bor (*Zizyphus jujuba*), hiwar (*Acacia leucophlæa*), neem (*Azadirachta indica*), babul (*Acacia arabica*), etc.

(*d*) *The Babul Forests* —Along the banks of the rivers, on the alluvial soil, pure narrow patches of babul forests have sprung up These are the next valuable forests with neem (*Azadirachta indica*) and chinch (*Tamarindus indica*) as the principal associates of babul.

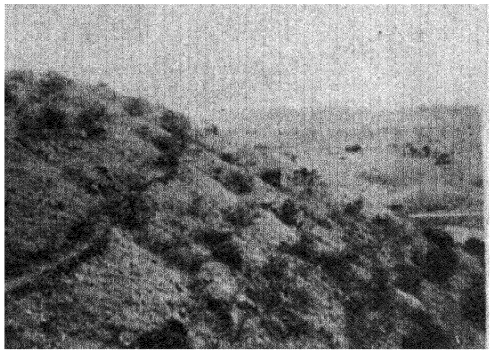
Inaccessible location of forest areas and their occurrence in widely separated patches render general protection and supervision, difficult and laborious Quite a bit of area gets cut off during the rainy season on account of floods

Illicit cutting, lopping of trees, illicit grazing and encroachment on forests for cultivation are some of the destructive activities of man The culprits freely make use of fast-moving vehicles to escape detection Forest fires are not very uncommon, though not severe. The damage caused by natural agencies is not of much consequence

The Mobile Squad is available to detect offences and apprehend the offenders Checking nakas on all important roads leading to Poona, which is the main market for most of the forest produce, have been established to check illicit transport.



Forest well fitted with pump for watering the nursery at Ramling—Poona Division



Afforestation in Khed Range showing continuous contour trenches

The forests of this Division, do not support any major industry The *bona fide* requirements of the rural population only, are met with from these forests. Collection of babul and tarwad barks for tanning, shikekai for soap and shampoo manufacture, and rope making from agave are some of the cottage industries supported by the forests. Hirda also forms an important minor forest produce

The forests meet some of the requirements of the population in small timber, fuel and fodder, besides providing work to the people The villagers are given, free grants of timber in cases of accidental damage caused by fire or floods, free grazing in areas open to grazing, permission for free removal of karvi, deadwood and rab material for agricultural purposes according to the rules, laid down for the purpose Corporate bodies of villagers are given grass kurans at prices fixed on the basis of realisations of the past few years. The Forest Labourers' Co-operative Societies are given forest areas for exploitation of timber, fuel and minor forest produce, thus enabling the members to share the profits in addition to the wages earned

The forest management aims to maintain and improve adequate vegetative cover over steep hilly slopes and in barren areas, for soil and moisture conservation, as also to meet the *bona fide* requirements of the local population The forests are, therefore worked under six working circles to achieve the above objects Suitable prescriptions have been laid down in the Working Plan and the same have been found to be quite adequate Large forest areas which are poorly stocked or are barren, in Ahmednagar, Sholapur and Osmanabad Districts, have been taken up for afforestation.

The fauna in this Division is limited Amongst the carnivora the panther and amongst the herbivora, barking deer, black buck, blue bull, and hare are the important species found in this Division. Wild boar is a vermin in this tract, causing considerable damage to plantations and agricultural crops Wild fowl, duck, partrige, pea fowl, green pigeon, etc, are some of the feathered species available in this Division

During the early years of the nineteenth century, exploitation of mainly teak-bearing areas was undertaken The works were not carried out on any scientific lines. In the subsequent years, babul areas were worked departmentally. A scheme to work all types of forests in Poona Division was first prepared in 1892, and it was only in 1932 that Mr Garland took up the preparation of the first comprehensive working plan prescribing scientific forest management The results achieved though not very conspicuous, helped in bringing forest management on sound lines The present plan is by Shri S M Wagle It envisages further improvement of the crop and by raising plantations of valuable species in understocked areas Besides this, afforestation works taken up during the Second and the Third-Five Year Plan Schemes, have brought quite a bit of forest area under vegetative cover Some works such as the beautification of Shivneri Fort area, development and afforestation of Bhimashankar hills, afforestation of Ghod Valley, raising cashew plantations etc, are successfully carried out since the last few years Afforestation works in Ahmednagar, Sholapur and Osmanabad Districts are also being continued with fairly good results All these works, when completed will add substantially to the forest estate of this Division

SATARA DIVISION

The Satara Forest Division spreads all over the 3 Districts of Satara, Sangli and Sholapur The details of the forest areas are given below —

Areas in charge of the Forest Department

Kind of forests	Satara	Sangli	Sholapur	Total
	(area in sq miles)			
Reserved forests	425 45	63 57	34 19	523 21
Protected Forests	20 82	0 08	.	20 90
Leased forests	24 29	0 55		24 84
Unclassed forests	0 89	45 03	4 11	50 03
Total ..	471 45	109 23	38 30	618 98

Area in charge of the Revenue Department			
Reserved forests	106 74	80 35	187 09

The following are the types of forests met with—

(*a*) *Evergreen forests* (*Western Zone*).—The Evergreen forests are confined to the Sahyadri Range of hills where the rainfall is excessive (72" to 252") and the soil is lateritic.

(*b*) *Dry mixed deciduous forest* (*Eastern and Central Zones*)—The forests in this tract vary in quality from straight and well grown teak forming a high forest of fair quality to a retrograde scrub forest which is fairly common in the eastern talukas

Various forest industries are run in this Division, of which the following are a few .—

(*i*) Furniture.
(*ii*) Charcoal and firewood.
(*iii*) Toy-making
(*iv*) Rope making, and
(*v*) Saw mills, etc

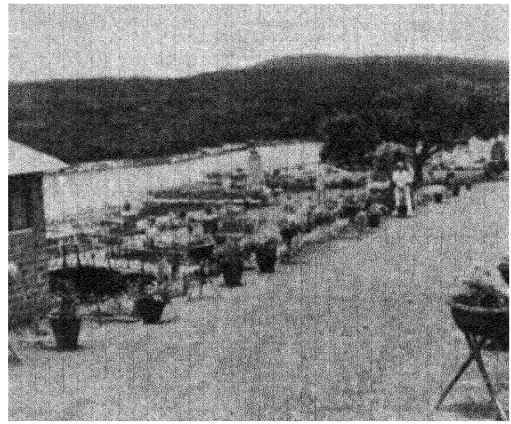
The forests of this Division are spread over the Western Ghats, where the annual rainfall is about 200 inches The people in this region generally grow hill millets and the forest lands are constantly in demand for Nagli cultivations

The working of coupes in this Division is through forest contractors and also through Forest Labourers' Co-operative Societies which are 7 in number There are Government firewood and charcoal depots at Mahableshwar and Panchgani in this Division They are managed through contractor's agency Labour is locally available for various forest operations

The forest area under the management of this Division is worked under the various silvicultural systems, prescribed in the Working Plans

The major forest products are timber, firewood and charcoal Almost all the major forest produce is consumed in this Division only and practically no major forest produce is exported to other districts The chief minor forest produce are grass, hirda, shikekai, honey, arrowroot, apta-tembhurni leaves and stones

The area of Mahableshwar Plateau is closed for hunting The Wild Life in this Division is varied, the important of them being bison, panther, sambar, cheetal, bear, etc The extent of illicit shooting is not grave, as steps are taken through protective staff to prevent poaching



View of Children's Corner and Museum cum—Herbarium, with Venna Lake in the background, Pratapsinh Park—Mahabaleshwar Satara Division

During the Second Five-Year Plan, the following schemes were executed —

(1) The improvement of denuded areas in Satara Range

The scheme is introduced for the improvement of denuded areas in Satara Range The works carried out so far are satisfactory

(2) *Kaju plantation*—Kaju is a dollar-earning commodity It is a hardy species, and is introduced with a view to clothe the poor areas The scheme has been successful

(3) *Raising of a live-hedge of Agave.*—The scheme is introduced with a view to provide effective protection against fire, to demarcate forest boundaries and to check encroachments in forest areas The scheme has been successful

(4) *Establishment of wet nurseries*—The scheme is introduced with a view to supply the planting stock for the afforestation areas and to supply seedlings for the annual Vanamahotsava

(5) *The raising of special teak plantations*—The scheme is introduced with a view to increase the area under teak with special efforts in Patan Taluka The scheme has been successful

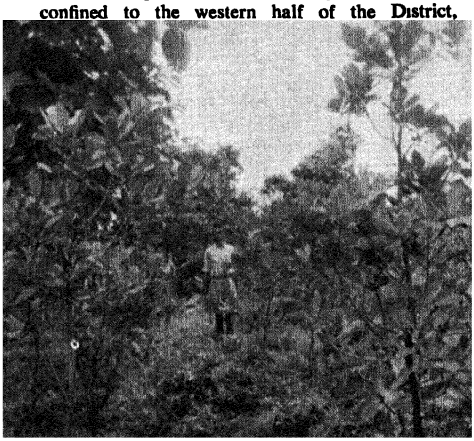
(6) *Afforestation and rehabilitation of pasture lands*—The scheme is introduced with a view to wire-fence the selected kurans in order to protect them from continuous grazing With the protection afforded, it is expected that the kurans will be improved to a considerable extent

(7) *Establishment of Pratapsinh Park at Mahableshwar.*

Apart from being of recreational value to the public it educates them on the value and the utility of forests, through the Herberium-*cum*-museum opened in this Park

KOLHAPUR FOREST DIVISION

Kolhapur Forest Division is spread over the entire Kolhapur District, the bulk of the forest area in charge of the Forest Department being confined to the western half of the District,



Three year old Cashew Plantation—Agra Range—Kolhapur Division.

The elevation varies from 2500′ to 3411′, the highest point being near Kalanidhigad in Chandgad Range of Chandgad Taluka of this District The topography is all hilly The annual rainfall varies from 35″ to 300″ The total forest area is 612 14 square miles distributed in eight ranges The percentage of forest area over the total land area of the District is about 21

In the high altitude areas with heavy rainfall, the types of the forest found are evergreen to semi-ever-green type In the middle slopes, the type changes from semi-evergreen to moist deciduous, while in the lower slopes and the plains below, the type met with is dry deciduous. The hill ranges in the east are almost without any conspicuous tree growth The details of the types of forests, and the species growing, in each type of forest are as below.

(*a*) *The Sub-Tropical Evergreen*—Here the composition of the crop is mixed with no particular species marked as "principal" in the crop The species met with are —

jambul (*Syzigium jambolana*), amba (*Mangifera indica*), hirda (*Terminalia chebula*), anjani (*Memecylon edule*), surangi (*Ochrocarpus longifolius*) parjambul (*Olea dioca*), phanasi (*Carallia integerrima*), bibi (*Holigarna arnottiana*), karvi (*Strobilanthes callosus*), shendri (*Mallotus philippinensis*), pandhri (*Murraya exotica*), asana (*Bridelia retusa*), kumbh (*Careya arborea*), nana (*Lagerstræmia lanceolata*), kindal (*Terminalia paniculata*)

(*b*) *The Semi-evergreen to moist deciduous type.*—This is a mixed type of forest and the species found are —

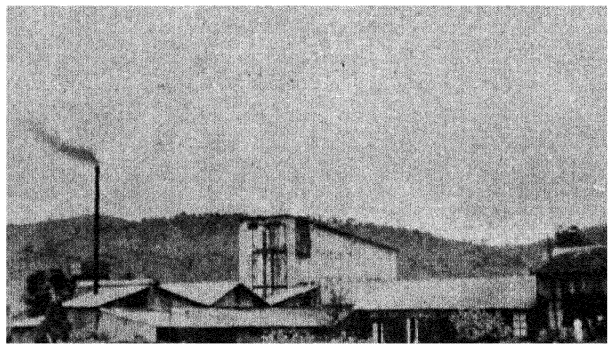
teak (*Tectona grandis*), ain (*Terminalia tomentosa*), kindal (*Terminalia paniculata*), sawar (*salmalia malabaricum*), hirda (*Terminalia chebula*), bibla (*Pterocarpus marsupium*), jambul (*Syzigium jambolana*), amba (*Mangifera indica*), shisham (*Dalbergia latifolia*), asana (*Bridelia retusa*), kumbh (*Careya arborea*), bhava (*Cassia fistula*), parjambul (*Olea dioica*), umbar (*Ficus glomerata*), bibi (*Holigarna arnottiana*), charoli (*Buchanania latifolia*), sandalwood (*Santalum album*)

In open and denuded hill slopes lantana bushes are commonly met with.

(c) *Dry deciduous type.*—The eastern hills of this type of forests are almost devoid of tree growth The common species met with are :—

teak (*Tectona grandis*), dhavda (*Anogeissus latifolia*), shisham (*Dalbergia latifolia*), bushes of dhaity (*Woodfordia floribunda*) and karvand (*Carissa carandas*) and the ground is normally covered with coarse varieties of grasses.

Protection of existing tree growth in accessible and cultivated areas especially of Vishalgad and Panhala Ranges has been a serious problem. During the last five years about 5686 acres of



A view of the Amba Tannin and Pharmaceutical Factory at Amba, Kolhapur Division

forest area of Vishalgad and Panhala ranges have been indiscriminately cleared for temporary cultivation of cereal crops by the adjoining villagers There is a factory at Amba for extracting both semi-solid and powdered tan-extract from hirda fruits

The forests lie in the catchment areas of the important river-systems of this District and hence serve a great deal to prevent soil erosion in these heavy-rainfall areas especially in hilly regions receiving an annual rainfall from 150" to 300"

The forests of this Division, not only meet the local demand of firewood and charcoal, but also the demand of the people from the neighbouring Districts, like Poona, Satara, Sangli and Belgaum

The small timber from teak and the superior injaili species obtained from the coupes worked also helps to meet the local demand to some extent

The forests provide adequate grazing facilities for the cattle of the district The forests of Ajra Range produce valuable sandalwood

The forests of this division excluding Chandgad Range are being managed under the prescriptions of the Working Plan by Shri S M Wagle since 1957

The important wild animals and birds that are generally met with, in the forest areas of this division are tiger (rare), panther, bison, bear, jackal, wild boar, sambhar, wild dog, barking deer, hare, porcupine, blackfaced monkey, wild cat, jungle fowl, imperial pigeon, etc

The shikar preserve of His Highness the Chhatrapati Maharajasaheb of Kolhapur in Radhanagiri taluka has served greatly to preserve the diminishing wild life

The figures of revenue and expenditure for the last one year are as below —

Year	Revenue	Expenditure	
		B-Conservancy	C-Establishment
	Rs	Rs	Rs
1960 61	2,87,289	2 21,144	2,71,834

The brief account of the development works carried out in the past, under different schemes under the First and Second Five-Year Plans, in this division, is as follows

Name of the Scheme	Physical achievements	Expenditure incurred
	A G	Rs nP
(*i*) Opening of Soil Conservation and Demonstration centre in the vicinity of towns and villages	52 00	8,590 39
(*ii*) Afforestation Scheme on Panhala Hill Station	402 21	75,430 16
(*iii*) Raising of a live hedge of Agave	Miles 125	22,506 43
(*iv*) Construction of residential Buildings for the forest staff	7 Nos	50,450 23
(*v*) Establishment of wet nurseries	9 Unit	47,308 47
	A. G	
(*vi*) Cashew plantation	1,849 00	84,515 05
(*vii*) Matchwood plantation	120 20	86,52 14
(*viii*) Teak plantation	330 00	26,980 41
(*ix*) Establishment of a Bison Sanctuary at Radhanagari	Buildings 5 Nos Road 4 miles	78,185 79
(*x*) Establishment of additional Checking Nakas (Temporary)	2 Nos	407 36
	Total	4,03,226 43

NANDED FOREST DIVISION

This Division consists of the forests of Nanded and Parbhani Districts. The forests of Kinwat Taluqa which were formerly in Adilabad Division were added to this Division at the time of the States Reorganization in 1956 The total forest area of this Division at present is 621 68 square miles

Out of the total forest area of 621 68 square miles, an area of 373 83 square miles has been notified as Reserved Forest under section 19 of the Hyderabad Forest Act, and an area of 172·43 square miles has been notified as proposed Reserved Forest under section 4 of the Hyderabad Forest Act An area of 16 11 square miles has been notified as Protected Forest, whereas an area of 59 31 square miles is still to be notified.

The forests of this Division are of the dry mixed deciduous type with teak as the most valuable species The associates of teak are salai, dhavada, timburni, khair, ain, moyana, etc The quality of tree growth in Kinwat Taluqa is better than that of any other Ranges

For the purpose of protection and administration, the Division has been divided into 7 Ranges namely, Kinwat, Mahore, Islhapur, Nanded, Bhokar, Degloor and Hingoli These Ranges have been further divided into 24 Rounds consisting of 109 Beats. There is also a Special Duty Range Forest Officer for surprise checks and enquiries into illicit cuttings 15 Check-Nakas have been established for the control of transit of forest produce Recently a Mobile Squad consisting of one Range Forest Officer and two Armed constables with a Jeep has been sanctioned for Nanded and Aurangabad Divisions So far the Mobile Squad of Poona Circle used to visit this Division for surprise checks.

The most important factor causing damage to forests is illicit cutting of trees by the local people Incidence of such illicit cutting is more in the forest of Nanded, Bhokar and Hingoli Ranges as these forests are situated nearer the big towns like Nanded and Hingoli Comparatively, the incidence of illicit cutting is much less in the remote forests of Kinwat Taluqa With adequate protective staff and the checking Nakas and Mobile Squad, damage to the forests by illicit cutting is being checked to a great extent.

Damage to forests due to fires is not serious in this Division, as only grass is burnt in the ground fires. However, fires do cause considerable damage to young regeneration. Plantation areas are, therefore, protected from fire damage by burning fire lines around them before the commencement of the season.

There are very few industries which utilize forest produce as raw material. The most important forest industry existing in this Division is manufacture of furniture articles. This is located mainly at Nanded and Kinwat where timber is converted into cut sizes and sold.

The forests cater to the needs in respect of firewood and timber of the local people They also provide grazing to the local cattle Apart from these benefits derived from forests, the local people get employment for felling trees, and collection of forest produce like timburni leaves, gums, etc

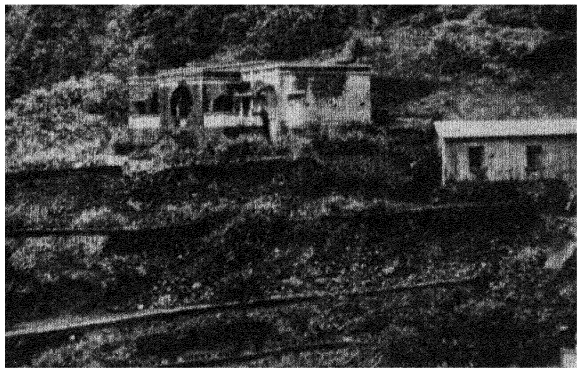
Recently three Forest Labourers' Co-operative Societies have been allotted forest coupes for working Two societies in Parbhani District are working Minor Forest Produce farms like timburni leaves and gums

The forests of Kinwat Taluqa (i e, forests of kinwat, Mahore and Islapur Ranges), are being worked under "Coppice with reserve system" with a felling cycle of 40 years. The forests of other Ranges are being worked under "Improvement felling system" with a felling cycle of 40 years The work of revision of the working plan for this Division is in progress The coupes are sold annually by auction

Since last 3 years this Division is giving a net surplus revenue of about Rs. 7 lacs.

The forests of this Division contain a variety of wild life like tiger, panther, sambar, chinkara, wild boar, bear, etc Tigers are found in Kinwat, Mahore and Bhokar Ranges Panthers are common throughout the forests Amongst the wild birds, pigeons, peafowls, and partridges are quite common.

During the Second Five-Year Plan period four schemes were executed Under the afforestation scheme an area of 2979 acres was planted up as against the target of 2000 acres. These works were carried out in degraded forests Four Wet Nurseries were established during this period Under the Scheme of Strengthening of Territorial Staff, one Special Duty Range Forest Officer was appointed who did demarcation of inter-State boundary between Maharashtra and Andhra Pradesh Fifteen Check-Nakas were established under the scheme of "Intensification of checking of Forest Produce in transit".



Forest Rest House at Ajanta Caves Fardapur Range, Aurangabad Division

AURANGABAD FOREST DIVISION

Aurangabad is one of the two Forest Divisions transferred by the ex-Hyderabad State to the bilingual Bombay State, after the State reorganization in 1956 It covers all the forest areas in Aurangabad and Bhir Districts of the Marathwada region The total forest area in this Division is 432 sq miles and is distributed in 5 Ranges viz Aurangabad, Jalna, Kannad, Fardapur (all four from Aurangabad District) and Bhir (Bhir District) Out of the 432 sq miles, 312 sq miles are Reserved Forests, 101 sq miles are Protected Forests and 19 sq miles Unclassed Forests

According to Champion's classification, these forests fall in the group 4A i e, 'Southern Dry Deciduous Forests'. These forests are scattered all over the two Districts in small patches A variety of species is met with, chief among which is teak (*Tectona grandis*) which covers considerable portions in Kannad and Fardapur Ranges In parts of Fardapur Range, one also comes across a typical 'Anjan' type of Forest where 'anjan' (*Hardwickia binata*) predominates Rest of the forests are either of the mixed miscellaneous type without teak or are open grass lands

Apart from teak and anjan, the important species which occur in this Division are -

Dhavda (*Anogeissus latifolia*), salai (*Boswellia serrata*), char (*Buchanania lanzan*), chandan (*Santalum album*), mohi (*Lannea grandis*), tembru (*Diospyros melanoxylon*), kandol (*Sterculia urens*), khair (*Acacia catechu*), mhowa (*Madhuca latifolia*), palas (*Butea frondosa*) and ain (*Terminalia tomentosa*)

The undergrowth usually consists of ghaneri (*Lantana camara*), gela (*Randia dumetorum*), kharwand (*Carissa carandas*), amoni (*Rhus mysorensis*), dhairi (*Woodfordia floribunda*) and nenkal (*Gymnosporia montana*).

The common climbers of this Division are — Ran-mogra (*Jasminum arborescens*), karanta (*Cryptolepis buchanani*), kavali (*Gymnema sylvestre*), *and* palasvel (*Butea superba*)

The southern undulating plains as well as the steep northern hill ranges carry extensive grassy areas The common species of grasses met with in this tract are —

Kusal (*Heteropogon contortus*), paonya (*Schima sulcatum*), and sheda (*Schima nervosum*) Both the varieties of Rosha grass are found in these forests, though "sofia" variety is more commonly seen than the "motia" variety

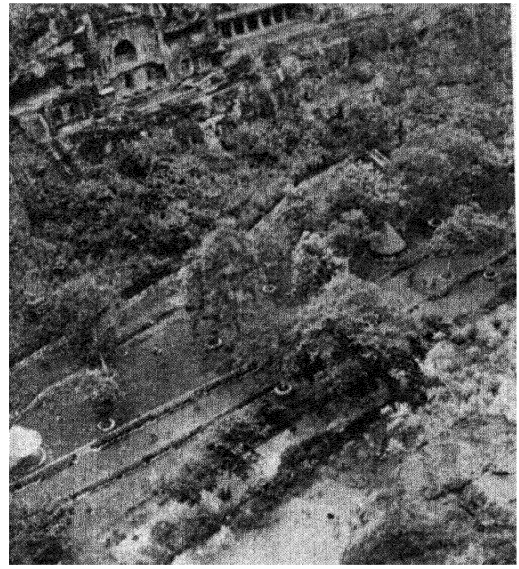
Due to the scattered nature of the forests, protection is not as effective as is expected and a number of illicit cutting cases are detected every year Government have recently sanctioned a mobile Forest Police Squad for Marathwada and it is hoped that this Squad will help in reducing the incidence of illicit cutting considerably. Besides illicit cutting, the injuries like annual fires and excessive grazing have caused the forests to deteriorate to such an extent that some of of these areas do not have even a blade of grass Big outcrops of rocks are a common sight in these forests

The forests being of such poor quality there are no forest industries in this Division

The forests of this Division can be best defined as 'unorganised forests' as till today they do not have a sanctioned Working Plan for their management The past history shows that till the year 1900 (when the Forest Department was first created in this tract), these forests were managed by Revenue Officers who issued 'permits' to the needy local people for exploitation of these forests. However, though the Forest Department took control of these forests in 1900, it did not attempt to change the so called 'permit-system' till about 1917, when a small area of Dhamangaon forest block was brought under a working scheme which prescribed "Simple Coppice" as the main system of working The rest of the forests was, however, allowed to be managed under the 'permit system' The uncontrolled permit system, however, resulted in practically total destruction of all the important blocks of forests in this Division This state of affairs continued till 1947 when Shri Abdul Hamid Khan, for the first time drew up a Working Scheme covering most of the important forest blocks in Aurangabad, Kannad and Bhokardhan Ranges. This Scheme tried to regulate the fellings, bringing most of the area under 'Coppice with Re-

serves' system and prescribing general felling rules for the rest of the area where no coupes were laid out. According to the Scheme ten coupes were worked when the period of the Scheme expired and had to be extended till 1959 when a fresh provisional scheme for a short period of 3 years was prepared by Shri V D Mehendale. Simultaneously the preparation of a full-fledged Working Plan was also undertaken Shri Mehendale's temporary Scheme covered only small teak forests and prescribed improvement fellings for them Shri Mehendale's Scheme expires in 1962 and now a working plan which is in draft stage will be brought in force from 1962-63 onwards This new draft Working Plan prescribes seven Working Circles of which the 'Main Working Circle', 'The Afforestation Working Circle' and the 'Sandalwood Working Circle' are the chief three working circles through which these forests are proposed to be managed and improved The Plan also prescribes management of Pastures and Kurans in a systematic way

It is said that Aurangabad Forests were so well stocked with the famous Indian tigers, that in 1868 one Colonel Nightingale is reported to have bagged thirty tigers in one shooting season However, as the forests started getting depleted, the fauna of the forests also started disappearing and it is difficult to see even a rabbit in some of these forests today Nevertheless one does come across a wild boar, chital and panther in the interior and in inaccessible portions of these forests



Forest Garden at Ajantha caves, Fardapur Range, Aurangabad Division

The development programme includes afforestation of 1342 acres, beautification of hills around the famous historical Ajantha and Ellora Caves, intensification of checking the forest produce in transit, creation of 8 forest rest-houses, establishment of a botanical garden at Aurangabad and strengthening of protective staff The total plan expenditure during Second Five Year Plan was Rs 5,79,498.

BANDOBAST

A crafty D F O was camping for a week at Kunkadgaon, the Beat Head Quarters The R F.O. had as usual made lavish camp bandobast At the end of the camp the D F O asked for the bill The R.F.O as usual gave a bill for Rs. 3.

The D F O went through it and was struck at seeing that the R F O. had charged as much as 25 nP. for only two and a half dozen of eggs He promptly cleared off the bill and paid 25 nPs more to the poor R F O., saying "Keep these eggs with you The next time I come here, give me the "murghis" from them"

Trees and creepers and the forest animals are our kinsmen.

—SANT TUKARAM.

THANA CIRCLE

NORTH THANA FOREST DIVISION.

The Northern part of Thana District covering the talukas Dahanu, Palghar, Jawahar, Talasari Mahal and Bassein (Part) form the North Thana Division. The forest area of this Division is 581 58 square miles classified as Reserved, Protected and Woodland Protected Forests Their areas are 424 79 square miles, 30 99 square miles, and 125 80 square miles respectively

The forests are situated on hill slopes where the soil is shallow and unfit for cultivation The underlying rock is Deccan trap. The soil in the valley is however deep and fertile Most of these forests are situated on steep Western Ghats extending up to the sea. The area is intercepted by tidal creeks which extend over 15 miles in length

The forests fall under the type of "Tropical moist mixed deciduous forests" in which teak is the most important species, roughly about 20 per cent of the total crop, its close associate being ain, which is 16 6 per cent The other important injaili species are 13 4 per cent and the remaining comprises inferior injaili species The top canopy trees are teak, ain, hed, shisham, bibla, kalam, sawar, dhavda, nana and bonda The middle canopy trees are avla, bhendi, warang, karanj, shiras, ghatbor, apta and bamboo The understorey comprises kuda, kudi, kirmira, palas, and bhawa The ground floor comprises various varieties of grasses belonging to the *Andropogon* species Along the coast artificially raised Casuarina plantations form an evergreen, narrow belt for many miles

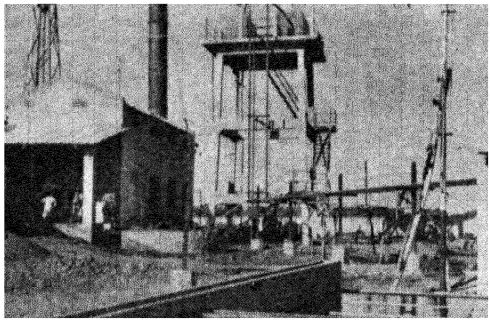
The forests are subjected to damage by fire, grazing, insect-attack, illicit cutting and unauthorised cultivation This is primarily due to the proximity of the forests to the growing villages and towns, especially along the Western Railway line and inspite of protective measures, the incidence of forest offences is on the increase. However, with the appointment of "Jodi" Guards, and with the Mobile Squad, Patrolling Boat and intensive checking by the existing staff, the situation is being kept under control The incidence of forest offences due to fire and grazing is low but the offences due to unauthorised cultivation are on the increase.

Timber production forms the most important industry of this Division The depots are well connected by road, rail and sea with the market centres of Bombay and Saurashtra. Approximately timber worth Rs 6,00,00,000 was sold during the last year from Sawta, Manor, Bhatana and Sanjan Bunders Charcoal and firewood also find their way to the markets of Bombay and parts of Gujarat by rail and road from this Division, forming the second major forest industry Industries allied to the above 2 major industries are the saw milling of timber and conversion for the manufacture of bobbins of various types, foot rules, coat hangers, furniture, packing cases, cricket bails, toys, rollers for cloth, tool handles, etc.

Weaving of baskets from bamboo and making bamboo furniture is an industry which provides occupation to thousands of local villagers Manufacture of Kath is an important industry in this area Four centres produce Kath by the crude method, while a modern factory for the manufacture of Kath and Catechu by scientific method is being installed at Dahanu under the name of "Swastik Kath Factory" Construction of country boats and launches is a developing industry, organised on a co-operative basis at Satpati in Palghar Range This is said to be the first of its kind in this State Grass cutting and baling for supply to stables in Bombay is an industry which provides labour to thousands of forest villagers. The preparation of straw covers for bottles for packing purposes is also



Exploitation of a coupe in North Thana Division through the Forest Labourers' Co-operative Society



A view of Swastik Kath Factory, Dahanu Road, North Thana Division

an allied small scale industry, Collection and sale of apta leaves for the manufacture of bidies is a fast growing industry

Taking into consideration the variety of raw material available from the forests, there is a vast scope for further expansion and introduction of new forest industries in this Division, for instance, the manufacture of paper, pulp, straw boards, hard boards, etc

Government have taken precaution to standardise the rates of wages for various types of forest works and thus helped labour to get out of the clutches of unscrupulous "sawkars" and forest contractors Adequate concessions such as removal of dead wood, firewood, bamboos, karvi, dead leaves, etc, for domestic use free of cost have been granted by the Forest Department to the forest villagers. Arrangements have been made for the sale of firewood to the local population, at concessional rates at the depots fixed in the areas which are away from forests Government have fixed the policy to grant forest coupes for working to the Forest Labourers' Co-operative Societies. Today 106 coupes are being worked by 32 Co-operative Societies in the Division

The forests of North Thana Division are scientifically managed as per prescriptions of the Working Plan In the present Working Plan by Shri S P Jadhav, the treatment consists of selection-*cum*-improvement felling in the main coupes coupled with artificial regeneration in the gently sloping areas therein, along with subsidiary cultural operations and tending at proper intervals, of the younger crops The exploitable age of timber is fixed at 80 years when it is expected that the girth at breast height of teak will be 48" and above

Nature's gift to North Thana in wild life, includes tiger, panther, sambar, spotted deer, bhekar, pig, hare, peacock, etc Due to accessibility to large towns and cities the wild life of this Division was reduced practically to extinction but since the application of the Wild Life Preservation Act, Bombay in 1953, the forests are again teeming with fauna. The propaganda to preserve wild life has reached the remotest forest villages, and the inhabitants are well aware of the importance of wild life in their forest and its usefulness to the human race.

The following are some of the important items of development taken up in this Division —

(*i*) *Forest Labourers Co-operative Societies* —There are 32 Societies in this Division which have been allotted 106 coupes for exploitation during the current year The working of coupes by Co-operative Societies has increased from a humble beginning of 1 coupe 12 years ago to the present number as stated above

(*ii*) *Planting of agave hedge* —A live hedge of agave along the boundary of forests has been planted over a length of 120 miles during the Second Five-Year Plan period The results have been encouraging and the local villagers have realised that the fibre from agave is useful for various purposes

(*iii*) *Scheme for raising special teak plantations* —100 acres of special teak plantations have been raised in Jawahar Range It is proposed to raise annually, 50 acres of teak plantation in this way This is in addition to the normal plantation of teak raised annually according to the Working Plan

(*iv*) *Matchwood plantation* —The physical target of 128 acres and 19 gunthas of matchwood species, namely sawar, has been achieved by planting up the specified area during the period of the Second Five-Year Plan

(*v*) *Wet Nurseries—Establishment of* —Ten Wet Nurseries have been established to supply the planting stock annually required in this Division In addition to these, a central nursery, 5 acres in extent, has been established at Bharad, in Kasa Range.

(*vi*) *Cashew Plantation.*—700 acres have been planted up with cashew during the Second Five-Year Plan period.

(*vii*) *Casuarina Plantation* —Areas along the coast have been planted up with casuarina to form an effective wind-belt Most of these areas are however transferred to the newly formed Gujarat State.

(*viii*) *Roads and Buildings*- A road from Ozar in Nasik District, to Saiwan in Thana District, 34 miles in length has been proposed for construction. 12 miles of this road are constructed and the rest will be taken up when funds permit This will open out a way for the extraction of valuable forest timber from the areas in Jawahar and Udhwa Ranges in this Division

Buildings suitable for the Range Offices and quarters for the Range Forest Officers are already provided in this Division Similarly in a majority of the cases, quarters are provided to Round Officers except in areas which have lately come in due to the merger of Jawahar State

WEST THANA FOREST DIVISION

The West Thana Forest Division is situated at the southernmost end of the Thana District and comprises the forests of the talukas of Bassein, Bhiwandi, Kalyan, Murbad, Salsette, and parts of Wada and Borivli of Thana District, extending over 472 60 square miles

The forest of this division falls under the type "Tropical moist (mixed) deciduous" in which teak is the most important species Teak forms roughly 20 per cent of the crop. Other important species are, ain (*Terminalia tomentosa*), khair (*Acacia catechu*), shisham (*Dalbergia latifolia*), hed (*Adina cordifolia*), tiwas (*Ougeinia dalbergioides*), bibla (*Pterocarpus marsupium*) dhavda (*Anogeissus latifolia*), kalam (*Mitragyna parvifolia*) and sawar (*Salmalia malabarica*) In addition to these important species, there are many species which were not of much use then but are coming into prominence now, mainly due to the great demand for timber They are, kakad (*Garuga pinnata*), shemat (*Lannea grandis*), etc

Being very close to Bombay and other industrial areas such as Kalyan, Bhiwandi, Thana, etc, incidence of illicit cutting is heavy and protection of forests has become a great problem In order to cope with the increased incidence of illicit cutting, Government have set up a mobile squad with a jeep to patrol constantly on land and a motor-launch with adequate staff to patrol the creeks This has definitely brought down the incidence of illicit cutting and removal of forest produce As far as forest industries are concerned there are many saw mills at Kalyan, Bhiwandi, Thana and Bassein Moreover there is also a bobbin factory at Wada and a slate factory at Bassein In addition, there are a lot of industries at Bombay which are mainly depending on forest produce Anil Hard-boards are one of such industries

Forest in this division is mostly well distributed and has a great influence on the climatic conditions of the locality The climate of the area is moderated only because of the great extent of the forest area spread out all over

The forests of this division afford to the Bombay public an opportunity of relaxing at picnic spots such as Tansa and Pavai lakes and Vaitarna Dam situated in the midsts of forests

The forests of this division are worked as per revised working plan for the Thana forests with the general objects of management as under —

(*i*) To improve the quality and quantity of the growing stock by conservative working

(*ii*) To ensure sustained yield of timber, firewood and matchwood

(*iii*) To maintain forest cover on the hill tops, steep hill slopes and ridges with a view to conserve the soil, to improve it and to protect the catchment areas to ensure water-supply

(*iv*) To meet the legitimate demands of the local population and of the right and privilege holders as regards timber, fuel, bamboo, grazing, etc

(*v*) Consistent with the above to obtain the maximum annual revenue compatible with the principles of silviculture.

There is very little wild life in the forests of this division The two check nakas at Bhiwandi and Mulund keep a constant round-the-clock-watch over the poachers This is intensified over the week-ends when large number of people from Bombay go out for picnic and shooting

The development schemes to be undertaken during the Third Five-Year Plan are the raising of special khair plantations, kaju plantations and bamboo plantations in addition to the various measures already in force to check and prevent the illicit fellings and transport of forest produce, by appointing mobile squads with jeep and motor-launch and also by intensifying checking of forest produce in transit by introducing a number of check nakas on the various roads During the First and Second Five-Year Plans kaju, sawar and agave plantations were raised and they are doing fairly well

Various measures employed to curb illicit cutting and removal of forest produce have also given good results

EAST THANA FOREST DIVISION

East Thana Forest Division comprises areas of the eastern part of the Thana District and includes the entire taluka of Shahapur, part of Vada taluka and a part of Mokhada Peta The area is hilly and in places rugged, broken and precipitous The forests are situated on the steep Western Ghats and on the spurs, ridges and out-layers extending from the Ghats The underlying rock consists of Deccan trap On hill slopes the soil is generally shallow, and rocky but fairly deep and fertile in valleys The climate of the area is warm and humid The annual rainfall of this region varies from 100" to 150"

The forests form about 40 per cent of the total area of the Division The extent of forest area of this Division is as follows —

Reserved Forests	2,19,243 acres
Protected Forests	71,728 acres

The forests of this Division fall under the type "Tropical Moist (mixed) Deciduous forests" in which teak is the most important species Teak forms roughly 20 per cent of the total crop and its associate, ain (*Terminalia tomentosa*) follows closely with 16 6 per cent Other superior injail species viz hed (*Adina cordifolia*), shisham (*Dalbergia latifolia*), tivas (*Ougeinia dalbergioides*), khair (*Acacia catechu*), bible (*Pterocarpus marsupium*), dhavda (*Anogeissus latifolia*), kalam (*Stephegyne parvifolia*), sawar (*Bombax malabaricum*) together form 13 4 per cent and rest of the species 50 per cent of the crop

The quality of the forests is not uniform It varies widely within the Division The best forest growth contains teak trees upto 70′ in height and 3′ to 4′ in girth at breast height

Evergreen forests —In these forests the vegetation is purely evergreen and teak is rarely visible These forests are situated in moist areas on higher slopes upto 3000′.

Illicit cuttings —The forests are subjected to a considerable amount of illicit cutting and looting especially near towns, railway stations and thickly populated areas Illicit cuttings are made either for fuel, timber or leaf-fodder In detected offences alone, the average annual loss is about 6,700 cft. of wood

There is a mobile squad with a jeep under a special duty Range Forest Officer, which keeps constantly moving throughout the Division doing patrolling and offence detection work The number of various types of offences detected in this Division during the year 1960-61 is as follows -

	No of cases.
(*i*) Illicit cutting	1148
(*ii*) Fire	66
(*iii*) Grazing	39
(*iv*) Miscellaneous	276
Total	1529

East Thana Division consists of mainly backward areas of Thana District Hence no forest industries have yet been started in this Division

Most of the tract is an undeveloped and backward area populated by hill tribes and adiwasis The population enjoys a good number of privileges Rice and nagli are the principal crops of the Division The people who are mainly agriculturists require 'tahal" for preparation of rabs and are permitted to remove "tahal" from the coupes under working They are also allowed to cut "tahal" from standing trees in protected forests under certain conditions Other privileges allowed are (1) removal of dead and fallen timber and firewood of certain species (2) cutting for wood ash-manure and certain shrubs (3) removal of thorns and (4) various other items of minor forest produce such as leaves, flowers, fruits, roots, honey, wax, gum, etc under certain conditions for domestic use and sale These amenities in the form of privileges provided by the Forest Department have greatly influenced the life of many adiwasis in this region who eke out their livelihood by collecting various types of leaves, fruits, deadwood etc as allowed to them under the Privilege Code

The forests of this division are managed under the following principal Working Circles

(A) The Main Timber Working Circle

(B) The Lake Catchment Area Working Circle

(C) The In-exploitable Working Circle

The method of treatment in the Main Working Circle is clearfelling with artificial regeneration of teak and valuable species in non-steep areas and selection-*cum*-improvement in the steep and poorer areas In the Lake Catchment Area Working Circle, the improvement fellings consisting of removal of dead, dying, unsound and over mature trees, is adopted Selection-*cum*-improvement fellings are carried out on a forty years cycle in the Protected Forests.

Only about a decade ago this Division was teeming with interesting wild life One could easily come across wild animals like

tiger, panther, sambar, bhekar, blue-bull, etc But due to indiscriminate hunting and shooting and other reasons the wild life is fast disappearing from the forests Efforts are now being made to preserve whatever wild life that exists in the forest The whole of the Lake catchment area of this Division is proposed to be constituted as a Game Sanctuary Hunting and shooting are completely prohibited now, in the area in accordance with the provisions of the Wild Animals and Birds Protection Act

During the 1st and the 2nd Five-Year Plans, the following main development schemes were implemented in this Division

Scheme	Target	Expenditure Rs
(1) Wet nurseries, 2 acres each	5 Nos	22651 00
(2) Planting of Agave hedges	114 miles	18391 00
(3) Matchwood plantations	140 acres	7712 00
(4) Intensification of checking forest produce in transit	3 depot buildings & 7 depot guards' nakas	30611 00
(5) Construction of buildings		133495 00
(6) Cultivation of lac	250 acres	9255 00
(7) Cashew plantations	408 acres	27332 00
(8) Management of Thana Woodlands		82788 00

KOLABA FOREST DIVISION

The Kolaba Forest Division comprises Karjat, Panwel, Uran, Pen, Alibag, Sudhagad and part of Roha Talukas All excepting the forests of Sudhagad Taluka of the former princely State of Bhor, are treated under the prescription of the Working Plan for the Kolaba Division forest reserves, by Shri R R Chaudhari, and those of Sudhagad under the Working Scheme for Sudhagad Range, prepared by Shri G R Mavinkurve

Kolaba Forest Division comprises forests found mainly on a very hilly, rugged, and in places highly precipitous terrain of the Western Ghats or the Sahyadris The narrow belt of area separating the sea on one side and the hill ranges on the other is the well-known "Konkan Patti", scenic with lush green paddy fields having a stately backdrop of hills and interspersed with picturesque coconut and betelnut gardens The area is intersected by many creeks, the large ones being the Roha, Dharamtar, Nagothana and Revdanda creeks The forests are thus spread over disconnected bits from the sea-shore (Casuarina plantations) to high hills such as Matheran plateau (highest point in this ridge being 2563 feet above sea level at St Paul's Church) having semi-evergreen vegetation The characteristic feature of the Division is the existence of innumerable and extensive private or malki forests either contiguous to or in close vicinity of, the Government forests, thus making the work of forest protection a highly difficult one Another important aspect is the assignment of forest lands called dalhi plots for cultivation on yearly lease to hill tribes and Adiwasis There are 406 such plots covering an area of about 25,753 acres With the average rainfall ranging from about 80 inches on the coast to about 250 inches at Matheran, the general character of the vegetation is moist deciduous containing teak and its associates on the lower slopes and valleys and stunted montane semi-evergreen type of growth on the crest of hills and on plateaus such as Matheran

The average percentage of forests to the total land area of the Division is about 21, the maximum being about 40 in Pen taluka and the minimum 21, in Kolhapur taluka The position of Reserved and Protected Forests as it stood on 31st March 1960 is as follows

	Area in acres and gunthas
Reserved Forests	
(i) Forest Department	2 21,653 03
(ii) Revenue Department	7 241 00
Protected Forests	
(i) Forest Department	15,389 21
(ii) Revenue Department	18,977 37½
Total	2,63,261 21½

The principal species found in the moist deciduous forests are teak (*Tectona grandis*), ain (*Terminalia tomentosa*) bibla (*Pterocarpus marsupium*), hed (*Adina cordifolia*), kalam (*Mitragyna parvifolia*), sawar (*Bombax malabaricum*) shisham (*Dalbergia latifolia*), nana (*Lagerstroemia lanceolata*) and *Albizzia* species The prominent species found in semi-evergreen hill forests are pissa (*Actinodaphne Hookeri*), Parjambul (*Olea dioica*), anjani (*Memecylon edule*), katekumbal (*Sideroxylon tomentosum*), bhoma (*Glochidion lanceolarium*), lokhandi (*Ixora parviflora*) pabha (*Chuckrassia tabularis*) phansi (*Canthium integerrima*), tartali (*Tabernæmontana heyneana*)

tupa (*Canthium umbellatum*), Jambul (*Eugenia jambolana*), jamba (*Xylia xylocarpa*) and mango (*Mangifera indica*)

Amongst bamboos, the dowga or katas bamboo (*Bambusa arundinacea*) is the principal one occurring in low-level area and along nalas and river banks in moist deciduous forests The manwel or medar bamboo (*Dendrocalamus strictus*) is practically absent in moist areas

Since the forests are relegated to high and rugged hills, interspersed with cultivation, paddy fields, private forests and *dalhi* plots, the protection of forests against illicit cutting of trees and against clearance of vegetation for unauthorised cultivation is a difficult problem, particularly in areas intersected by creeks where the illicit material is buried in silt and mud and transported at night to villages down the creek in the saline belt called 'Kharpatta area ' and further down up to Bombay where it finds a ready market However, the strict vigilance exercised and innumerable raids or searches made of houses, " machewas " and country crafts have yielded satisfactory results This work was greatly helped by the functioning of a Mobile Squad with a jeep in charge of a Range Forest Officer and the motorised dinghy in charge of a Forester located at the Dharamtar creek In some places a well-organised racket operates, employing Adiwasis as the tools for illicit cutting, while the financiers and traders in illicit material are the people of the Kharpatta area who are agriculturists-*cum*-forest looters In such places the evil must be curbed with a firm hand by measures such as withdrawal of forest privileges, imposition of collective fines and even posting of punitive police The menace is so serious as to warrant the adoption of these measures without hesitation During the year 1960-61, illicit material worth more than Rs 50,000 was detected and recovered

The Forest Industries include saw-milling, furniture making, manufacture of kath, manufacture of bidies from apta and temburni leaves, manufacture of toys from kuda wood (*Wrightia tinctoria*) and manufacture of various decorative and utility articles from different woods There is also a paper mill viz Paper and Pulp Conversion Ltd , Khopoli, which though using principally imported foreign pulp and Himalayan fir has also started using *Casuarina equisetifolia* successfully for the manufacture of various types of paper There is also a straw-board and cardboard factory at Khopoli The forests also provide employment to a number of Adiwasis engaged in the manufacture of charcoal in the coupes, in addition to those employed in over 17 Forest Labourers' Co-operative Societies engaged in the exploitation of forests

The forests of Kolaba are of vital importance in the protection of soil on steep hill slopes, in the regulation of run-off and prevention of floods, in the regulation of flow of water in rivers and streams, in the protection of catchment and water-sheds and in the maintenance of fertility of agricultural fields These forests also have a profound influence on the amelioration of climatic conditions Both the protection and productive aspects of forests are well-balanced The direct amenities which local people enjoy, apart from the many indirect benefits, include the exercise of many forest privileges The free collection of dead and fallen firewood of permissible species by Adiwasis alone amounts to lakhs of rupees There are two hydro-electric works in Kolaba Division, one at Khopoli in Pen Range and the other at Bhiwpuri camp in Karjat Range, which supply a major portion of the power requirements of Bombay and its suburbs

From the year 1951-52, the Working Plan drawn up by Shri R R Chaudhari is in force for the entire district excluding Sudhagad Range of the erstwhile Bhor State This plan has constituted the forests into 10 Working Circles viz , Main Teak, Fuel, Protection (Inexploitable), Hill Station (Matheran) Casuarina, Dalhi, Fuel and Fodder Reserves, Matchwood (overlapping) and Minor Forest Produce (overlapping) Working Circles The treatment prescribed for the Main Teak Working Circle, is Selection-*cum*-Improvement fellings with clear felling of at least 1/3rd area for concentrated regeneration by plantations on gentler slopes and flatter portions The rotation fixed is 90 years to avoid heavy soil erosion on steep slopes which was found to occur under the previous clear felling system The exploitable girth for teak is 48 " (O B) and for other species 36" (O B) In the area treated with Selection-*cum*-Improvement felling, large gaps of the size 66' × 66' or more are also to be rabbed and planted up

In the Fuel Working Circle which comprises mostly semi-evergreen vegetation in transitional stage in Karjat and Alibag Ranges, the area is divided into three felling series with 30 years' felling cycle The treatment applied is Selection and Improvement fellings with an exploitable girth of 36" (O. B).

The average area to be artificially regenerated is about 1200 acres annually. It is done both departmentally and by agri-silvi method The coupes are worked through three agencies viz contractors. Forest Labourers' Co-operative Societies and departmental The total revenue of the Division realised during 1959-60 was Rs 12,76,485 and the expenditure amounted to Rs 4,37,307, leaving a net surplus of Rs 8,39,178

Carnivora and herbivora are not well represented However, bird life and Pisces are well represented Tigers are rarely seen Panthers are frequently reported from all Ranges Sambhar is rare, as also cheetal, barking deer and mouse deer Neelgai or blue-bull is reported from Sudhagad, Pen and Panwel Ranges It is locally called "Rui' Ducks, teals and cootes are also found in some ponds in the season

No development schemes were started in the First Five-Year Plan The various Schemes undertaken during the Second Plan included 100 acres of special teak plantation 1350 acres of kaju plantation and 500 acres of sawar (*Bombax malabaricum*) which were raised Denuded and blank areas over 570 acres were also afforested under the Second Plan A live hedge of agave in three rows over 100 miles in length was also raised Nine Wet Nurseries of 2 acres each were also established Residential Quarters for one Range Forest Officer and 2 Orderlies at Karjat and for 2 Orderlies at Pen were also constructed

JANJIRA FOREST SUB-DIVISION

The forests of Janjira Sub-Division extend over two Districts viz Kolaba and Ratnagiri

The forests are very picturesque and prominently situated forming a very narrow belt along the west coast extending over a length of 40-45 miles with a width varying between 2 to 7 miles The forest extends over an area of 240 square miles

Most of the forests are situated on hilly tract which is rugged, and at places precipitous sloping generally east to west and are isolated by the intervening occupied lands The forests are of the moist deciduous type on hill slopes and semi to pure evergreen type on hill-tops The chief deciduous species are teak and its associates like ain, dhavda, kinjal, bondara, khair, hed, sawar, etc

The underlying rock belongs to the 'Deccan trap' with murrum soil exposed and lacking in humus On the slopes and pockets, the soil is deep and rich in humus In some areas laterite formation is found on hill tops, and sandy loam along he coast

The climate is moist, comparatively temperate and fairly healthy But the summer months are tolerably warm The average annual rainfall is a little over 100"

As the price of timber and firewood has soared, there is a tendency towards heavy illicit cutting Some have started a business of removing the teak timber illicitly from forests, and earning their livelihood Further, many creeks such as Bankot, Rajpuri and Revdanda are close to the valuable forests which yield teak timber and it is very easy to remove timber illicitly through these creeks

Teak and jungle-wood timbers, firewood and charcoal are the major and the chief revenue-yielding produce of the forests Other minor forest produce are apta leaves chilhar bark, hirda, shikekai etc Kath is extracted by the crude method

In the recent years geological survey has revealed that there are large deposits of bauxite in the tree-clad hills of Murud and Shriwardhan Ranges and in a part of Roha Range also

A large number of applications for prospecting and mining bauxite in these areas are being received day by day, and some firms have started removing the ore since 1960-61

An industrial estate has been declared near about Roha along the Kundalika River and some firms have already selected sites for erecting paper and pulp and card-board factories

Due to the existence of the forests, the paddy lands touching them are fertile and rich in humus and there is a marked difference in the production of the crops

In places like Murud and Mhasala the existence of these forests regulates the flow of water in a number of streams and rivers, some of which have been dammed to provide tap-water supply to towns like Murud, Mhasala, Pahre, Mendani etc Betelnut, coconut and banana plantations are raised in these tracts, which need a perennial source of water These plantations, particularly betelnut, fetch a considerable amount of revenue

The forests of the Sub-Division are mainly worked under Selection-*cum*-Improvement system with clear-felling upto 1rd of the coupe area, which is regenerated with teak and other superior injaili species Cultural operations such as weedings, cleanings and thinnings are carried out at suitable intervals, as per prescriptions of the Working Plan Most of the coupes are sold annually

and the remaining are allotted to the Forest Labourer's Societies for working About 4,800 acres have been leased to the adiwasis for cultivation which is known as "dalhi" on a nominal rent of about 3 nPs to 5 nPs per acre Out of this area mature trees are exploited leaving about 20 trees per acre

During the Nawab's regime, the forests of Murud range in ex-Janjira State were teeming with wild life such as tiger, panther, sambhar, nilgai, chital barking deer, peafowl, wild fowl etc and the wild life protection was so strict, that not infrequently sambhar, chital and nilgai strayed on the main roads and were to be seen grazing or lying down, by the passers-by But soon after the merger of the Janjira state, poaching has increased to such an extent, that the wild life can be scarcely seen However, in some pockets where there is luxuriant growth of forests, wild animals are still noticed In the remaining areas of the Sub-Division, wild animals like panther, bhekar, wild boar, wild fowl, peacock are noticed still

During the war years, the forests specially in Roha, Mangaon and Mahad Ranges appear to have been heavily worked Efforts have been made to plant the clear-felled areas with teak and superior injaili species

Schemes for the development, improvement and better protection of these forests have been prepared for the next 15 years, and it is expected that after the execution of these schemes, vast areas at present which are devoid of tree-growth will be planted up with valuable species like teak, cashew, khair, sawar etc

An area of 450 acres under cashew, 160 acres under teak and 390 acres under afforestation has been already planted to date An afforestation scheme has been taken up on the surrounds of the famous Raigad fort of Chhatrapati Shivaji, where in addition to valuable species, some ornamental species have been planted during 1961-62

To provide adequate seedlings for the above programme, and for Vanamahotsava, central wet nurseries have been established at Medhe, Mangaon, Rajewadi, Dapoli, Dehen, Shriwardhan and Vavdungi in this Sub-Division

SAWANTWADI FOREST SUB-DIVISION

The forest area of the Sawantwadi Sub-Division is situated in the southern part of the Ratnagiri District Ratnagiri District is rugged and hilly The District is a long narrow strip of about 250 miles along the sea coast with a width of about 30-40 miles The forest areas can be divided into two groups The first group consists of the forests of the ex-State of Sawantwadi and the Reserved Forests, which were in charge of Revenue Department and which were subsequently transferred to this Department The second group consists of areas acquired under the Second Five-Year Plan

The distribution of area is as under —

Class of forest	Area in sq miles	Remarks
Reserved Forests	4 88	Transferred
Leased Forests	2 48	from the
Unclassed Forests	133 12	Revenue
	— —	Department
Total	140 48	

75 93 square miles of area are acquired from malki owners to implement soil conservation schemes in Ratnagiri District

The forests of the Sawantwadi Sub-Division are mainly of two distinct climatic formations namely (1) Bombay Sub-tropical evergreen forests, and (2) South Indian tropical moist deciduous forests The latter type is composed of two edaphic variations viz (a) forests having lateritic red soil and (b) the forests with sandy loams The detailed description of each type of forest is as under —

The Bombay Sub-tropical evergreen forests

This type is found in the plateau region in the vicinity of the Amboli ghat area The elevation ranges from 1800′ to 3100′ It slowly and imperceptibly merges with the tropical moist deciduous forests The mean annual temperature is 23 C (79°F) and mean May temperature is 26°C (79°F) The average rainfall is 7500 mms (300 inches) spread over from May to November The soil is well drained laterite forming a hard crust on exposure The shifting cultivation and lopping in the past have caused retrogression from the true evergreen Unencroached portions of forests show abundance of evergreen species with deciduous species in the top canopy

The top canopy consists of *anjani* (*Memecylon edule*) with associates in order of incidence as hirda (*Terminalia chebula*), amberi (*Nothopegia colebrookiana*), amba (*Mangifera indica*), shendri (*Mallotus philippinensis*) etc The middle canopy is made up of bhoma (*Glochidion lanceolarium*), parjambhul (*Olea dioica*), dinda (*Leea macrophylla*), tamalpatra (*Cinnamomum tamala*) etc and undergrowth consists of ansoli (*Grewia nucocos*), wakeri (*Wagatea spicata*), Karvi (*Strobilanthes callosus*), etc, cane (*Calamus*

Thwaitissi). The climber miri (*Piper trichostachyon*) is also seen

The composition of the western slopes is characterised by the rapid disappearance of anjani (*Memecylon edule*) as the elevation falls and increasing presence of such species in the canopy as jambul (*Syzygium cumini*), parjambul (*Olea dioica*) etc. is observed

The South Indian Moist Deciduous type.—This type occurs in the tract, down the elevation of 1800′ above mean sea level and confines itself mostly to hilly and undulating ground The mean annual temperature in these forests is 24°C (75°F), the maximum being 33° (92°F) and minimum 22°C (72°F) The rainfall is below 4500 mm (180″) with a dry season six months. The soil is sandy loam in areas around Sawantwadi and the rest of the forests have red soil formed of lateritic lumps Natural growth is generally of the excellent form and vigour. Virgin forests are of rare occurrence in the case of acquired areas

The most characteristic species is teak (*Tectona grandis*) which reaches luxuriant size in the sandy loams The associates of teak are ain (*Terminalia tomentosa*), kinjal (*Terminalia paniculata*), nana (*Lagerstæmia lanceolata*), etc.

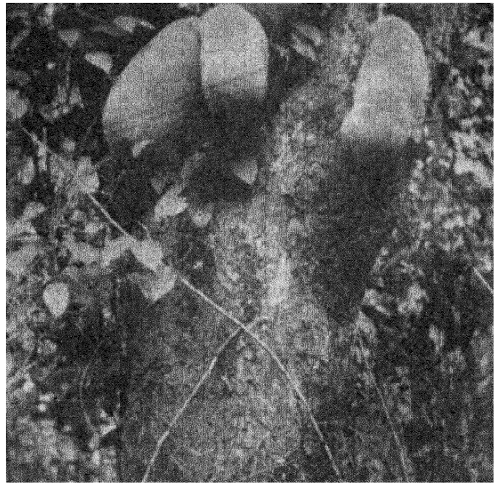
The middle storey consists of bibi (*Holigarna arnottiana*), satwin (*Alstonia scholaris*), bibla (*Pterocarpus marsupium*), shisham (*Dalbergia latifolia*), etc and undergrowth of ukshi (*Calycopteris floribunda*), asoli (*Grewia microcos*), etc

The bamboo viz kalak or velu (*Bambusa bambus*) is found in some part of the forests

The main damage caused to the forests is due to illicit cutting of teak and important injaili species The timber trees are illicitly cut for domestic purpose i e for house-building and agricultural implements and for sale Firewood species are also cut mostly for domestic consumption and sale Fire is generally set by the villagers in the hope of obtaining succulent grass.

Timber species other than teak have no demand locally There are 14 small-scale saw mills run mostly on circular saws Soft-woods are used for preparing packing cases for mangoes, cashewnut, bidis, etc Preparing toys of Pangara wood is one of the cottage industries in Sawantwadi.

The tract receives very heavy rainfall and the forest plays an important role in conserving soil and retaining water It was noticed that the forests of malki ownership were indiscriminately being cut with the result that the area was getting denuded A beginning was made with the acquisition of 50,000 acres of malki lands



Jack tree, an economic species Sawantwadi Sub-Division

under the Second Five-Year Plan and the afforestation of these areas is taken up. The existing forests supply large-size timber to the saw mills for house-building, firewood for the domestic needs of the people and minor forest products such as shikekai, hirda, tamalpatra and fruits

The ex-Sawantwadi State areas are worked under a sanctioned scheme They are divided into four Working Circles viz

(1) The Protection Working Circle.
(2) The Main (Teak Timber) Working Circle.
(3) The Old Plantation Working Circle, and
(4) The Teak Pole Working Circle

The method of treatment in the Protection Working Circle consists of improvement fellings in the overwood and light thinnings wherever necessary in the underwood Selection-*cum*-Improvement is the system prescribed in the Main (Teak Timber) Working Circle Plantations of the past are tended under the Old Plantation Working Circle In the Teak Pole Working Circle the method of treatment is improvement felling and light thinning with plantations in concentrated areas

Acquired areas—As for acquired areas, they are planted in accordance with the soil conservation scheme in Ratnagiri District The areas are divided into two groups—the first group consists of areas somewhat well wooded while the second group includes areas which are barren

In the first group planting is to be undertaken in one-third portion of the coupe while in the second group plantation is to be raised in the whole coupe. The annual area of working under

each group is 717 acres and 757 acres respectively. The area to be afforested annually is about 996 acres.

Wild life consists mostly of tiger, panther, spotted deer, sambar, blue bull, barking deer, and wild boar Bison is occasionally seen in some localities.

The following main schemes were undertaken under the Second Five-Year Plan —

(1) *Creation of Sawantwadi Sub-Division* — The area of this Sub-Division was a part and parcel of Kolhapur Division The new Sub-Division was created with effect from December, 1956 in order to undertake some of the important schemes.

(2) *Establishment of Wet Nurseries* —Three nurseries have been established under this scheme

(3) *Soil Conservation Schemes in Ratnagiri.* Excluding the forests of the ex-State of Sawantwadi there was practically no forest in Ratnagiri District which is a hilly and rugged country About two-third area of the District is uncultivable The areas are known as "warkas" lands and are of private ownership. They are subjected to cutting of tree growth for shifting cultivation on a rotation of 6 to 8 years The result is heavy soil erosion in the hills and inundation in the plains The nallas and rivers also get silted up A beginning has been made by acquiring about fifty thousand acres of such land and afforesting about 2,800 acres during the Second Five-Year Plan. The total expenditure on acquisition would come to Rs 20,34,267 51 and on afforestation Rs 1,77,088 02, including the pay of protective-staff

Nature is visible thought

—HEINRICH HEINS

What animal is dropped from the clouds ? The rain, dear

Why is the figure "9" like a peacock ?
Because it is nothing without its tail.



NASIK CIRCLE

WEST NASIK FOREST DIVISION

West Nasik Division is spread over parts of two revenue Districts viz Nasik and Ahmednagar The average altitude is about 1,200' above mean sea level The average rainfall ranges between 22" in Akola to 100" in the below-ghat area The forest area is as under —

(i) Reserved forest in charge of Forest Department	557 61	sq m
(ii) Reserved forest in charge of Revenue Department	109 30	sq m
(iii) Protected forest in charge of Forest Department	98 30	sq m
Total	755 21	sq m

The average of the last 3 years' gross revenue, expenditure and the net revenue is indicated below —

	Gross Revenue	Expenditure	Net Surplus
Rs	41,73,212	11,72,678	30,00,534

The Division is divided into seven Ranges

The most valuable teak-bearing forest is located in the below-ghat area The main valuable tree species are teak, sadada, hed, kalam, khair, shisham and tiwas Two varieties of bamboos viz, manvel and katas are found extensively Karvi is found in good proportion The forests of Nasik and Igatpuri Ranges are of an inferior type There are, however, extensive grazing areas (kurans) in these two Ranges In Nasik Range, chandan is found in small numbers In Igatpuri Range there are patches of evergreen forest In Akola and Rajur Ranges the tree growth is scanty and of a very inferior type There are many species of economic importance in the Division These are apta, temburni, kandol, karanj, chilhar etc In protected forests almost all the above species exist but in considerably different proportion The tree-growth in the good localities in the reserved forests attains a maximum height of approximately 90' with a girth upto 60" In such localities the average height is about 70' and the average girth 48" In the protected forests the non-teak trees are heavily lopped for "tahal" for preparation of rabs for cultivation

The forests are fairly well protected and there is no large-scale illicit cutting Small-scale pilferage continues Encroachments for cultivation however, are still taking place

Manufacture of kath is being done on a small scale There are no major forest industries in the Division These forests supply large quantities of raw material for various industries such as bidi manufacture, manufacture of bamboo articles, for tanning, for rope-making and saw-milling There are 38 saw-mills in Nasik City and Nasik Road alone These saw-mills are mostly small units and do not hold large stocks of sawn material but usually undertake sawing on orders from customers Hirda fruit required for tanning industry is exploited from Rajur, Nasik and Igatpuri Ranges

The forests provide the main source of livelihood to the villagers in the interior areas In the year 1960-61 this Division had employed the following labour —

	Labour units employed	Aggregate amount paid Rs
Departmental works	14,312	21,468
Purchaser's agency	54,154	71,231

The Department maintains 40-M 4-F of metalled road and 118-M 6-F of "katcha" road This year, one causeway costing Rs 28,770 31 was constructed on Par River A diesel road-roller costing Rs 52,234 30 was also purchased There are 14 Forest Labourers' Co-operative Societies in this Division 3 of these work coupes on upset price basis and 11 on logging basis The villagers enjoy the usual forest privileges The cultivators have a privilege to lop certain species in the protected forests for "tahal" for rab Considerable quantities of timber in the round, small-sized material, charcoal, firewood and bamboos are supplied from this Division Firewood depots for retail sale at concessional rates, are situated at Trimbak and Ghoti Provision is made for sale of tanning bark and hutting material at fixed concessional rates, as also for sale of timber at fixed rates at Range headquarters There are 7 wet nurseries in the Division which raise annually, approximately 2 lakh seedlings. The Division supplies more than one lakh seedlings for Vanamahotsava.

To beautify 'Pandav leni' which is a place of tourist interest, large-scale afforestation work has been done on the hill and a considerable number of shade and ornamental trees have been raised. On both sides of the paths leading from Trimbak to Gangadwar and Brahmagiri, eucalyptus plants have been raised.

The catchment areas of some of the big water reservoirs such as Bhandardara and Gangapur fall in this Division There are many places of tourist interest as well as places of worship in the Division. The important amongst these are Bhandardara, Randha falls, Lake Beale, Pandav leni, Trimbakeshwar, Gangadwar and Brahmagiri

The forests of Peint, Harsul and Barhe Ranges are worked under selection-*cum*-improvement system with clearfelling in suitable patches where teak plantations are raised The total area brought under teak plantation during the year is 361 acres 15½ gunthas The exploitation is carried out through contractors and Forest Labourers' Co-operative Societies Forest Labourers' Co-operative Societies are of two types viz (1) those working as per revised formula basis and (2) those working on logging basis The contractors market their timber, fuel and charcoal through Nasik, Ghoti and Sangamner markets The societies working on revised formula basis sell their material at Nasik in their depots The material extracted by logging societies is brought by them to Government Timber Sale Depot at Nasik and is supplied at schedule rates to various Government Departments and Public bodies and the remaining sold in open auction, held 2 to 3 times a year Annually about 6,000 tons of timber and 750 tons of charcoal are brought to Government Timber Sale Depot and sold, realizing a gross annual revenue of about Rs 27,58,386

The rates obtained for teak, average Rs 10 per cft for all types of material, the maximum being Rs 18 per cft Non-teak timbers specially hed, kalam and khair fetch a good price varying from Rs 5 to Rs 8 per cft The grazing areas and minor forest produce farms are first offered to Village Gram Panchayats and other corporate bodies on upset price basis and the remaining sold by open auction

Except panthers, there is practically no carnivora in this Division However, tigers occasionally come from the adjoining Thana forests. Deer species are not found anywhere Rabbits and other small game are found in small numbers

Development works—Two quarters were constructed at a cost of Rs 38,203 Agave plantation has been done over a length of 113 miles at a cost of Rs 13,755 Seven wet nurseries have been established so far. Two diesel pumps have been purchased for watering two nurseries. The total amount spent, inclusive of cost of the diesel pumps is Rs 40,000 The soil conservation and demonstration centre at Pathardi is maintained and is being extended. The result obtained in raising valuable plants is encouraging Afforestation and rehabilitation of pasture lands was done by fencing and by the introduction of improved varieties of grasses and tree species Sinnar-Pangarwadi kuran has been fenced with barbed wire and Belgaon-Dhaga and Dudgaon kurans are protected by cattle-proof trenches Cashew plantation has been done in an area of 376 acres at a cost of Rs 20,673 The total area afforested so far is 817 acres The afforestation work has given encouraging results

EAST NASIK FOREST DIVISION

The forest occupies 22 31 per cent of the total area of Nasik District The East Nasik Division consists of seven ranges which form the eastern 2/3rd of Nasik District and a small part of Vaijapur Taluka of Aurangabad District The soil varies in quality but is generally shallow and poor It is covered with loose stones and in many places rock appears on the surface There are 4 categories of forests in this division viz Reserved Forest, Protected Forest, Unclassed Forest and Pasture Forest (in charge of Revenue Department) The area under each category is as under —

Head of Forest	Area in square miles
(1) Reserved Forest	760 10
(2) Protected Forest	6 99
(3) Unclassed Forest	80 87
Total	847 96
(4) Pasture Forest in charge of Revenue Department	44 58

The forests of this division can be grouped into three zones The forests of the north western part of the division are deciduous forests tending towards the moister type Teak is the principal species found in these forests Its associates are ain or sadada, hed, kalam, shisham, khair, tiwas, bibla and dhawda found in varying proportion Bamboo is also common except in the eastern parts of the Surgana Mahal Two species of bamboos viz. manwel on upper slopes and kashti on the lower slopes and in the valleys, are found. The vegetation along the terraces of the western ghat is mainly of evergreen type. The principal species are

mango, jambul, karanj, hirda, mohin, kombal, etc, with scrubs of karwand, karwi, etc

The incidence of offences viz., illicit felling, illicit grazing and encroachments for cultivation is very high and therefore a major portion of time of the staff is spent in apprehending the offenders and in protecting the forest.

Check nakas have been established at important points to prevent transport of the illicitly cut material There is a Mobile Squad with a jeep for Nasik Circle

The main village industries on which the forest population depends are as under

(*i*) Preparation of bamboo baskets for house-hold purposes or other similar articles from bamboo for daily use in Surgana Range

(*ii*) Distillation of Rosha grass carried out during the fair season in Dindori, Kalwan and Baglan Ranges

(*iii*) Manufacture of katha from khair trees is also taken up in areas where khair trees are available

(*iv*) Rope-making from Agave fibre

(*v*) Manufacture of bidis from apta and temburni leaves

(*vi*) Use of tarwad and chilhar bark and ghatbor fruits for tanning

(*vii*) There are many saw mills at Nasik and other big places like Malegaon where round timber is converted into different sizes for house-building and other purposes

The forests cater to the grazing needs The poor utilise the firewood and timber out of the remnant material lying in the felled coupes according to rules The leaves shed by the trees are used for manuring the fields A substantial proportion of the population is absorbed in the work of felling of trees, cutting of grass, transport of timber, firewood and grass and in other forest operations

The forest in Surgana Range is worked under selection-*cum*-improvement system under Dangs Plan and Surgana Scheme

The forests from the other six ranges and from part of Surgana are worked under Nasik above-Ghat Working Plan under clear felling with reserves system and artificial regeneration in suitable areas with teak and injaili In the thinly wooded areas efforts are made to reclothe the forests as far as possible

Wild life is rare in this Division. The wild animals generally found are, panther, deer, wolf and fox

The following schemes under the Second Five-Year Plan were taken up in this division

(*i*) *Agave Plantation*—Agave has been raised over a length of 115 miles

(*ii*) *Wet Nurseries*—Six wet nurseries each of 2 acres have been maintained in 6 Ranges of this Division.

(*iii*) Opening of a Soil Conservation and Demonstration Centre at Chandor.

The object of the scheme is to demonstrate to the public the ways and means by which the impoverished and barren lands can be enriched and maximum production ensured For this, a soil conservation centre has been opened at Chandor A total area of 250 acres has been afforested during the plan period

(*iv*) Afforestation of arid and blank areas in East Nasik Division

Under the Second Five-Year Plan soil conservation and afforestation works have been taken up on a fairly big scale.

The total area taken up for afforestation up to the end of 1960-61 was 1,187 acres 8 gunthas

NORTH DHULIA FOREST DIVISION

The North Dhulia Division extends over the north of Tapti region of Dhulia District The entire area of 855 106 square miles of reserved forests is in charge of the Forest Department The forests were settled and constituted as reserved forest in 1881 and succeeding years The average annual rainfall varies between 30" to 42'

The forests are situated on a terrain varying from almost flat with deep loamy soil in Taloda Range, to hill slopes ascending to an elevation of 3000' above mean sea level, with varying degrees of slopes Teak forms the principal species with ain, shisham, tiwas, biya, hed, khair, dhavda, dhaman as its associates On the plains of Shahada and Shirpur Talukas the quality of teak is comparatively poorer producing only pole-size timber Along the fringes, firewood species predominate and anjan is found growing almost in pure patches Damage to the forests is due to fire, theft, encroachment and grazing Great damage is done by fires, which are of annual occurrence in the Satpudas

Considerable damage is caused due to illicit cutting. To curb illicit cutting, staff for patrolling is appointed in the affected areas and the services of the Mobile-squad of Nasik Circle are availed of. To encourage villagers to purchase *bonafide* material at reasonable cost, departmental retail sale depots of timber and firewood have been opened at different places

Due to land-hunger, encroachments in forests for cultivation have become common in certain regions.

Unauthorised grazing and grazing of prohibited animals are common Young natural and artificial regeneration is often destroyed by grazing before it is allowed a chance to get established

The important forest industries in the Division are., (i) **Saw-milling, and (ii) Rosha-grass** distillation

Traders dealing in timber and fuel get their material from the forests in the Division and no material is brought from outside The timber from this Division is feeding some of the market centres in West Dhulia and Nasik Divisions and in Gujarat State There is a departmental depot at Dondaicha where timber from Akrani Range is brought and sold

Private saw-mills are working at Shahada and Shirpur Other minor industries are kath manufacture from khair, and bidi manufacture from tendu leaves There is esnough raw material for setting up a straw-board factory

The Division is yet backward, mainly due to the hilly tract, the backwardness of the population, and poor communications Due to labour scarcity 73 forest settlements have been established in different localities to ensure labour supply whenever required for departmental and other works These settlers are given lands for cultivation for their livelihood Various facilities like schools, wells, dispensaries etc., are made available to these settlers 'Taccavi' is advanced to the needy cultivators

To facilitate transport of forest produce and to connect the forest settlements with the important roads, this department is maintaining 231 miles of fair-weather roads and 52 miles of bridle paths

The forests play an important role in the economy of the population The Forest Labourers' Co-operative movement started in 1950-51 has made great progress during the past 10 years As against only 2 societies during 1950-51, there are at present 41 societies

Presently the following Working Plans are in force :—

(1) Satpuda forests and Taloda Reserved forests Working Plans by Korlhalli and Mundkur

(2) Akrani forests · Interim Working Scheme by Kalbag and Wagle.

The Division comprises 5 Ranges with 20 Rounds and 53 Beats

These forests were once famous for elephants, tigers, panthers, bears, sambhars and deer

With the opening of areas for cultivation and the increase in population, the fauna is getting extinct There are now a few tigers, panthers and bears

Prior to the implementation of various schemes under the Five-Year Plans, only normal teak and other plantations were undertaken in the felled coupes as per the prescriptions of the working plans Development work commenced only with the Second Five-Year Plan Plantations of teak, matchwood and cashew were raised The following will indicate the details

Additional Teak Plantations were raised under the Five-Year Plan over an area of 652 acres, matchwood plantations over 772 50 acres and cashew plantations over 50 acres Afforestation of arid and blank areas was also done over an area of 1,200 60 acres Agave hedge was raised over a length of 87½ miles 4 Central Wet Nurseries were prepared and maintained to meet the requirement of the various afforestation schemes In addition, a Soil Conservation and Demonstration Centre was opened and maintained

WEST DHULIA FOREST DIVISION

Dhulia is one of the largest forest Districts in the Maharashtra State The District is divided into West and North Dhulia Forest Divisions The total area of the Reserved Forest in this Division is 3,57,379 acres The average annual rainfall is 25" at Nandurbar and 43" at Nawapur

There are two clearly marked zones, the north-west and the south-west The crop in the former consists of mixed deciduous species among which teak occupies a conspicuous place The quality of crop varies greatly within short limits from deciduous forests of a fair size to thorny shrub or open grassy lands interspersed with stunted khair or palas

The soil in the latter is subjected to erosion The general characteristics of these lands are more or less those of wooded pastures In sheltered ravines dhavda, salai, khair, bor, hiwar, apta, etc., are found and in the south on the plains and gradual slopes anjan is most commonly found

Forest fires are the greatest menace to the forests. Fires are caused mostly because of the practice of the local people of burning grass under mhowa trees, in order to facilitate collection of mhowa flowers Fire lines around the area to be protected, minimise to a considerable extent the danger of fires

Another danger to forest is illicit cutting Nearly 4,000 forest-offences are detected annually

The marketable products are timber and firewood for which local demand is limited Most of the timber and firewood is exported by the Tapti Valley Railway which runs through the most important forests of Nawapur and Chinchpada In addition, apta, tembhurni leaves, rosha oil and kath are also exported

The first Working Plan was drawn up in 1903

As per the present Working Plan, the area of the first zone is divided into "Teak timber", "Teak pole" and "Fuel" Working Circles In Teak Timber Working Circle, Selection system on a 20 years felling cycle, is adopted

In the Teak Pole and Fuel Working Circles, Coppice with Standards with a felling cycle of 40 years is prescribed

The area of the second zone is 1,71,439 acres Here the problems of management are mainly pastoral and agricultural, rather than silvicultural The principal prescription is rotational grazing during monsoon months with limited number of cattle admitted to graze Four pastures are open to grazing at any one time and the fifth is closed in turn for 8 years In the fifth pasture closed to grazing, a special provision is made for temporary cultivation and bunding along contours so as to check erosion and build up the soil Planting in lines, especially of anjan, a valuable fodder species, is done

The area planted with teak as per the prescriptions of the plan is 16,875 acres and under agri-silvi system 4,601 acres

During the Second Plan the following schemes were implemented -

Afforestation and rehabilitation of Pasture lands—Plantations over an area of 11,124 acres were raised Species like anjan, neem, etc were planted in trenches in addition to grasses raised on 'uralies'

Afforestation of arid and blank areas—Under this Scheme plantations over an area of 1,250 acres were raised The species planted were anjan, neem, kansar, khair, sisoo, etc

Rotational grazing—Under this scheme an area of 2,388 acres was covered during the Second Five-Year Plan Grasses like anjan, shedya, and pawnya were introduced

Propagation of bamboos—Bamboo plantation over an area of 10 acres was raised

Matchwood plantation—Sawar plantations were raised over 395 acres.

Teak plantation—Teak plantations were raised on 627 acres

Establishment of Wet Nurseries—Six wet Nurseries were raised and the same were maintained

Construction of buildings.—Quarters for R F O, 2 Clerks, 1 Forester, 4 Guards and 1 Range Forest Office were constructed.

Soil Conservation and Demonstration Centre at Nandurbar—Land improvement work over an area of 50 acres was carried out The closure of the area has brought about much improvement in the area In the first season itself sufficient grass had come up in the area

Agave plantation—Agave plantation over 113½ miles was raised

Extensive cultivation of Lac—One Brood-lac farm was opened in order to supply brood lac to the local people for propagation

Cashew plantation—Cashew plantation over an area of 120 acres was raised

Creation of an armed Forest Constabulary Two forest subordinates from the protective staff underwent training in fire-arms at Poona

Departmental Working of coupes—One Government truck for departmental working of coupes was supplied to this Division and a garage for the same was constructed

Fodder Bank Scheme This scheme was sponsored by the Central Government The scheme was implemented in Lalling Kuran near Dhulia The main object of the scheme was to supply hay in emergencies to the scarcity areas

Forest Labourers' Co-operative Societies The entire Division has been brought under the working of these Societies There are at present 14 Societies working in this Division and from 1950-51 they have worked 145 coupes

JALGAON FOREST DIVISION

Jalgaon Forest Division covers the entire Jalgaon District and a part of Kannad Taluka of Aurangabad District The classification of the forest areas is as under –

	sq miles	A. G
Reserved forest in-charge of Forest Department	776 68	497079 06
Reserved forest in-charge of Revenue Department	24·26	15530-23
Total	800 94	512609 29

The forests are of the mixed deciduous type Anjan and bamboos occur in abundance in these forests Other important species are teak khair, salai, dhawda, sisoo, mohin, and babul Teak is the most valuable species The forest areas in the Satpudas are fairly well-stocked Those in the plains are generally sparsely stocked

The protection of forests in the Satpudas poses a difficult task because of the ruggedness of the areas and the habitual indulgence of the inhabitants in illicit cutting. There are no major forest industries in this Division. Teak is sawn and sold. There are in all 27 saw mills

The people are mostly, locally dependent on forests for earning their livelihood The forest settlements are largely confined to the Satpuda Ranges of this Division and are not easily accessible during the rains The forest settlers have been granted land from forests for cultivation on nominal assessment They are given "tagai" loans, free timber for the construction of houses and other concessions admissible under the rights and privileges. They are also provided with work by the Forest Department during the fair season. The forest villages in this Division enjoy forest privileges which include free grant of timber in the case of accidental fire, the remnant material below 6" girth from the coupes worked by the contractors, and plucking of anjan leaves on permits for the purpose of fodder A number of other privileges are also enjoyed by the forest villages The forests of this Division provide fodder, grass and free grazing on a fairly large scale The average annual revenue is Rs 30 lacs and the expenditure Rs. 7 lacs.

The reserved forest areas of this Division are covered by the following five different Working Plans which are in force

1. Revised Working Plan for the Satpuda Forests of East Khandesh and North Khandesh Divisions.

2. Revised Working Plan for the Scrub Forests and Jamner Teak Reserves.

3 Revised Working Plan for the Anjan and Scrub Forests of Edlabad Range of East Khandesh Division.

4 Working Plan for the East Khandesn Babul Forests

5 Working Plan for the Satmala Forests

The yield is regulated on area basis.

Wild Life is getting scarce in this Division The carnivora is confined to the Satpudas only Bear, sambar and nilgai only, are reported to be found

During the First Five-Year Plan period one building was constructed as residential quarters for the Range Forest Officer at Raver

During the period of the Second Five-Year Plan, 8 Wet Nurseries were prepared and maintained, to meet the requirement of the afforestation schemes, implemented during the Plan period Bamboos were propagated over an area of 40 acres, match-wood plantations were raised over an area of 853 acres, additional teak plantations were raised over an area of 664½ acres and Agave hedges were planted over a length of 109 miles Afforestation and rehabilitation of pasture lands covering an area of 626 acres were carried out This scheme also comprised wire-fencing of the grass kurans over a length of 8 miles and 1 furlong Afforestation of blank and sparsely wooded areas was also undertaken over an area of 926 acres A soil Conservation Demonstration Centre at Mehrun, was opened covering an area of 60 acres Roads were built over a length of 15 miles and 7 furlongs. In addition, residential quarters for a Range Forest Officer and another for a Range Clerk were also constructed.



Agri-Silvi Plantation of 1951-52—Wavadade, Old S. F. S. No. XIII-A—Jalgaon Range, Jalgaon Division

AMRAVATI CIRCLE

AMRAVATI FOREST DIVISION

The Amravati Forest Division covers the entire Amravati Civil District. The total area of the district is 4,723 square miles, of which the extent of forest area is 1,428 square miles, constituting .

		Sq miles
1	Reserved Forest –	
	"A" Class ...	1,271
	"C" Class ...	215
2.	Protected Forests—	
	Ex-proprietary Forests	32
	Total ..	1,428

The forests of the Division are distinguished into two distinct categories the Plain Forests and the Melghat Forests The Plain Forests lie scattered in small blocks amidst the intensively cultivated tract The Melghat forest covers the entire area of Melghat Taluqa It is a compact block of 1,187 37 square miles, constituting 77 per cent. of the land area of the taluqa The terrain is hilly occupying the Gawilgarh ridge of the Satpura Ranges The highest point on the ridge is the Bairat peak 3826′ above M. S. L

The composition of the forest varies directly in relation to climate, soil and altitude The underlying rock is basalt and the soils derived from it are clayly loam to clay

In the Plain Forest, the rainfall is on an average 30″ annually. The summer is long The soil is shallow and the forest, is of the dry mixed deciduous type with teak and its associates, salai (*Boswellia serrata*), dhanora (*Anogeissus latifolia*), tendu (*Diospyros melanoxylon*), achar (*Buchanania lanzan*), and rohan (*Soymida febrifuga*) In sheltered valleys scattered bamboo clumps are met with in the understorey Reproduction is generally patchy.



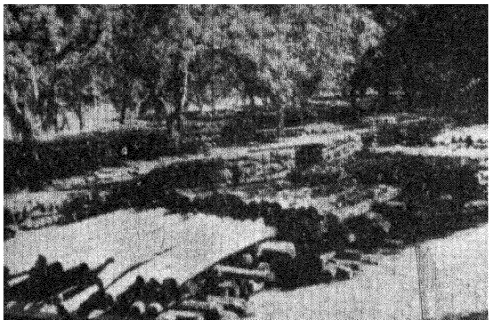
Dragging of squared timber in the Melghat Forests of Amravati Division.

The southern and western portion of Melghat gets a comparatively less rainfall of about 40″ annually and the portion in the north of the main Gawilgarh ridge receives an annual rainfall from 60″ to 100″ Melghat holds a highly potential forest of the Division, with a high percentage of teak varying from 40 per cent. to almost pure stands of good quality. Belts along the valleys of the rivers Sipna and Kuapathi and nalas with well-drained fairly deep soil, contain beautiful stands of teak with average heights between 70′ to 90′ The associates are haldu (*Adina cordifolia*), dhanora (*Anogeissus latifolia*), saj (*Terminalia tomentosa*), shewan (*Gmelina arborea*), tiwas (*Ougeinia dalbergioides*), kalam (*Mitragyna parvifolia*), etc. Tiwas generally occurs on the higher altitude between 2,400′ to 3,000′ and is found in pure stands. Bamboo occurs in the understorey and is of good quality in the northern portion Lantana has invaded the southern and middle portion, comprising about 50 per cent of the area and is a menace Reproduction is scanty.

The forests of the Division are vulnerable to damage by fire, illicit felling, illicit grazing and frost.

Forests of the plain region being scattered and amidst populated areas are particularly vulnerable to damage by illicit felling and illicit grazing The Melghat forests with a heavy undergrowth of grass and lantana, high winds during the hot season and a hilly configuration are fraught with constant danger by fire. The damage by front is noticed in the low-lying valleys within an elevation of 1,200′ to 1,500′.

Inside the reserved forests, 170 forest villages (labour colonies) have been established to afford a permanent supply of dependable labour on the protection and conservancy works They



Paratwada Depot—Amravati Division

form the back-bone of forest protection and in co-ordination with the staff, maintain the required vigilance The forests have remained, well-protected against the likely damage from fire, illicit grazing and fellings.

Inside the forests no industries have been set up except distillation of Rosha grass oil The local "burads" utilise bamboos from the forests for the manufacture of bamboo matting, baskets, and chicks. Distillation of rosha grass was being done departmentally between the years 1949-50 to 1955-56 Successively, an area of 231 acres was planted between this period for the departmental distillation of rosha grass oil Due to the ebb in the market and the operation being uneconomic, departmental distillation was abandoned and now the areas are sold on annual lease to the contractor who distills the rosha grass oil.

At Chikalda, coffee plantations have been raised by the missionaries A plantation of about 6·2 acres of coffee is with the Forest Department The coffee beans are collected and sold realising on an average, a revenue of Rs 200 per acre annually.

The forests of Melghat are essentially teak-bearing with an estimated annual yield of timber at 13 lac cft. The locality has a future for developing wood-based industries.

Various departmental works afford a permanent source of labour to the tribal population The area however, is thinly populated; hence shortage of labour The local population enjoys privileges and concessions for grazing and for obtaining their "nistar" requirements for *bona fide* consumption at non-competitive rates The hill station at Chikalda is a great attraction to the visitors during the hot weather Melghat forests are fairly rich in game and attract sportsmen from all over the country

The forests of the Division are being managed under the prescriptions of the following Working Plans :—

(1) Melghat Forests under the Working Plan by Shri D C Sharma, for the period from July, 1956 to 1970.

(2) Plain forests—The Working Plan of these forests has been revised recently and has come in force from the current year. Bamboo and other minor forest products are exploited under rated pass system at the sanctioned schedule of rates.

The exploitation of coupes from the valuable forests of Melghat is done through the departmental agency.

The Working Plan for the Melghat Forests prescribes raising of teak plantations in the annual coupes Teak plantations are generally successful The average annual surplus revenue of the Division is about Rs 37,00,000.

The forests in Melghat are fairly rich in game. The animals found are bison, tiger, panther, bear, sambar, barking deer, pig and chital The area is divided into 22 shooting blocks From June 1961, the Bombay Wild Life and Wild Birds Protection Act, 1951, has been made applicable to this region.

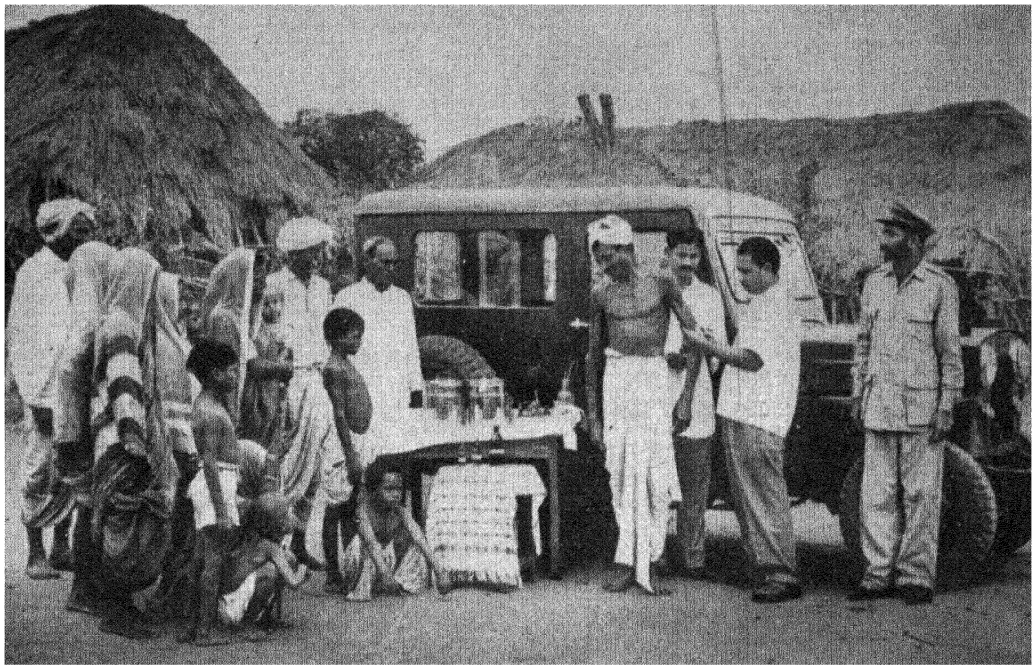
Under the Second Five-Year Plan, seven schemes, as below were executed with an overall expenditure of Rs 3,90,254, (1) Extension of regular plantation of teak, and semal and Wet Nurseries (2) Construction of roads (3) Construction of buildings and wells (4) Raising of the economic status of forest labour (5) Construction of dams and bunds. (6) Afforestation of catchment area. (7) Survey and demarcation of Private Forests.

YEOTMAL FOREST DIVISION

Yeotmal Forest Division lies wholly within the Yeotmal District of Vidharbha area There are 1141 square miles of reserved forests in the Division Out of these, 841 square miles of forests are under "A" class, that is under management as per the working plan and 300 square miles under "C" class which are kept primarily for grazing and do not come under the working plan Besides, there are 73 square miles of ex-proprietary forests

The average elevation of the Division is 1200' above M S.L. The elevation varies from 500' along the Wardha river to a few hills of 2000'. The average annual rain fall is 35".

The forests of Yeotmal Division belong to the South India tropical dry (mixed) deciduous types of Champion's classification of forest types of India



Mobile Forest Dispensary, Korat Forest Village, Kinwat Range—Yeotmal Division

The forests can broadly, classed as under .--

(*i*) Good quality teak forests

(*ii*) Poor quality teak forests

(*iii*) Mixed forests

(i) In the good quality teak forests, teak trees upto 5′ girth are found with a few trees reaching 6′ girth The other species found are ain, bel, kalamb, tiwas, lendia, dhawada, tendu, semal, bhiwa, etc Natural regeneration is on the whole inadequate

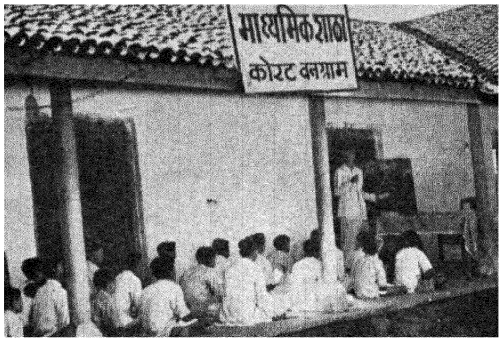
(ii) The poor quality teak forests occur over most of the area of the division Teak forms over 50 per cent of the crop and in many areas it is almost pure The associates of teak are dhawda, salai, ain, lendia, tendu, achar, etc The quality varies from place to place but a majority of the areas is pole forest, teak generally growing up to 2½′ girth Natural regeneration of teak is on the whole good.

(iii) Mixed forests occur in patches, mostly in the south-east in Wani range Here teak is entirely absent The species found are ain, lendia, dhavda, tendu, gavrai, char, bija, beheda, kalani, khair, etc

The problem of illicit cutting has become acute in some areas, Prior to April 1960 the transit rules under section 41 of I F. A 1927 were not applicable to forest produce from private lands but this has now been remedied Protection of "A" class forests from damage by fire has been quite good

There are no major forest industries in the Division, except saw milling There are a number of saw mills all over the Division, where the timber, is sawn before sale and export Since teak is abundant in the Division, other species are not used Among the minor forest produce, tendu leaves and gum are important

In areas where forests are well distributed, firewood is used for domestic needs The forests provide grazing to a fair extent There are several ramnas (kurans) all over the division from which cutting of grass on permits is allowed and the needs of the bigger towns for grass and hay are met Dead wood from forests is allowed to be removed on permits, for domestic use The collection of edible fruits, roots and gum is permitted free As per "nistar" rules the agriculturists of villages within 5 miles of coupes under exploitation are given small-sized timber and fuel at half the market rates The removal of boulders, earth etc., for agricultural use is allowed on free permits.



Forest Village School at Korhat village—Yeotmal Division.

The forests are not burdened with rights Privileges are few. The abundant natural regeneration of teak, favoured by controlled grazing and fire protection is taken advantage of in prescribing the system of management. The major portion of the forests is worked under the Coppice with Reserves system, under which each patch of forest is treated according to the treatment suited to it Plantations in suitable areas have mostly been raised under agri-silviculture. Teak is planted at a spacing of 6′×6′ with 2 lines of cotton between the lines of teak.

A feature of this Division is the large number of in-forest settlements or forest villages established by the department to provide substained labour in forest areas Almost all the forest works in the Division are carried out by these forest villagers There are 45 forest villages in the Division with a total population of 11,295 The department looks after the welfare of the forest villages, who have been provided with land for cultivation at a nominal assessment The department gives "taccavi" loans to the plot holders and runs 11 schools, one at Korat, a middle school, with hostel facilities. The department also runs a forest dispensary, with a 2 bed in-patient ward at Korat in Kinwat Range where there are 13 forest Villages within a small radius. The doctor is provided with a jeep and he visits all the forest villages in the range every week.

The fauna are fairly well represented in the forests of the division Tigers are found in many of the larger forest blocks in fair numbers and panthers are common all over. Hyænas, wolves and wild dogs are found in certain areas, Sambar and cheetal occur in many areas, but their numbers are much reduced since the last 20 years Blue bull, chinkara, four horned antelope and wild pig are found in fair numbers all over the district. Black buck and barking deer occur rarely and only in one or two localities. Amongst small game, hare, porcupine, peafowl, partidge, quail, blue rock and green pigeons occur all over the District.

As per the revised working plan, which came into force from 1956, the "A" class forests have been divided into the following Working Circles.

Working Circle	Area in Sq miles.
I. Penganga selection-*cum*-improvement Working Circle	20-48
II Coppice with Reserves Working Circle	616 12
III Improvement Working Circle	30-61
IV Plantation Working Circle	8 59
V Pasture improvement Working Circle.	168 03
VI Miscellaneous areas like kurans, etc	70·52
Total .	914·35

WEST BERAR FOREST DIVISION

The present West Berar Division with headquarters at Akola, extends over two revenue districts viz, Akola and Buldana. The total forest area is 789 27 square miles out of which 744 96 sq miles is reserved forest and 44 31 sq. miles protected forest Thus forest is divided into 7 ranges

The percentage area of forests in Akola District is 8 per cent and in Buldana district 12 per cent The overall percentage for the division is 10 per cent.

The majority of the important forests of the Division is confined to the hilly region and fall under the type Southern Tropical Dry Deciduous Forests of Champion s classification. Teak is the main species found all over. Anjan is found in pure patches and babul is confined to the river banks along the black cotton soil.

Occurrence of petty thefts of timber and firewood is ever on the increase. Forests being in scattered small patches, provide easy access to the miscreants.

There is no major forest industry in this Division as the forest is not even sufficient to meet the daily domestic demands of the population As a matter of fact forest produce is imported here from the neighbouring forest divisions.

The chief local wants of the people are small timber for house building and agricultural implements, fuel, thorns, grass grazing and bamboos. The demand for teak timber is keen and it is saleable in all sizes. Firewood of babul is favoured mostly

At present the reserved forest has been classified into "A" and "C" classes "A" class is primarily intended for the production of timber and fitewood while "C" class for grazing.

In 1898 a provisional working scheme was introduced for the greater portion of the forests to which the treatment prescribed was "Coppice with Reserves". The first working plan was introduced in 1912. At present the forests are being worked under the following systems.

(1) Coppice with reserves.

(2) Improvement.

(3) Clear felling with artificial regeneration with agri-silvi method used for babul

The last working plan which was introduced in 1942-43 is now under revision. The work is nearing completion

Plantations —Attempts to raise plantations were carried out as far back as in 1883 Actually, raising of babul by agri-silvi method started in 1900 and since then it is being practised After years of experience the present practice is to sow seed of babul in lines 18′ apart.

Sandal - - Sandal plantations were started in 1911 and continued upto 1922. During this period 1,033 acres were stocked These early plantations served as seed distribution centres for the spread of sandal naturally into the forest

Teak —Stray efforts were made in the past to raise teak under agri-silvi method But the regular plantations were taken up during the 1st Five-Year plan period and these are being continued now

Wild life is not varied and found only in the remote parts of forests Most of the forests of this division are in scattered patches and to preserve and protect the forest fauna whatever is found there, a vigorous campaign is usually organised during the Wild Life Week and also during the course of tours.

A game sanctuary of about 1/2 square mile has been created surrounding Narnala Fort which is a picturesque spot in this Division.

During the period of the last two plans the following works were carried out under various schemes.

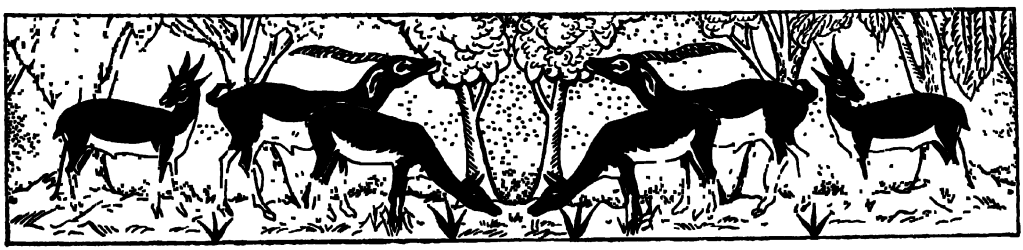
(1) Construction of quarters for subordinates.	44	
(2) Construction of wells for water supply.	4	
(3) Improvement of Roads.	6	miles.
(4) Plantation of teak and semal.	241	acres
(5) Afforestation of catchment areas.	38	acres.
(6) Wet Nurseries	3	
(7) Survey and demarcation of ex-proprietory forests	43	Square miles
(8) Reorganisation of Ranges.	1	Additional Range was created.

In addition, the schemes for training of clerks, implementation of transit rules, appointment of surveyors and clerks were successfully implemented.

Forest Labourers' Co-operative Societies. -- The labour Co-operative movement has started recently in this division and so far three Forest Labourers' Co-operative Societies have been registered During 1960-61 one main timber coupe was allotted to one of the Societies

School —This division is running a primary school in one of the Forest Villages.

There is pleasure in pathless woods,
There is rapture on lonely stone,
There is society where none intrudes,
By the deep sea and music in its roar,
I love not man the less, but nature more—BYRON



NAGPUR CIRCLE

NAGPUR FOREST DIVISION

The forest area of Nagpur District is in this Division The total forest area is 882 88 square miles and consists of Reserved Forest as well as ex-proprietary Forest

It has a mixed topography with a hilly terrain to the north, a low table-land to the west and broken peneplain to the south. The average annual rain fall is about 50 inches

The Reserved Forest belongs to Champion's classification of "Southern Tropical Dry Deciduous Type" and consists of mainly the following sub-types

(*i*) Good quality teak in mixed forests in which teak forms 30 to 60 per cent of the crop with saja, salai, dhaw, tendu etc (*ii*) Poor quality teak forests This type is found in dry exposed localities but teak forms 50 to 95 per cent of the crop with associate trees like, lendia, dhaw, garari etc (*iii*) Mixed forests, confined to poorly drained stiff soil, where saj, tendu, bhirra, aonla and bija are found (*iv*) Poor and open forests where saj, palas, khair and ber are common The trees attain a height of 30 to 80 feet

The reserved forests of this division are under systematic protection since 1895 These are all well-protected from fire as well as from biotic factors The grazing problem in the division except Pench Ranges has always been an acute one In the year 1933, for the purpose of grazing control these forests were classified into two types Tree Forest, Pasture and Open Forests Based on this re-classification the grazing settlement was brought into force from the year 1933 which satisfied all possible demands in respect of grazing Illicit fellings are on the increase and on an average there are two thousand forest offence cases registered every year A Mobile Squad stationed at Nagpur, occasionally visits the division and helps to check illicit felling The ex-proprietary forests which were acquired in 1951 consist of scattered forests attached to each village and these are being brought under systematic protection very recently

The main forest industries include supply of timber for building, agricultural and other purposes The local demand is mostly for small timber and poles whereas big timber is exported Bamboos are chiefly used in 'Pan Badis" and orange gardens, as also for construction of mats, dholies, chicks and small huts Manufacture of katha is carried on specially in the Pench Ranges Manufacture of bidies from tendu leaves is an important industry in Nagpur and Kamptee The Division is rich in Manganese ores There are a large number of Prospecting and Mining leases in force in this division

There are in all 19 forest villages which provide forest labour The Forest Department is running one primary school In order to provide medical aid to the forest labourers and the neighbouring villagers, dispensaries and quarters have been recently constructed at Salaighat Forest Villages

For the Reserved Forest of this division, the first Working Plan was introduced in 1895 At present the forests are worked as per Shri B R Mishra's Working Plan and the following working Circles have been formed

(*i*) Protection Working Circle

(*ii*) Pench High Forest Conversion working Circle

and (*iii*) High Forest Working Circle

The ex-proprietary forests which cover approximately 370 77 square miles of forest, are in an infant stage of management, in that the work of demarcation, survey, mapping and preparation of a scientific working scheme for the the same are in progress These ex-proprietary forests are mostly burdened with 'nistar" rights and for the present, due to their depleted nature, they are not in a position to meet the requirement of the villagers and hence from certain coupes of Reserved Forest, material at concessional rates is being supplied as per the scheme formulated by the D D B All the ex-proprietary forests taken over by the Forest Department have been declared as Protected Forest and a Forest Settlement Officer has started the work to enquire into the rights and privileges For the purpose of administration, this division is divided into 6 Ranges, 19 Rounds and 117 Beats

The division abounds in wild game and the existing arrangement to preserve wild life in the Government Reserved Forest as per the enactment and rules prescribed from time to time is adequate The game which is usually found is tiger, panther, bear, sambar, chital, four horned deer, wild dog, blue bull etc

During the First and the Second Five Year Plans in this Division, a number of schemes have been implemented According to these schemes, nearly 40 miles of forest road were improved and nearly 4 miles of new road construction work was undertaken For office and residential accommodation, in all 97 buildings have been constructed Plantation of teak, semal etc., has been raised in 523 00 acres

BHANDARA FOREST DIVISION

Bhandara, the eastern-most district of Maharashtra State, covering an area of 3,623 square miles, of which nearly 1,400 square miles or 38 per cent of the total land area consists of forest under the management of Forest Department is divided into two forest Divisions viz. Bhandara and Gondia Forest Divisions Bhandara Division has a total of 709 square miles of forests of which nearly half is Reserved Forest and the rest is ex-proprietary forests which were acquired in 1951

The country is generally level, broken in places by isolated hill ranges, the highest point being about 2,300 feet above mean sea level Wainganga the main river, drains in a southerly direction The annual rain fall which is received from June to September varies from 40" to 50"

The Reserved Forest belongs to Champion's "Southern Tropical Dry Deciduous Forest" and consists of the following sub-types

(*i*) Teak Forest which is found in Reserved as well as in ex-proprietary forests, occurs over a relatively small area covering about 15 per cent of the total area while (*ii*) the rest 85 per cent consists of mixed forest The important species usually met with are teak, saja, garari, palas, ghot, lendia, tendu, mahua, moyan, rohan, bija, bhirra, salai, khair, etc Bamboos occur in large numbers in hilly tracts

The Reserved Forests of the Division are under systematic protection since long, hence well protected against fire, grazing and illicit felling and shooting However, illicit fellings are on the increase and on an average 2,000 cases are registered every year in this Division

Due to luxuriant forest growth and a number of tree species found, the timber, poles, firewood and charcoal from these forests find a ready market mostly in Nagpur which is situated fairly close The annual production of timber and firewood (including charcoal), is approximately 9,000 and 31,000 tons respectively Timber and firewood fetch annually over Rs 10 lakh Bamboos which fetch annually near about Rs one lakh form an important source of material for cottage industries such as preparation of baskets, mats, curtains, etc The total revenue of the Division is Rs 12 lakhs per annum The leaves of tendu which occur in large quantities in this forest area are always in a great demand and are a source of annual revenue to the tune of Rs 2 lakhs Bidi making is a main cottage industry of this Division and over several lakhs of labourers find employment in this industry. The tract is also famous for lac In the southern part of this Division silk worms are reared on trees by the local Dhimer community and this industry producing indigenous silk has good prospects There are 7 Forest Labourers Co-operative Societies, to which timber and fuel coupes are allotted

There is a net work of 200 miles of forest roads in this division for facilitating extraction and inspection The Forest Department has provided amenities to the forest villagers by constructing in all 7 tanks in forest villages For the forest staff 26 buildings and 44 wells have been constructed by the Department

The first full-fledged Working Plan for the Reserved Forest was prepared by Hon J W Best and came into force in 1910 The current Working Plan which came into force in 1957 aims at the preservation of forest cover over the hilly tract, precipitous slopes and in the catchment area The plan also provides for the supply of timber and other forest produce including fodder and grazing to the local inhabitants and industries

The ex-proprietary forests are of two kinds — (i) Dochand forest or "Nistari" forest which are burdened with heavy "nistar" rights and (ii) "Fazil" forests The condition of these forests when these were taken for management soon after the abolition of proprietary rights in 1951, was deplorable The preparation of a Working Scheme for Dochand forest is in hand, while that for "Fazil" forests is completed The Working Scheme covering an area of 348 square miles of Fazil forest has come into operation since 1961 and for the first time in history, these ex-proprietary forests have been brought under scientific management The division comprises 5 Ranges, 12 Rounds and 78 Beats

Game is plentiful and consists of tiger, panther, bison, sloth bear, chital, chinkara, blue bull, boar, jackal, etc Amongst the feathered species jungle fowl, peafowl, titar, and ducks are found

During the Second Five-Year Plan, nearly Rs 6 lakhs were spent on several development schemes Plantation of teak and other valuable species was raised over an area of over 500 acres, nearly 300 square miles of ex-proprietary forests were demarcated, survey of forest resour ces was carried out over nearly 60,000 acres and about 25 miles of new roads were constructed Besides this, afforestation over 400 acres in the catchment area was carried out and 47 new buildings were constructed Other development works undertaken include establishment of wet nurseries, construction of tanks, bunds, revision of working plan and schemes

GONDIA FOREST DIVISION

Gondia Forest Division is situated in the easternmost part of Maharashtra in Bhandara District The total forest area of the division is 705 72 sq miles out of which 164 52 sq miles are reserved forests and the rest are ex-proprietary The geological formations worthy of mention are granite, dharwars, vindhyas, diorites and laterites Depending on the parent rock and the topography of the locality, the soil generally met with is, sandy loam The average annual rainfall varies from 40″ to 60″. The forests of this Division fetch an average annual revenue of about Rs 11 lacs

The forests of the area can be described as of the dry deciduous type

Two broad sub-types can be recognised

(1) Teak Forests (2) Mixed Forests

The teak forests are restricted to the hilly portion The maximum height attained by teak and its associates is upto 80′ The average height met with is 40′ to 50′ The important associates of teak are bija, dhawda, garari, tendu with scattered shisham, tiwas and haldu The mixed forests are generally met with on comparatively flatter areas The important constituents of these are bija, saja, dhawda, tendu, mohrwa, bhirra, sihna and garari Pure patches of palas are also met with

These forests not only foster agriculture by serving the needs of small-sized timber, fuel and fodder of the local villagers but also of the urban populace for timber and fuel They also form an important and indispensable source of supply of raw material to the important local industries There are about thirteen saw mills at Gondia The ex-proprietary forests yield the bulk of tendu leaves which are used for bidi making in this division and also exported outside It is estimated that over a lakh of labour is employed in bidi industry, besides those who pluck the leaves in the forest Extensive patches of palas, which forms an important host for the lac insect are commonly met with especially in the ex-proprietary forests Lac is one of the important minor forest produce About 6 factories which convert raw lac into various types of finished lac and its products exist at Gondia The finished products of lac are exported outside the district Basket-making is also a flourishing cottage industry The raw material is green bamboos which occurs extensively The community of burads manufacture bamboo-mats, and baskets and packing-cases for beedies

Rearing of tassar silk cocoons on forest trees, especially ain, is commonly practised by the dhimar community in the division and the silk cocoons are sent to Bhandara for the manufacture of silk Of late co-operative societies are taking up this industry

Considerable damage was caused by the ruthless cutting of tree growth in the ex-Zamindari forests before the abolition of proprietary rights Forest protection, has thereafter considerably improved as a result of organising regular ranges, rounds and beats in these areas A Forest Mobile Squad operates in this division to check illicit cutting

Besides conferring the physical beneficial influences, forests supply the village population, free or at concessional rates, the necessary timber, fuel, grass and grazing

The major industries based on forest produce particularly bidi-making, lac processing and saw mills provide employment to a large percentage of population of the division The cottage industries based on bamboo also provide employment

Forests, irregular in composition, age, density, and vegetation and deficient in the regeneration of valuable species are being managed under Selection-*cum*-Improvement system A 20 year's felling cycle is adopted and the yield is regulated by area The forests capable of producing small-sized timber, poles and firewood and some quantity of large-sized timber are being managed under the Coppice-with-Reserves system Under this system intensive reservation is carried out on steep slopes, nala banks and catchment areas so as to prevent soil erosion

The bamboo forests in this division are worked under a set of working rules which ensure proper working and improvement of these forests.

A variety of game abounds in these forests tiger, panther bear, sambhar and chital are the species worthy of mention. They are found in fairly large numbers over the entire tract Bird life is also abundant and varied. Peafowls, grey jungle fowls and titar are commonly found all over the division A variety of ducks migrate from the cooler region in the north and settle in the tanks in winter. These tanks also afford an opportunity for fishing

Under the developmental activities an area of 208 acres has been planted with teak The undemarcated forest areas have been surveyed and demarcated during the Second Five Year Plan Period The forest area covering 4,659 acres has been enumerated under the scheme of survey of forest resources One Wet Nursery at Gothangaon has been established 30 buildings and a dam have been constructed

WARDHA FOREST DIVISION

Wardha Forest Division which was formed on 24th December 1959 by splitting up the old composite unit of Nagpur—Wardha Division falls between 20°-18′ and 21°-22′ (North) latitudes and 78°-3′ and 79°-13′ (East) longitudes

The Forest Division with its headquarters at Wardha proper is divided into three Ranges The total forest area under the management of this division is 333 square miles Besides this, about 54 square miles of forest area is in charge of the Revenue Department The total forest area of the district is thus 387 square miles or 16 7 per cent of the district area.

The average rainfall in the division is 45" The rock formation is deccan trap with zones of inter-trappean rocks, The forests are of the " Dry Deciduous type " It is interesting to note that the forest areas are separated into two very distinct types viz teak forest and miscellaneous forests

In the teak areas, the principal associates are ain, bija, tinsa, dhavda, lendia, mowai etc In the open grassy inter-spaces, pure stands of ber are common On the patches bearing poor soil, khair and palas form distinct islands

In the miscellaneous areas the principal tree species are khair, palas, lendia, ain, saja, dhavda, moin, etc. The undergrowth consists of dikmali, kudmudi, bharati, ber, karvand etc Climbers are limited The species common are, chilati and eruni

All the three Ranges are divided into 3 Rounds each, and there are in all 48 Beats in this Division

The Division does not have any outstanding problem of forests protection, needing special measures Most of the Malguzari forests have now come to Government and are constituted as Protected Forests.

The major forest produce extracted from the Division are timber and firewood. Timber is exported mostly to Nagpur, whereas firewood is fed to the local industrial centres at Hinganghat and Pulgaon and to parts of the adjoining Amravati District. Generally charcoal is not prepared There are no forest industries except a few saw-mills at Wardha and Arvi

The minor forest produce sold are tendu leaves for bidi making, grass and gum, the latter two being available in small quantities The total revenue of the District is Rs 11 lakhs per annum and the net surplus revenue is about Rs 8 lakhs

Whereas the tract is chiefly cotton producing and the financial economy revolves around production of cotton crop, the public has to depend on the forests for their day to day needs of timber, firewood, " nistar " material for agricultural use, and also for the grazing of their cattle

The main amenities enjoyed by the public are —

(1) *Nistar from the Reserved Forest areas.*— The agriculturists, artisans and agricultural labour are given annually, teak poles and firewood for their *bona fide* use, at concessional rates, as a temporary measure

(2) *Grass and firewood on schedule rates* — The villagers are also allowed to cut grass and collect firewood from forest areas on nominal royalty charges

(3) *Grazing of cattle* —Cattle grazing is also permitted in forest areas not under regeneration, rotational closure or monsoon closure. Grazing fees are charged at nominal rates for this purpose Annually 57,000 cattle avail of these grazing facilities Suitable amenities are also given to the residents of the seven forest villages that exist in the Division.

Grass Kurans are allotted to some of the Gram Panchayats at reasonable prices Coupes are also allotted to Forest Labourers' Co-operative Societies to promote the co-operative movement amongst the labour which depends upon forest works for their living.

Teak forest areas of the division are divided into two main working circles viz. the 'General High Forest' and 'Coppice-with-Reserves' working circles The rotation fixed for these is 60 years

and 48 years respectively. There are 3 intermediate thinnings prescribed for the General High Forest areas at the age of 10, 20 and 40 years For the Coppice with Reserves areas, only one mid-rotation thinning is prescribed at the age of 24 years.

The pasture working circle comprising the miscellaneous areas is set apart exclusively for meeting the grazing demands of the public

Wild animals though not abundant, occur in fair numbers in the forests of the Division Tiger, panther, blue-bull, sambar, chital, deer, bear, wild pig and porcupine are the main fauna Amongst bird species, peacock and hariyal are the notable ones.

For the betterment of forests, special Teak Plantations are raised over 65 acres. Afforestation is carried out in 377 acres, and Kaju Plantation in 200 acres. One West Nursery is established at Wardha

For housing the subordinates, 23 kutcha nakas were constructed for the Forest Guards

Thou the first word of creation, O light, cast thine auspicious
eyes on the new plant
Leave the message in its inmost heart,
That one day, it will fulfil itself in many flowers,
And gathering vitality from thee, let its cool leaves,
Lisp hymns to thee throughout hundred years

—TAGORE

वनस्पते शतवल्शो विरोह

(ऋ. ३-८-११)

[हे वनस्पते (वृक्षराजा) तूं शेकडो शाखांनीं वृद्धिंगत हो.]

वनस्पते वीडवंगो हि भूया
अस्मत्सखा प्रतरणः सुवीरः

(ऋ. ६-४७-२६)

(हे वृक्षा, तूं कणखर आहेस, तरी तूं आमचा तारक मित्र व उत्तम वीर हो.)

CHANDA CIRCLE

CENTRAL CHANDA FOREST DIVISION

The Central Chanda Division was created on 1st August 1959 by dividing the old South Chanda Division into two. It covers 1,563 square miles of Chanda District and has 7 Ranges

The timber sale depot of this Division is situated outside the Division at Ballarshah where round and sawn timber from the departmentally worked areas in Allapalli and Pedigundam Ranges and Allapalli Saw Mill is stocked for disposal The timber depot extending over an area of 73 47 acres has been in operation since the year 1918 and is well known throughout India It has an annual turnover of abut 1,00,000 cft of round timber and 50,000 cft of sawn timber The following statement shows the annual receipt of timber and revenue realized at this Depot —

Year	Receipt of timber in Cft	Revenue realised in Rs
1958-59	1,40,936 9	21,99,051 65
1959-60	1,49,517 2	22,56,236 00

The forest of this Division comes under the ecological group 3a, "Southern tropical moist deciduous forest" and 4a "Southern tropical dry deciduous forests" of Champion's classification of the forest types of India. Within the above type considerable local variations are observed depending on the nature of soil, topography and the past treatment. The forests of this Division are characterised by the high percentage of teak which in places is almost pure over limited areas. Parts of the forests are capable of producing large-sized timber and instances are on record where sound trees over 10' in girth have been noticed with hardly any sign of unsoundness Teak timber of large size is especially prized by the Plywood Companies for its fine figure which is greatly valued for decorative furniture, panelling and cabinet making The highest recorded price of a teak log from this depot is Rs 84 per cft.

Protection is not a problem in this tract as the incidence of forest offences is very low due to sparse human habitation Rigid fire-protection measures are undertaken according to the fire-protection schemes specially drawn up, with the result that fires are practically unknown in these areas This has to a great deal, contributed to the successful management of the forests under the Conversion System relying to a great extent on the natural regeneration of teak

Bamboos occur extensively all over the forests and are being utilized for paper and pulp industry in this tract A paper mill is being run at Ballarshah which partly depends on the supply of bamboos from this Division Charcoal is manufactured on a large scale in this tract A large amount of revenue is also derived from the sale of tendu (Diospyros melanoxylon) leaves which go outside the Division for the manufacture of "bidies".

Most of the population in this tract derives sustenance from the forests through the wherewithal it gets from employment on felling, logging and carting of timber from the forests, cutting and carting of bamboos, collection of tendu leaves, raising of plantations, repairs to roads and buildings etc There are various Forest Settlements where the settlers enjoy numerous benefits They are provided with educational as well as irrigation facilities at the cost of Government They are advanced loans for the purchase of livestock and for cultivation Wells are maintained at the cost of Government at these Settlements for providing drinking-water to the settlers In short the Department is solicitous of the socio-economic welfare of the settlers

The populace in the non-forest villages enjoys various "nistar" facilities by way of obtaining timber and firewood from the forest as well as free grazing

The gross revenue from this Division is approximately Rs 47 lacs and the expenditure about Rs 13 lacs

Wild Life of a varied nature is abundant in the forests of this Division Tigers occur in fair numbers all over The recent census indicates that there are some 40 tigers, including cubs in this Division

Under the Five-Year Plan Schemes, a number of developmental works are completed The more important are those of raising teak plantation over 980 acres, construction of forest roads, upgrad-



Teak Plantation of 1960 -Allapalli Range, Central Chanda Division

ing some roads and the construction of 16 buildings some as offices and the rest as residential accommodation for the subordinates.

In the remote interior of the ex-proprietary forests, 50 "kutcha nakas" for Forest Guards were erected to ensure better patrolling of the forests and supervision over the various forest operations.

The forests of this Division have great potentialities. More lines of communication and more intensive departmental exploitation of these forests will result in greater output from them, and therefore greater monetary returns to Government Measures in this regard are afoot

WEST CHANDA FOREST DIVISION

The West Chanda Forest Division comprises seven Ranges spread over 1,095 square miles The forests fall under Champion's type "Southern Tropical Dry Deciduous Forests". The forests are primarily mixed forests with a great variety of species including teak. The composition of the growing stock has been altered to not a little extent due to biotic factors.

As a major part of the area is under forest, the populace largely depends directly or indirectly on forestry operations, for its livelihood. The labour problem is actue and sometimes labour has to be imported from outside.

The Forest Department has provided two dispensaries one at Kolsa Forest Village run by the Public Health Department and the other at Moharli under the direct control of the Forest Department. They are a great boon, by way of providing medical aid to the villagers in the vicinity and to the subordinate staff.

There are two forest village primary schools one at Kolsa and the other at Done, both forest villages.

There are two Forest Labourers' Co-operative Societies functioning in this Division viz. :—

(1) The Forest Labourers' Co-operative Society, Borda.

(2) The Forest Labourers' Co-operative Society, Mul.

The Working Plan for the North Chanda Forest Division for the period from 1949-50 to 1963-64 by Shri S. N. Singh and Shri R. B Mujumdar, is in force and covers 841 square miles This Plan prescribes 7 Working Circles, some under "Coppice with Reserves", others under "Selection-*cum*-Improvement Felling" and the rest overlapping for khair, semal and pasture

The gross revenue of this Division is Rs 21 lacs and expenditure Rs 12 lacs

The forests of this Division teem with wild life The vast and continuous stretch to the North East of Chanda District affords a fine and safe harbourage to a variety of animals particularly the tiger, and is a veritable paradise for a keen game enthusiast.

There are 13 Shooting Blocks in this Division Many local, as well as foreign shikaris reserve them The most popular ones are the Moharli and Kolsa Shooting Blocks

The Taroba Shooting Block has been closed to shooting since the year 1905 but special permits were, from time to time, issued for the destruction of carnivora Since 1931 this area is totally closed to shooting, and an area of 45 57 sq miles round Taroba lake was constituted as a Sanctuary and later on in 1955 as a National Park, which is the only one of its kind in the entire State

In February 1959, a Forestry School was opened to train Foresters and Guards of Vidarbha Region as the facilities to train them at Balaghat and Betul were not available consequent to the reorganisation of the States. In February 1961 this School was made into a Forestry School for Foresters Departmental Guards fit for Foresters' training are also admitted to this School to be absorbed as Foresters on their completing the course successfully. The School can impart training to 64 candidates for the Foresters' Course each year.

Under the Five-Year Plan, 12 Schemes were in progress to date. To mention the more important ones, 11 "pucca" buildings were constructed, 21 miles of metalled road were built and 2 bunds at a cost of approximately Rs. 20,000 were completed.

About 240 square miles of bamboo forests have been leased out to the Ballarpur Paper and Straw Board Mills, Ballarshah, which have a rated daily production of about 35 tons of paper They have an ambitious programme of development and of augmentnig their daily production capacity to 100 tons for which they have applied for additional resources of bamboo from the forests of Chanda District. Negotiations with Government are under way in regard to the allotment of additional areas and the fixation of royalty for the raw material.

EAST CHANDA FOREST DIVISION

The East Chanda Forest Division was created on 17th May 1951 consequent on the taking over of the ex-proprietary areas by the Government Subsequent reorganisation of the Forest Divisions in Chanda District in 1954, and then in 1959 brought about certain changes and today the Division consists of six Ranges, spread over 1,715 square miles.

The forests belong to the type 'Southern tropical dry deciduous forests' according to Champion's classification of the forests of India

Within the above type, considerable local variations are observed, depending on the nature of soil, topography and past treatment. The forests are primarily mixed forests showing a great variety of species including teak. Biotic factors have however influenced the composition to a large extent The forests are generally well-stocked and the average height of dominants is generally below 50' in the crops approaching maturity They suffer from a heavy incidence of grazing

The eastern half of the Division which emprises the Zamindari areas has a similar type of forests However the special feature of these areas is that bamboos (*Dendrocalamus strictus*) occur as an under-storey over an extensive stretch, particularly on hilly tracts. Some of the areas, still inaccessible, carry well-stocked mixed deciduous crops of superior quality Teak in the plain areas occurs only in patches, but on the hills its proportion goes as high as 40 per cent Generally the crops are young to middle-aged although a sprinkling of mature and over-mature trees is not uncommon

The reserved forests of Wairagarh and North and South Sindewahi Ranges have a comparatively better system of protection against fire, cattle, etc Regular measures for fire-protection are in operation according to the Working Plan.



Natural regeneration of teak, Allapalli Range, Centri Chanda Division

No fire-protection scheme is in operation in the ex-proprietary forests

The territorial staff carries out the work of detection and prevention of forest offences The people exercise their rights for their domestic needs from the forests of Zamindari and Malguzari areas and as such the incidence of forest offences is low 'Tassar' silk industry depends entirely on forests as 'Tassar' silk-worms breed on the leaves of ain (*Terminalia tomentosa*) The industry flourishes partly in Wairagarh and partly in Sindewahi Ranges About 1000 acres of forests are leased out every year for 'Tassar' silk cultivation

A major part of this Division is cut off by the Wainganga river which is still unbridged, and as a result has remained undeveloped inspite of its vast forest wealth Small saw-mills exist at Sindewahi and Wadsa. Since the percentage of forests in the Division is high, a large section of the population depends to a great extent on the forests Apart from satisfying the requirements of the public, the forests are of great importance in providing employment to several people The forests therefore play a great role in the economy of the tract which has a forest bias

The Working Plan by Shri S. N Singh and Shri R B Mujumdar is in force in Wairagarh, North and South Sindewahi Ranges of the Division Here, the forests are managed under the Coppice with Reserves system The yield is regulated by area on a rotation of 48 years A regular Working Scheme for the ex-Zamindari forest areas of Palasgarh and Dhanora Ranges of this Division has already been drawn up and is likely to be introduced shortly A similar

scheme for the remaining areas is expected to be completed by 1966.

The gross annual revenue from this Division is Rs 12 lacs and the expenditure Rs 5 lacs

Unfortunately this Division is not rich in fauna since most of it has already been destroyed during the regime of the Zamindars Hence, whatever little game that exists is confined to the Reserved Forest areas of Wairagarh, North and South Sindewahi Ranges The animals that are commonly found are tiger, panther, bear, sambhar, chital, blue bull, etc

Under the Five-Year Plan Schemes, 185 acres of teak plantations were raised The survey and demarcation work has been completed over an area of 364 64 square miles. The Survey of forest resources has been completed over approximately 260 square miles as a 5 per cent strip survey

A great headway has been made in the matter of improving communications 5 major forest roads over 22 miles were completed in the accessible areas opening up new avenues for scientific management and exploitation 7 'pucca' buildings and 72 'kutcha' buildings were also completed for providing residential accommodation to the various forest subordinates in the interior

After the vast tracts of ex-proprietary forests are brought under systematic working by drawing up scientific Working Plans in the not too distant future these potentially valuable forests will have to be further sub-divided into 2 major Forest Divisions which will result in greater output with more than twice the revenue accruing at present

SOUTH CHANDA FOREST DIVISION

The South Chanda Division comprises the Reserved Forests of Sironcha, Aheri and Asarali and the ex-proprietary and ex-malguzari forests of Aheri Zamindari and Sironcha Malguzari estates which are now constituted as Protected Forests The Protected Forests are included in three Ranges viz Bhamragarh, Repanpalli and Pirmilli

This Division has the largest forest area in the State The total forest area of the Division is 2,403 44 square miles distributed over six forest ranges, three of which comprise Reserved Forests and the rest Protected Forests. The area of the ranges is far too large at present Additional Ranges are therefore being proposed to be created in the near future in the interest of intensive and efficient Forest Management

The gross revenue of this Division is about Rs 25 lacs, the expenditure being Rs 8 lacs

The forests of the region belong to the ecological group, " 3a-Southern tropical moist deciduous forests " and " 4a-Southern tropical dry deciduous forests " according to Professor H G. Champion's classification

Based on the above, the forests have been further classified as —

(*i*) Mixed teak forests of Somanpalli and Kopela Felling Series in Asarali Range

(*ii*) Mixed teak forests on the Gondwana sandstone in Sironcha Range

(*iii*) High quality mixed miscellaneous forests in the Patagudam and Sirkonda hills, and

(*iv*) Low quality mixed miscellaneous forests

The ex-proprietary forests are not yet fully stock-mapped Teak forests and the Mixed forests are seen closely interspersed The quality approaches 70′ to 90′ class along the well-drained banks of rivers and falls in the hills near Bhamragarh Detailed ecological classification has not been adopted for these ex-proprietory forests Repeated fires in the past, unsystematic exploitation and uncontrolled grazing coupled with shifting cultivation have greatly damaged the growth Most of the crop is unsound Teak of fairly good quality and density occurs in Yerragudda block in pockets which remained safe from these biotic factors

Out of the total area of 2,403 44 square miles only 762 17 square miles have been brought under regular Working Plans and Schemes The Working Plans cover 497 57 square miles while Working Schemes deal with 274 601 square miles The rest of the area is yet to be brought under systematic working

The total outturn of forest produce from all sources during the year 1959-60 was as under —

Year	Major forest produce		Minor forest produce		
	Timber in Cft in thousands	Fuel in tons	Bamboos value in Rs.	Grass and grazing value in Rs	Other forest produce in Rs
1959-60 ..	845·6	5,440 2	4,131·25	33,700 00	1,50,936·99

The road-system in the Division is grossly inadequate. There is only one Class I, P W. D Road viz Sironcha-Allapalli road in this Division Construction of some new roads through Public Works and Development Departments is in progress The main market for plywood quality and higher quality teak is at Ballarshah in Chanda District while the secondary species and poor quality teak are floated down the three main rivers viz Indravati, Godavari and Pranhita to Rajahmundry market, which is about 400 miles from Sironcha down Godavari in Andhra State Floating though cheaper, is difficult due to the rocks in the Godavari Also, floating is possible only from November to January and thereafter water level in the rivers recedes making floating almost impossible

Influences of the forests on land, climate, people and their living are very significant and of far-reaching importance The people are principally dependent on the forests for their livelihood

The main inhabitants of the tract are the tribal people viz "marias" and "gonds" who are of Dravidian origin The 'marias" are one of the most backward races and indulged in human sacrifice till recently These tribes were nomadic but the forest department has succeeded in settling them in the villages There are 11 Forest villages in all, in the Reserved Forests These tribals are not good cultivators but are good axemen In the past they depended on roots and fruits available in the forest for their food and destroyed wild life existing in the forests, indiscriminately for meat It would seem incredible that the "madias" prepare "chatni" of red ants from the leaf-nests on trees They relish immensely the flesh of rats and spend days in quest of them They are frugal in their food habits They prepare porridge from coarse rice called "ambil" which is their staple food Their requirement of clothes too is very meagre Formerly in these forests flourished the "tussar" silk industry but now this trade is hardly seen The people in general are lethargic by nature and look emaciated and worn out due to excessive drinking

Wild life is an important treasure of these forests The area is rich in wild fauna and consists of a variety of big and small game.

Under the Five-Year Plan Schemes, 460 acres of Teak Plantations have been raised. Survey of forest resources over 90 square miles by 5 per cent. strip survey was done The survey and demarcation of 291 square miles was completed 7 miles of a murrum road was also completed Quarters for subordinates and offices were also constructed at various places in the interior

A lot of headway has to be made in this Division in opening its remote and sparsely populated tracts containing valuable forests At present extraction of only large-sized timber is done and all lops and tops of felled trees and the timber from smaller trees felled under improvement, is not extracted With proper road communication and the bridging of the important rivers in due course, this Division will easily give 100 per cent more revenue i e nearly Rs 50 to 55 lacs

RAJURA FOREST SUB-DIVISION.

Rajura Range was part of Adilabad Forest Division in ex-Hyderabad State, but was later on, added to Nanded Forest Division when Rajura taluka was annexed to Bombay State at the time of reorganisation of the States in 1956 Thereafter for administrative convenience it was brought under the control of the Divisional Forest Officer, South Chanda Division When it was found that the various forest Divisions on account of the amalgamation of ex-proprietary forests had become very extensive and unwieldy, the old South Chanda Division was split up into Central and South Chanda Divisions and the areas of the various Divisions were reorganised It was during this reorganisation that Rajura Range was separated and an independent Sub-Division was formed out of it in 1959

Out of the total land area of 625 71 square miles, 290 15 square miles are under the Forest Department Out of this area only 75 25 square miles of the forest are under systematic working, while the rest is still unallotted The revenue of Rajura Sub-Division with its 3 Ranges has steadily increased from Rs 2 96 to Rs 5 02 lakhs in 1960-61

The forests in the tract can be classified as coming under the type "Southern tropical dry deciduous forest" as per Champion's classification of the forests of India Within this type a number of local variations are met with However they are mainly mixed miscellaneous forests with teak 20 per cent and over in patches (in Kawithpeth and Gotta Felling Series) while over a major portion there is little or no teak

Out of the total forest area of 290 15 square miles, 75 25 square miles of the most accessible portions are under a Working Plan (current) drawn up by Shri Bhogle Out of this, 59 7 square miles are worked under "Coppice with Reserves" system while 15 55 square miles are worked under Selection-*cum*-Improvement system.

The revision of the current Working Plan is due and it is expected that most of the hitherto unworked areas will be brought under regular working and the various resources of the Sub-Division will be exploited to the maximum benefit

The Sub-Division is poor in fauna, which is due to the indiscriminate shooting and trapping that was rampant in the tract during the ex-Hyderabad regime However soon after this area came under the Maharashtra State (previously Bombay State), stricter vigilance was enforced with the result that tigers, panthers, herds of cheetal (spotted deer) and blue bull are seen now and then in fair abundance

After the formation of this independent Sub-Division various development schemes were taken up under the Second Five-Year Plan Nineteen "pucca" buildings in all, were constructed, some as quarters for the subordinates and others as offices for the Range Forest Officers. 95 acres of the forests were planted up with teak.

Trees are poems that the earth writes upon the sky.
We fell them down and turn them into paper
that we may record our emptiness.

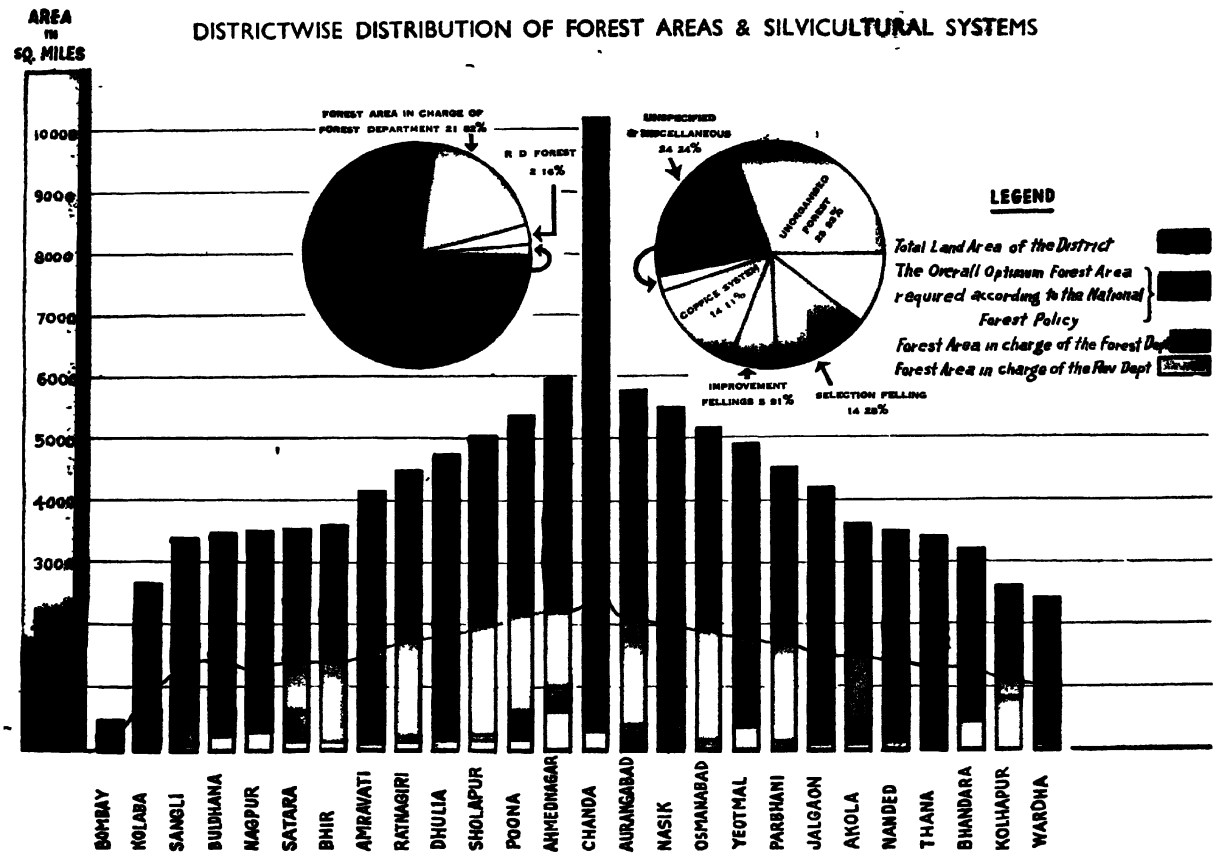
—KHALIL GIBRAN.



FOREST DEPARTMENT

MAHARASHTRA STATE

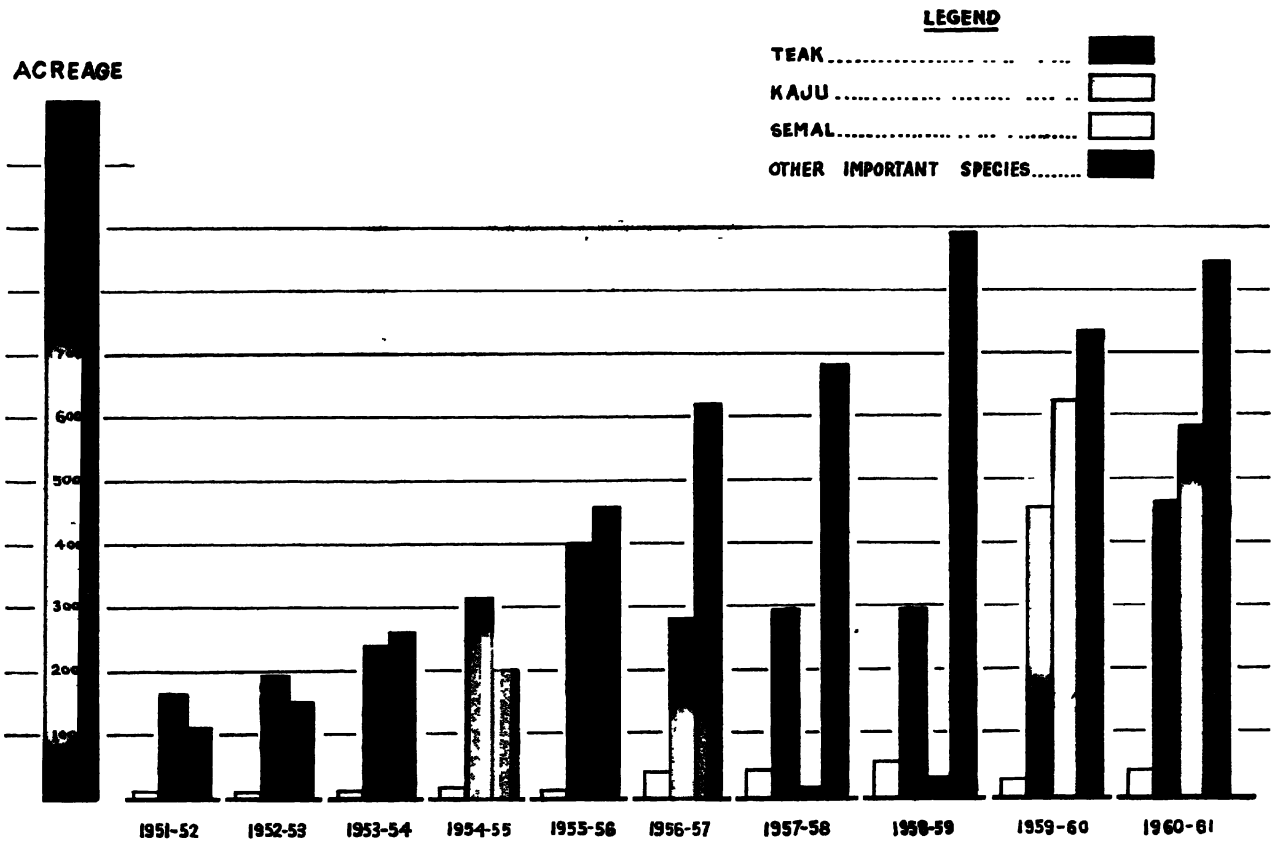
DISTRICTWISE DISTRIBUTION OF FOREST AREAS & SILVICULTURAL SYSTEMS



ACREAGES OF ANNUAL PLANTATIONS OF IMPORTANT SPECIES IN MAHARASHTRA STATE

for the Year

1951-52 TO 1960-61

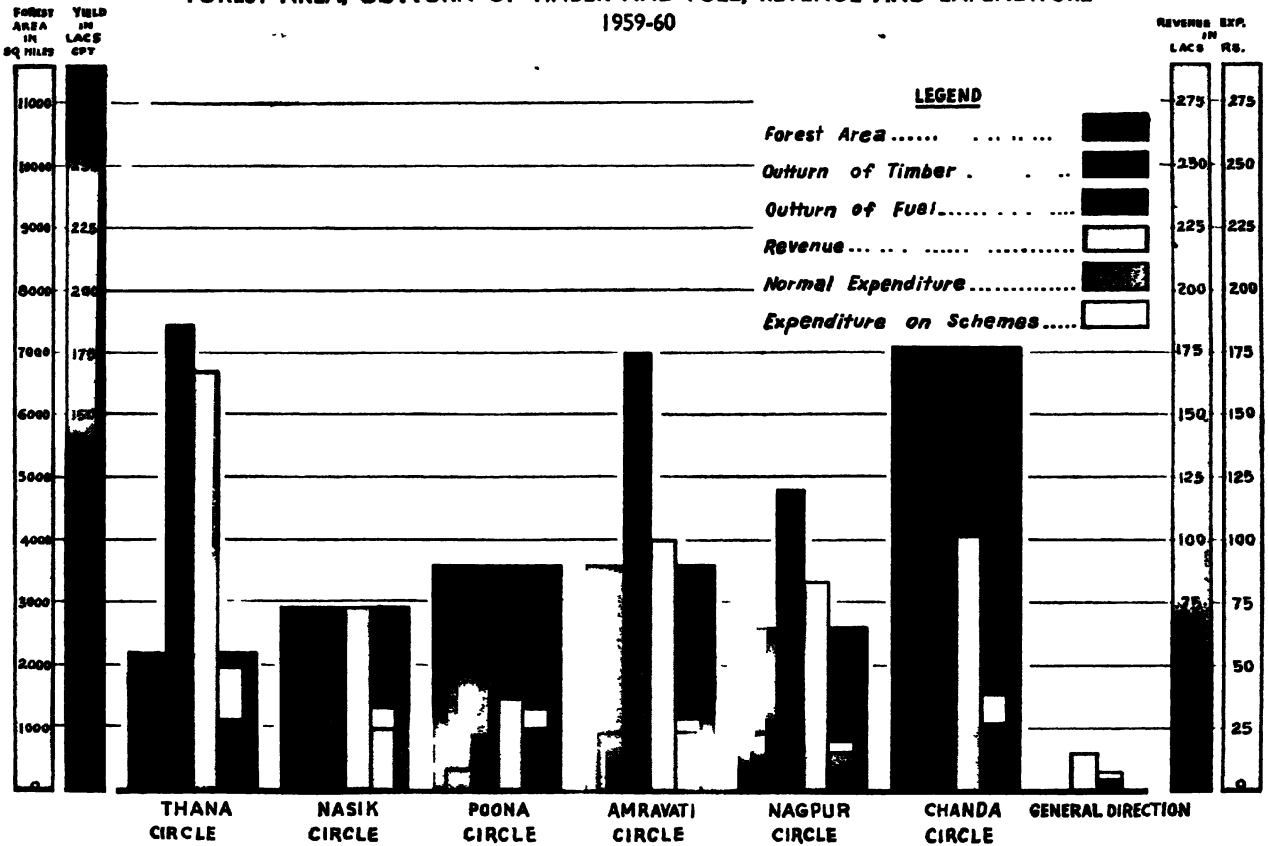


FOREST DEPARTMENT

MAHARASHTRA STATE

FOREST AREA, OUTTURN OF TIMBER AND FUEL, REVENUE AND EXPENDITURE

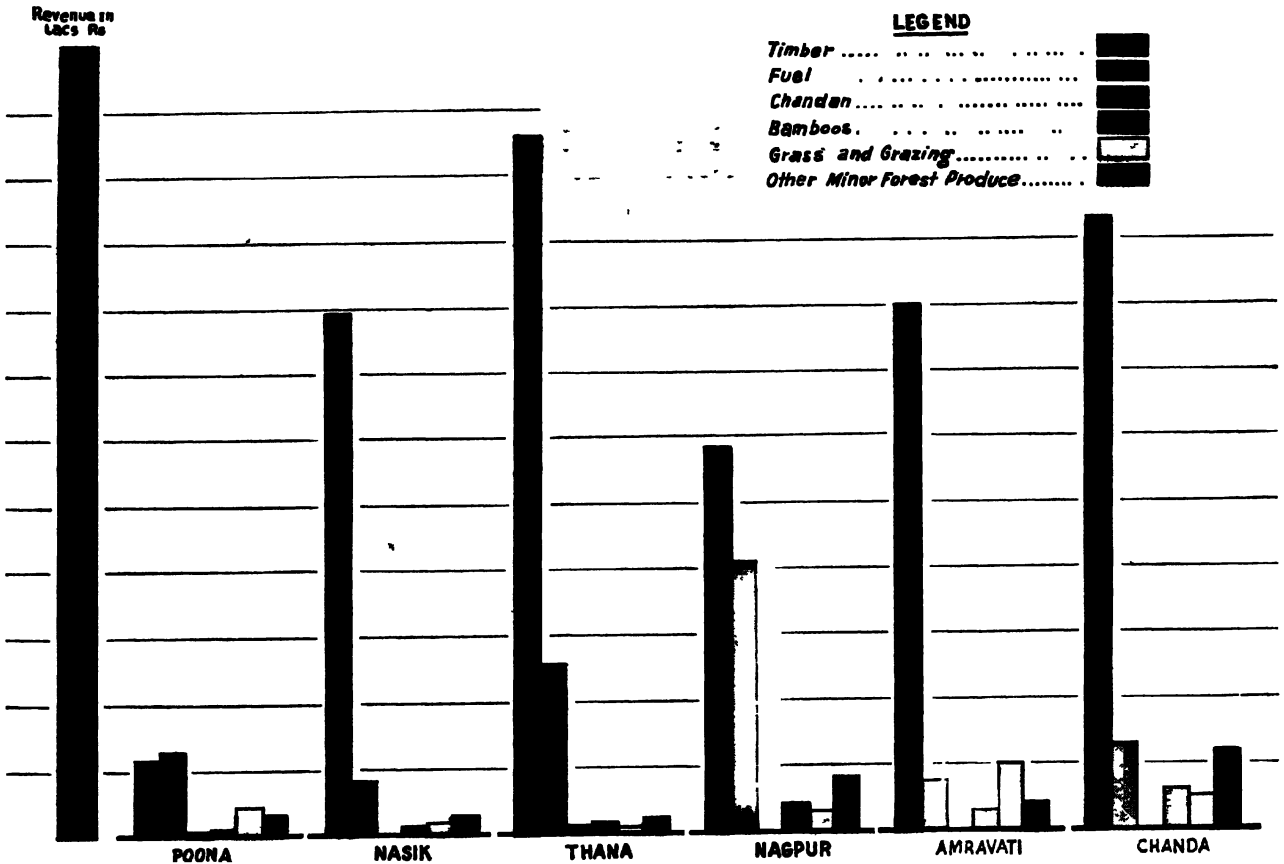
1959-60



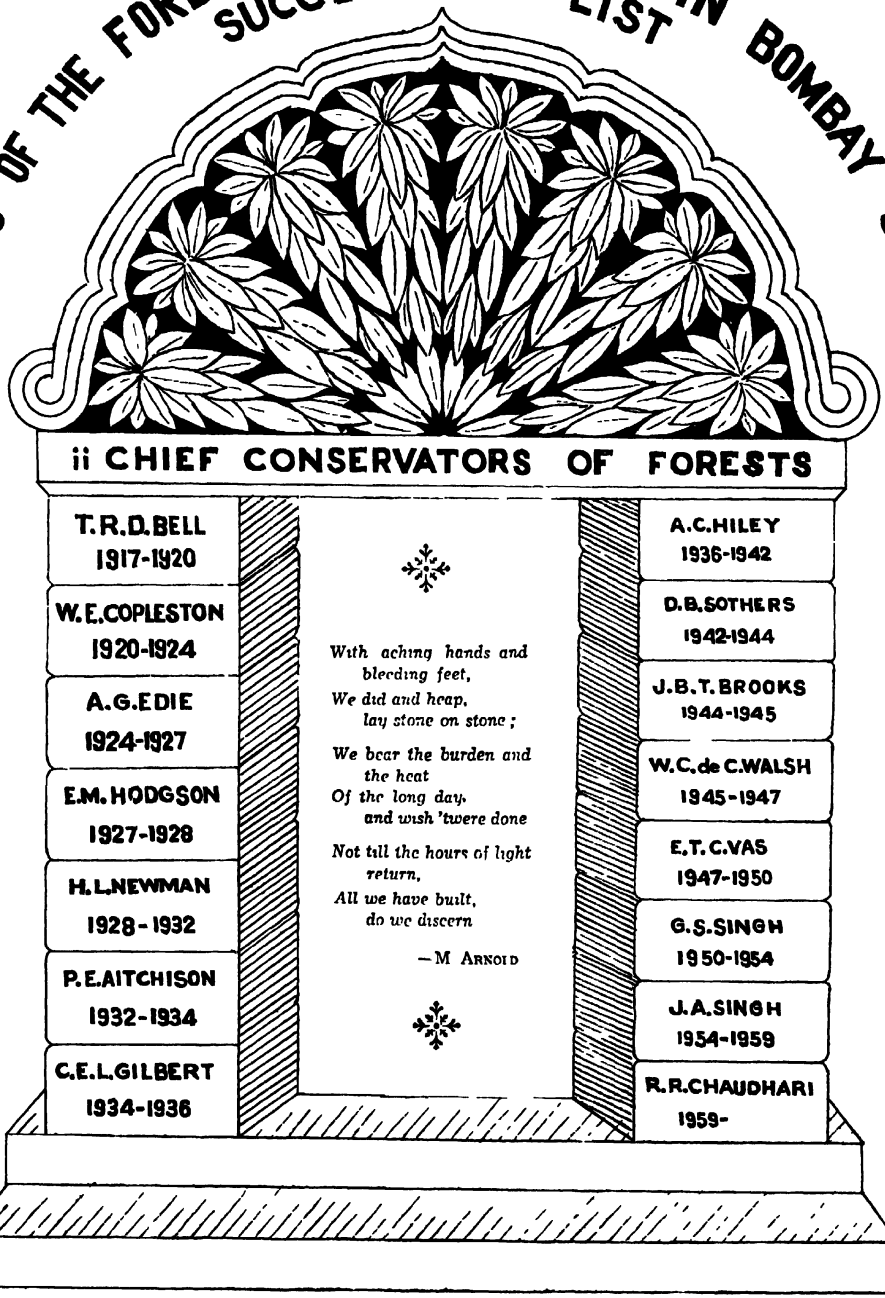
FOREST DEPARTMENT

MAHARASHTRA STATE

REVENUE REALISED FROM MAJOR AND MINOR FOREST PRODUCTS DURING 1959-1960



HEADS OF THE FOREST ADMINISTRATION IN BOMBAY STATE
SUCCESSION LIST



ADMINISTRATIVE SET-UP

CHIEF CONSERVATOR OF FORESTS

(R. R. CHAUDHARI)

CONSERVATOR OF FORESTS, POONA CIRCLE, POONA
(V. D. MEHENDALE)

Office Superintendent
(K. B. Chopde)

DIVISIONS

(1) *Poona :*
D. F. O. (P. G. Sathe)
Sub-D. F. Os.
(R. G. Yadav)
(N. R. Patil)

(2) *Satara :*
D. F. O. (A. D. Meshram)
Sub-D. F. O.
(T. S. Borgaonkar)

(3) *Kolhapur :*
D. F. O. (K. H. Chati)
Sub-D. F. O.
(R. M. Parande)

(4) *Nanded :*
D. F. O. (N. J. Joshi)

(5) *Aurangabad :*
D. F. O. (V. V. Khot)

(6) *Working Plans, Poona :*
D. F. O. (R. B. Kale)

CONSERVATOR OF FORESTS, THANA CIRCLE, THANA
(S. S. BUIT)

Assistant Conservator of Forests
(V. B. Koppikar)

Office Superintendent
(R. B. Kulkarni)

DIVISIONS

(1) *North Thana, Dahanu :*
D. F. O. (S. P. Jadhav)
Sub-D. F. Os.
(N. M. Apte)
(R. N. Garge)
(L. H. Rodrigues)
Instructor, Bordi Forest Class
(S. M. Tate)

(2) *Kolaba, Alibag :*
D. F. O. (I. M. Qureshi)
Sub-D. F. Os.
(B. D. Nadkarni)
(B. H. Nadgir)

(3) *East Thana, Shahapur :*
D. F. O. (P. J. Gurjar)
Sub-D. F. O.
(D. S. Rane)

(4) *West Thana, Thana :*
D. F. O. (V. D. Magre)
Sub-D. F. Os.
(B. V. Patil)
(T. S. Bhat)

(5) *Sawantwadi Sub-Division :*
Sub-D. F. O.
(B. S. Bhathena)

(6) *Janjira Sub-Division :*
Sub-D. F. Os.
(B. S. Bhathena)
(K. B. Durve)

CONSERVATOR OF FORESTS, NASIK CIRCLE, NASIK
(R. B. MUJUMDAR)

Asstt. Conservator of Forests
(N. D. Kalbag)

Office Superintendent
(N. B. Deshpande)

DIVISIONS

(1) *West Dhulia, Dhulia :*
D. F. O. (U. B. Patil)
Sub-D. F. Os.
(P. M. Asbe)
(S. M. Dighe)

(2) *North Dhulia, Dhulia :*
D. F. O. (P. R. Vaidya)
Sub-D. F. O.
(C. R. Wagle)

(3) *Jalgaon :*
D. F. O. (K. N. Khisti)
Sub-D. F. O.
(B. H. Patil)

(4) *East Nasik, Nasik :*
D. F. O. (Y. G. Jadhav)
Sub-D. F. O.
(H. K. Mahajan)

(5) *West Nasik, Nasik :*
D. F. O. (C. M. Joshi)
Sub-D. F. Os.
(C. K. Chaubal)
(V. N. Deshmane)

Working Plans, Thana and Nasik Circles, Nasik :
D. F. O. (V. M. Wagle)

CONSERVATOR OF FORESTS, H. Q.
(D. V. KHISTY)

ASSISTANT TO THE CHIEF CONSERVATOR OF FORESTS
(M. Y. Sowani)

OFFICER ON SPECIAL DUTY
(M. K. Chitre)

FOREST UTILIZATION OFFICER
(L. H. A. Rego)

SILVICULTURIST
(D. A. Marballi)

ASSTT. SILVICULTURIST NAGPUR
(V. J. Ketkar)

FOREST STATISTICIAN
(V. K. Mokashi)

FOREST ENGINEER, NAGPUR
(R. K. Petkar)

DEPUTY FOREST ENGINEER, POONA AND THANA CIRCLES, POONA
(R. N. Deo)

DEPUTY FOREST ENGINEER, NAGPUR AND AMRAOTI CIRCLES, AMRAOTI
(N. S. Sabnis)

PERSONAL ASSISTANT TO THE CHIEF CONSERVATOR OF FORESTS
(C. M. Moholkar)

SUPERINTENDENTS
(1) (H. V. Waranashiwar)
(2) (K. L. Patki)

CONSERVATOR OF FORESTS NAGPUR CIRCLE, NAGPUR
(S. A. HEJMADI)

Office Superintendent
(Hiralal Mohabanshi)

DIVISIONS

(1) *Nagpur :*
D. F. O. (P. P. Lele)
Sub-D. F. O.
(M. G. Sardar)

(2) *Wardha :*
D. F. O. (D. V. Narurkar)
Sub-D. F. O.
(Kartarsingh)

(3) *Bhandara :*
D. F. O. (G. B. Dashputre)
Sub-D. F. O
(G. D. Saranjame)

(4) *Gondia :*
D. F. O. (A. R. Moon)
Sub-D. F. O.
(A. M. Patwardhan)

Working Plans, Nagpur and Amraoti Circles, Nagpur :
D. F. O. (J. G. Thosre)
Sub-D. F. Os.
(V. G. Kekre)
(L. H. Benakatti)

CONSERVATOR OF FORESTS, AMRAOTI CIRCLE, AMRAOTI
(S. G. BHOGLE)

Office Superintendent
(A. D. Kukade)

DIVISIONS

(1) *Amraoti :*
D. F. O. (J. C. Sarawate)
Sub-D. F. Os.
(B. P. Desai)
(R. G. Patwardhan)

(2) *West Berar, Akola :*
D. F. O. (P. P. Joshi)
Sub-D. F. Os.
(S. S. Parasnis)
(R. N. Patil)

(3) *Yeotmal :*
D. F. O. (B. R. Koppikar)
Sub-D. F. Os.
(N. P Choksi)
(V. P. Velhankar)
(N. T. Monde)

CONSERVATOR OF FORESTS CHANDA CIRCLE, NAGPUR
(S. A. HEJMADI)

Assistant Conservator of Forests
(M. M. Jamkhindikar)

Office Superintendent
(M. V. Parulekar)

DIVISIONS

(1) *Central Chanda :*
D. F. O. (S. M. Kalbag)
Sub-D. F. Os.
(S. B. Kulkarni)
(A. J. Madan)
(P. M. Naik)

(2) *West Chanda :*
D. F. O. (M. A. Bhadbhade)
Sub-D. F. Os.
(Noor Mohd.)
(A. R. Maslekar)
Instructor, Forest Training School Chanda
(M. S. Risbud)

(3) *South Chanda :*
D. F. O. (A. G. Oka)
Sub-D. F. Os.
(R. B. Joshi)
(R. A. Mandke)

(4) *East Chanda :*
D. F. O. (M. D. Joshi)
Sub-D. F. O.
(B. D. Koppikar)

(5) *Rajura Sub-Division :*
Sub-D. F. O.
(M. V. Khisty)

(6) *Working Plans, Chanda :*
D. F. O. (G. S. Chandras)
Sub-D. F. Os.
(V. K. Prabhu)
(R. L. Chaudhari)

Officers on deputation and on leave

D. H. Kulkarni, Dean, Indian Forest College, Dehra Dun.
U. R. Mavinkurve, Special Forest Officer, Forest Labourers' Co-operative Societies, Poona.
S. A. Mundkur, Deputy Conservator of Forests, on leave.
D. D. Yellurkar, Deputy Director, Anti-Corruption and Prohibition Intelligence Bureau, Bombay.
C. S. Kirpekar, Lecturer, Indian Forest College, Dehra Dun.
V. V. Damle, Assistant Conservator of Forests, French Institute, Pondicherry.
A. B. Phadke, Assistant Conservator of Forests, Soil Conservation Officer, Agra.
N. R. Chaudhari, Assistant Silviculturist, Forest Research Institute, Dehra Dun.
V. K. Sarawate, Assistant Conservator of Forests, on logging training, Burma.