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STANDARD OF LIVING IN INDIA AND PAKISTAN
1981-82 to 1940-41

STANDARD OF LIVING IN INDIA AND PAKISTAN

1931-32 to 1940-41

By R. C. DESAI

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PREFACE

The bulk of the contents of the following pages, except for minor revisions, was prepared and approved for the Ph.D. Degree of Cambridge University. I have allowed myself to permit its publication in the hope that it will provide a link between the pioneering work of Dr. V. K. R. V. Rao for the period upto 1931-32 and of the National Income Committee since the end of the War. The estimates arrived at in this work are not comparable with either Dr. Rao's or of the National Income Committee. As to their validity I leave it to the judgement of the readers. I would feel happy if only the description of the sources used and the methods employed may prove of some help to further research in the field and encourage those who are attempting to improve both the statistical raw material and tools of its analysis.

A short report on the data, methods and conclusions of the work appeared as a Paper I had the honour to read to the Royal Statistical Society in London in May 1948. The Paper was subsequently published in the *Journal* (Part IV, 1948) of the Society. I am indebted to the Society for that opportunity and for the permission to publish the fuller work.

My absence from India has put the burden of its publication on a friend to whom I am deeply in debt. Despite heavy calls on his time made by his students and the work required for his own publications Professor K. T. Merchant has willingly devoted considerable time and effort to see the work through all the stages of its publication. But for his kind intervention it would not have been possible to answer the many requests for its publication I had received from research workers in the field of national income at home and abroad. I am also grateful to Mr. G. R. Bhatkal, the proprietor of the Popular Book Depot at Bombay, for undertaking the publication of a work involving high printing costs and low profitability. Despite the delays imposed by power shortages and other difficulties, I appreciate the care with which the publication has been seen through the press.

R. C. DESAI

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INTRODUCTION

This essay examines the available data in an attempt to build up a serviceable estimate of the standard of living in India and Pakistan for the years 1931-2 to 1940-41.

An indication of the communities' standard of living is provided by the estimates of 'Consumer Expenditure', which term is throughout this essay used to cover the total expenditure on current goods and services.* Production and consumption being a continuous process at any moment of time, commodities and services are at various stages in their progress to the final consumers. A valuation of consumer expenditure involves ascertaining the paid or imputed values of commodities and services at a fixed point—"when they are in the form and at the place that render them immediately available for use" by the final consumers. All expenditure chargeable to business account is, therefore, excluded except "where the object purchased is re-sold to persons as part of a composite product or service" which could not be independently estimated except as a total of individual expenditures on constituent items. Food purchased in restaurants is a case for instance. Since expenditure from private incomes alone is considered we exclude all government expenditure. We exclude all direct taxes as direct deductions from incomes, as also licence fees, fines etc., items of expenditure in lieu of which no specific service is provided. Savings from personal incomes are also excluded. While the amount spent on the purchase of any commodity or service is generally accepted as a measure of the current use made of it, acquisition of residential property is excluded. Instead rents paid of all dwellings, whether new or old, are assumed to measure their current services. The value of services rendered to the consumers by current accounts of banks and post offices and by life insurance companies is measured by the current expenditure of such enterprises on the provision of these services.

In all practical attempts to build up quantitative estimates of this sort one cannot overstress the limitations of such work. Most of the current estimates will have to be discarded if the objective is the measurement of welfare. Consumer expenditure in a monetary economy can only include a total of exchange values and, except for a few conventional items, would tend to exclude all the services not rendered for monetary rewards. Both national income and consumer purchase will be reduced if a man

* The word symbol 000 is used in place of 'thousand'. The full value in numerals (e.g., 147,822,000) would indicate a reference to the nearest unit, while the words 000 (e.g., 147,822,000) indicates reference to the nearest thousand.

married his nurse. International and intertemporal comparisons are also severely restricted. Greater earnings on rents to-day than in the past, or in towns than in the country, are indicative of congestion and shortage rather than abundance. Greater expenditure on clothing in the United Kingdom may only mean a more hostile climate than in India.

The purpose behind this study has been twofold. It is, first, a step to build up an estimate of gross and net national expenditure on lines similar to the estimates available for western countries. In this sense it attempts to be a measure of the sum total of 'utilities,'* in this instance, utilities involving expenditure from personal incomes. In India, a larger sector of population obtains satisfaction of some of its wants outside the money economy, and the need to make the estimates comparable with those for western economies has created problems of imputing values, which are arbitrary to a more or less degree. The two significant items in imputed values are :

(a) Producers' retention of farm produce and wages in kind given to agricultural labourers and village artisans, and (b) Services of housewives on farms and in respect of cleaning and grinding of grains.

Imputation of the first is not unknown in the West but in India and Pakistan its significance is considerable. In the case of the second, grains are not supposed to be finished commodities till they are readily available for cooking, and hence the services of housewives in grinding and cleaning are included. Cooking and other domestic services of housewives are excluded on conventional rather than logical grounds. Another item of some significance is the rental value of owner-occupied houses, which in the case of rural huts include practically all housing. In some cases imputation of values is simply not possible, and hence not attempted. Thus, for instance, the hospitality of one's relatives reduces the need to spend on services rendered by hotels in a different social set up. These intangible assets (or liabilities) of social institutions such as the joint family system or of factors such as climate could not possibly be included.

The second objective has been to provide a quantitative basis for analytical economics of the type associated with the work of Lord Keynes. In economically backward countries the propensity to consume is too high. When the standard of living as in

* 'Utilities' here is defined in the same sense in which its meaning makes its use tautological in economics, i.e. all those products and services for which consumers are prepared to pay money.

these countries is just sufficient to provide for the barest minimum physical needs of the people, they almost invariably spend a very large proportion of their incomes in obtaining current goods and services. Any change in outlay, hence, has a very great multiplier effect. A slight rise in capital investment or in public spending tends to create an inflationary situation, and a small fall lends the economy into a heavy deflation. The significance of this should not be lost on the advocates of rapid industrialisation or of a vast network of social services. Wars against poverty, illiteracy and disease while being waged create very much the same economic problems, the only difference being that in the case of these we have the choice of its tempo and are better off at the end if we manage to get through. Even this choice is limited if we are confronted with a hyper-Malthusian situation.

The study covers the present territories of India and Pakistan. In human terms the estimates presented here relate to the personal expenditure of a total population of 338 million heads in 1931 at the beginning of the inquiry and 389 millions in 1941 at its end. The term 'Provinces' refers to the major units in which the territories of India and Pakistan under direct British rule were administratively divided during the period. The area covered by these Provinces is referred to by the term 'British India', the appellation by which the territory was known during the period covered by this study. The Provinces are to be distinguished from the 'States' which were the units under the then semi-autonomous administration of the native princes. The term 'region' is used to connote geographically homogeneous units broadly following the external boundaries of the provinces and also the states of Rajputana, Central India, Hyderabad, Mysore and Kashmir. States situated within the external frontiers of the provinces are supposed to form part of the region bearing the same name as the Province and vice versa. Thus Baroda, Gujarat, Western India and Deccan States are included in the Bombay region. The term 'Trade Bloc' is also interchangeably used with the term 'region' to denote broadly homogeneous economic units.* The term 'Government' or 'Government of India' is ordinarily used to refer to the pre-Partition British Administration at New Delhi known as the Central Government, which together with Provincial Governments, was responsible (each within its specified fields) for direct administration of the Provinces, and which exercised a varying degree of control over and co-ordination of the administration of States. The collection of primary statistics was the concern of the Provincial Governments, but it was the Central Government of India

* For a fuller definition see Chapter 8, Page 141.

which was responsible for their co-ordination and (in most cases) their publication.

The basic unit of British India administration was the 'district', and each province was divided into a number of districts. The number of districts in a province varied with the size and population of the province. Thus a small province like the North-West Frontier Province had only 5 districts, while the United Provinces of Agra and Oudh had 48 districts. The most important of statistical information in official publications is available in separate provincial issues giving information for each of the districts. It is not possible to secure a further break up beyond the district. Demarcation of the present frontiers of Pakistan and India have involved cutting up of districts as well, and to that extent it is not possible to form separate estimates very accurately from the available data. Quite an amount of information, however, is not available for units smaller than the province or the region, and in these cases even a broad break up would involve a considerable amount of inaccuracy. Finally, not in all cases do we get even a provincial break up. In the present estimates whenever it has been possible to obtain separate information for each of the provinces and some of the major states or state blocs, this has been prepared in detailed tables which for lack of space are not included here. The study only contains global figures, covering both India and Pakistan.

In respect of the princely states practically all the available official and unofficial data have been consulted, specially the host of Administration Reports, which vary a great deal in respect of quality. The mosaic, however, defies all definition, and in the main discussions of the essay, therefore, the brunt of the attack is mainly borne by the British India publications. Generally speaking, the information in respect of the states follows the lines of some of the major British India publications, and suffers from the same limitations. But there is a total black out on a great many relevant aspects, and the patches of light here and there are of a very poor quality indeed.

One is agreeably surprised, however, at the mass of material that is available in respect of British India. The need of a foreign government to rule a strange people from a distance of thousands of miles required it to insist on every one of its officials to write down and dispatch a detailed account of the people he handled, and this has proved an unintended blessing for a statistical antiquarian. Thus right from the monumental *Gazetteers* and Watt's *Dictionary of the Economic Products of India* to the pettiest of Administration Reports, all have been useful at some point or the

other. The literary quality of the material has also been fairly high. In what is ordinarily a dreary work of this sort, the occasional glimpses of interesting human characters breaking through the steel curtains of departmental routine have provided very pleasant experience. The author is indeed grateful to the legion of civil servants, mostly foreigners, who unwittingly carried on the best traditions of the Service (laid down by Mill and Macaulay in the days of the East India Company) in presenting reports that are not only readable but make reading a pleasure.

Comparatively unknown and rather disapproved of as having expensive idiosyncracies were some mathematicians and statisticians in this talented service. It is only recently that statisticians have caught the eye of the respective governments, but before that these people (Sir John Hubback, for instance) carried on in their small way experiments the results of which made hardly any impression on the Government then, and most of their work lay buried in official files. The same has been true mostly of the various Commissions and Committees who during their short period of life collected masses of evidence which runs always as a second line of attack for the economic statistician. Financial stringency in those days of sound finance dictated the Department of Finance to shelve all the proposals in connection with the improvement of official statistics. For a period some very useful publications suffered a break, and some helpful publications, *Prices and Wages in India* for instance, never found print again.

In order to supplement what was available in the published official statistics at the India House Library the author undertook a nine-month visit to the country, and through the kind sponsoring of the Economic Adviser to the Government of India was able to go through the various 'files' in the departments and the record offices at Delhi, Calcutta and Simla. The work was not easy. The war had just ended, and practically every official was buried deep in post-war readjustment work. The most upsetting factor was the political uncertainty. Tremendous changes were planned one day, and thrown out the other day in face of the political weather forecast. In that mood work of this type could not secure adequate attention and support from all concerned. Thus while it became possible to persuade some Central Government Departments to undertake or sponsor some of the inquiries with the Provinces, these, in view of the Cabinet Mission's Plan, could not see any reason to be bothered about economic affairs with which the Centre was to be no longer concerned.

The author also succeeded in persuading some of the officials to address private firms, and got some useful information which

otherwise could never have been obtained. But since requests of this type, though coming from the Government, could only be voluntary, not many firms cared to add to the tremendous number of forms they already were filling up under compulsion. "Either we can carry on with production or fill up forms but not both" was the burden of many a justifiable complaint. In the cases where the author failed to get the desired official sponsoring, he personally addressed and visited a number of firms and control officers, and presented references from the Economic Adviser to the Government of India and from Manufacturing Associations and Merchants' Chambers. It has, however, been his experience that not much can be gained by this type of statistical 'private enterprise'. In a varied inquiry of this sort it would be tedious to recount the hundreds of letters sent and informations asked for, the number of replies received and the percentage of refusals. While it is possible to get some specific information, this adventure should not be undertaken if one aims at securing a sample. The replies hardly possess any scientific value whatever.

The real gain from the journey was the opportunity to have a first hand contact with the raw material from which official statistics were prepared, and at times quite as important the men who were responsible for their collection, compilation and publication. Except for the Department of Agriculture practically every department of the Government at that time seemed to share the impression that statistics could be obtained by the good old method of 'inquiries'. The various commissions and committees had also gone the same way. Whenever any need for information arose the Central Government addressed a circular letter to the provincial Governments to give their 'estimates'—actually guesses—and on the basis of some of the round figures so obtained a table was prepared, and in many cases found publication in that form. Most of the official information was thus a product of such 'inquiries'. Probably rough estimates of this type might have some administrative use, but the sampling value of this medley of subjective opinions is very small. What the country had then accepted in case of estimation of crop yields had got to permeate all aspects of statistical estimation. If large scale production or distribution censuses are ruled out, only scientific sampling could provide a good basis on the many problems of rural life in India and Pakistan, on which accurate knowledge was so meagre and yet so vital!

Failing to possess scientifically accurate information, the author was compelled to use the data as available in their present form. He has, however, constantly endeavoured to divest himself from the hallucinations of accuracy induced by the neatly printed

columns and totals published under the authority of the then Government of India. He has also come to entertain caution in assessing the accuracy or reliability of his estimates.

Finally, he has the greatest pleasure in gratefully acknowledging the help and guidance he received from Professor D. H. Robertson who supervised the earlier part of the work, and Mr. J. R. N. Stone under whose guidance it obtained its present shape. He is also grateful to Sir Theodore Gregory, the Economic Adviser to the Government of India who helped him to find his way through the maze of Imperial Secretariat and its offshoots at New Delhi. It is needless to add that a work of this sort cannot but depend on the willing interest and co-operation of myriads of Government officials (now distributed between India and Pakistan) whose help was significant and whose numbers were vast. He must also thank Mr. C. F. Carter who kindly went through some parts of the work. And he need not mention the often abused privilege of running upto Mr. Sraffa and the late Mr. G. F. Shove for assistance and advice. The greatest demands, however, were made on the unfailing kindness and courtesy of Miss Thorne, the Librarian of India House at London and Mr. Parsons of the Cambridge University Library and their staff. They alone know the burdens such work imposes on them.

PART ONE

PRODUCTION

CHAPTER 1

CROPS

This Chapter describes the sources of and the methods by which outturn of agricultural crops was estimated. The observations relate to the following crops the outturn of which was directly helpful in estimating consumer purchase.

Grains and Pulses:—Rice, wheat, barley, *jowar*, *bajra*, *ragi*, maize, gram, other foodgrains including pulses.

Oilseeds:—Linseed, sesamum, rape and mustard, groundnut, coconuts, castor, other oilseeds.

Sugar:—Sugarcane, others.

Fruits and vegetables including rootcrops.

Condiments and spices.

Miscellaneous foodcrops.

Beverages:—Tea, coffee.

Tobacco.

Sources

The basic publication on agricultural statistics in India and Pakistan was the *Season and Crop Report* issued by the Department of Agriculture or Land Records in each Provincial Administration. This gave information for each district which remains the basic unit of published agricultural statistics. For the period covered by this study, the Director General of Commercial Intelligence and Statistics* at Calcutta issued annually two central publications: *Agricultural Statistics of India*, Volume 1 (British India) and Volume 2 (Indian States) and *Estimates of Area and Yield of Principal Crops in India*.† The latter was issued soon after the harvest and set out the figures published in the Final Forecasts. From among the crops above, forecasts were prepared for rice, wheat, sugarcane, linseed, rape and mustard, sesamum, castorseed, and groundnut. It also included estimates of area and outturn of tea, coffee, barley, *jowar*, *bajra*, *maize*, gram and tobacco. *The Ag. Stats.* was a later publication and gave area estimates only. The aggregates of area given here differed from those in the *Estimates*.

The reasons were;

1. Certain tracts for which forecasts were not published were excluded from the aggregate for British India in the

* Hereafter referred to as DGCIS.

† Hereafter abbreviated the *Ag. Stats.* and the *Estimates*.

Estimates. Figures for these tracts were, however, included in the *Agricultural Statistics*.

2. In the districts of Almora and Garhwal and in the hill tracts of the Nainital District of the United Provinces there was no agency for the collection of statistics and no figures for these were included in the *Estimates*, but rough estimates for these areas were included in the *Agricultural Statistics*.
3. In some cases the figures given in the *Estimates* were revised before being included in the *Agricultural Statistics*.*

The *Estimates* on the other hand contained estimates of area and outturn for a great many of Bombay, Rajputana and Central India States for a few crops information in respect of which was not available in the *Ag. Stats*. Inclusion in the latter was merited only if a complete classification of all cultivated soil was available, while in case of the *Estimates* the approach was on the basis of individual crops and thus some of these states which could only furnish information in respect of a few of the major crops were included. Inclusion in the *Estimates* on the other hand required statistics both of area and outturn. The *Ag. Stats*. did not require outturn estimates and hence its coverage generally was greater than that of the *Estimates* except in the case of one or two major crops.

A further source of information was *The Food Statistics of India*, a publication issued in 1946 by the Department of Food.† This publication incorporated information on the area and outturn of rice, wheat, jowar, bajra, maize and barley received from the hitherto 'non-reporting' areas for the years 1936-37 onwards.‡

A source of frequent check on official statistics and in some cases the only source of information was the long series of the *Marketing Reports* issued by the Agricultural Marketing Adviser to the Government of India. From among the commodities or groups listed above there are separate *Marketing Reports* on rice, wheat, barley, gram, linseed, groundnut, coconuts, sugar, potatoes, grapes,

* *Guide to Current Official Statistics*, Volume I (Third Edition) p. 10.

Area under Rice for the year 1935-36. (000 acres)

<i>Estimates</i>	79,085
Punjab, N. W. F. P. & Ajmer-Merwara	1,011
Almora, Garhwal and Nainital	122
Revision Orissa deduct	—280
<i>Ag. Stats.</i>	79,888

† Hereafter abbreviated *Food Statistics*.

‡ 'Non-reporting' areas were defined as those areas which did not report agricultural statistics to the DGCIS. Since some of the states only reported area and not yield, the 'area-non-reporting' units had to be distinguished from a larger number of the 'yield-non-reporting' units. The term 'non-reporting' had been loosely used in official publications and at times it was not clear in which sense it was mentioned. The term will be used in this essay only for area-non-reporting units which, of course, did not report yields as well.

bananas, cashewnuts, citrus fruits, coffee and tobacco. The *Reports* provide good descriptive material and specific instances being the product of 'inquiries'. The dignified term 'survey' (e.g., market survey) often indicates a member of the marketing staff going to a town market and inquiring from one or two 'prominent' merchants the volume of produce coming to the market or from a couple of 'typical' shopkeepers the prices obtained for it. In preference to a total black out such information was often used, but its statistical value can only be exaggerated.

Comprehensiveness of Statistical Information

The publications noted on the previous page differed in their coverage and hence any general statement on the coverage of official statistics is likely to be misleading. The total bloc area of India and Pakistan by Professional Survey* was customarily classified into the following four administrative divisions for which the area of reporting and non-reporting units as in the *Ag. Stats.* was separately stated.

TABLE 1.
Comprehensiveness of Agricultural Statistics.
(000 Acres)

	Reporting	Non-reporting	Total
1. British Provinces (including Indian States within the political jurisdiction of the Government of Assam)	512,664	7,891	520,555
2. Indian States having direct political relations with the Crown Representative	147,822†	288,026	436,748
3. Certain specially administered territories in the N. W. F. P. (Tribal areas etc.) not included under 1		14,536	14,536
4. British Baluchistan (including administered areas)		84,706	84,706
Total ..	660,486	346,059	1006,545

*"The area covered by 'Professional Survey' is that carried out by the survey of India in Northern India, and by the corresponding departments in the southern provinces. The agricultural statistics are, however, prepared in a number of provinces or parts of provinces from 'Village Papers,' i.e., papers prepared by the village accountants for the purpose of assessment and collection of land revenue" (Introductory Note. *Ag. Stats.*). According to the 'Village Papers' the reporting area for the year 1938-39 was 511,877 (British India) and 151,161 (States) 000 acres instead of 512,664 and 147,822 000 acres according to 'Professional Survey.' "The causes of this difference are: (a) While the surveyed area is calculated in bloc, the area by village papers represents the added total of field and village areas, and (b) the system followed as regards the inclusion or exclusion of areas covered by water, buildings, roads, and railroads is not uniform in the two sets of returns." *ibid.* The bloc total area of India and Pakistan also differed slightly in the various publications. The latest Survey estimate as available in the Census of 1941 was 1581,640 square miles i.e. 1012,102 000 acres. According to the 1938-39 issues of the *Ag. Stats.* the bloc total was 1006,545 000 acres. According to the *Food Stats.* the figure was 1008,372 000 acres. It was not generally possible to revise all the details in respect of which a table was prepared from any of the publications and hence the bloc totals slightly differ in different tables.

† The gross area of these states is 257,959 000 acres. Of these no returns were available for 110,187 000 acres comprising chiefly of unsurveyed areas and lands held on *jagirs* and other privileged tenures,

Thus of the 1007 million acres of the geographical area of India and Pakistan complete crop-classification of cultivated soils was not available for about one-third. The coverage from the point of view of the individual crops lacked uniformity and it was not often possible to total up the bloc area of units in respect of which information was obtained by DGCIS and published in the *Estimates*. Thus if a crop was reported, for instance, in 'Bombay States' it was not possible to ascertain whether all the Bombay states were included or a few, and whether the same states were included in respect of all the crops mentioned in the publication. The labours of the Food Department succeeded in getting a few more units to submit 'estimates' (official term for guesses) of area and yield of cereals from the year 1936-37 onwards. The results are stated in Table 2.*

TABLE 2.
Comprehensiveness of Statistics by Crops (Agricultural)
(000 Acres)

Cereals	Bloc area of the Yield-reporting units in the <i>Estimates</i>	Bloc area of units from which information was obtained by Food Deptt.	Bloc area of units still under black-out	Area under Crop as published by DGCIS in the <i>Estimates</i>	Additional area under Crop Covered by Food Deptt.	Column 6 per cent of Column 5
(1)	(2)	(3)	(4)	(Average of 7 years (5))	ending 1942-43). (6)	(7)
Wheat	669,292	264,893	74,387	34,516	898	2.6
Rice	640,304	283,760	84,508	73,933	3,821	6.8
Jowar	592,997	317,326	98,249	34,517	3,533	10.2
Bajra	592,997	319,669	95,906	18,159	3,094	17.0
Maize	552,351	325,472	180,749	6,887	1,841	28.8
Barley	556,184	317,855	185,033	6,851	931	14.6

It is obvious from the above table that the cultivation was very small in the area for which information was not available. The increase in outturn was also of the same order as the increase in acreage. Subject to the observations in the next paragraph a 40 per cent increase in the coverage of wheat gave only 2.6 per cent increase in the actual acreage under the crop or in its yield. A 59 per cent increase in the coverage of maize increased the area under the crop by 28.8 per cent and the yield by 29.4 per cent.† This was primarily due to the fact that in many of the yield-non-report-

* P. 66; *Food Statistics*. It appeared that in the table gross area of the states was included and no deduction appeared to have been made for unsurveyed areas, etc. mentioned in the footnote on page 21.

† "The total addition to be made to the estimated production of foodgrains from the (yield) reporting areas on account of the inclusion of nearly 70 per cent of the (yield) non-reporting area was only 8.4 per cent of the estimated yield of cereals from the reporting areas." *Food Statistics*, p. 3.

ing areas there was either no production at all or that it was negligible.

The value which could be placed on the statistics obtained by the Food Department was doubtful. The Report of the Inter-Departmental Committee on Official Statistics mentioned that a detailed examination of the reliability of these figures was being undertaken by the then Department of Education, Health and Lands. An inquiry from the Statistician to the Department as to the degree of accuracy he attached to these figures, elicited the reply: "These figures are provisional and are under scrutiny."* Meanwhile, the Department of Food saw it fit to publish these. In absence of any official indication suspicion attaches to the accuracy of these figures. They were all obtained during the War after the creation of the Food Department and the tragedies of the Bengal Famine. When a general scarcity was feared and when Food Department with its power to requisition food supplies had called out information mostly from princely states, these were very likely to be biased. Every unit whether deficit or surplus was interested in the underestimation of its supplies, either in order to secure more supplies from outside or part with as little of its own supplies as possible. The *Food Statistics* was alive to the general unreliability of these estimates. It commented, "It is true that the estimates provided for by the administrations of the non-reporting areas are even more in the nature of guesswork than the statistics furnished by the reporting areas."† It would have been more helpful if while incorporating the information thus obtained the Food Department had indicated the 'planks' on which this guesswork was based and if it could justify any suspicion of reliability. Since there was no further information to check these figures the comments that follow refer to the statistics supplied by the DGCIS in the *Ag. Stats.* and the *Estimates*.

Determination of Outturn

The framing of estimates of outturn of agricultural crops in India and Pakistan involved a consideration of three factors, viz., area, standard or normal yield, and seasonal or crop condition factor. The estimate of outturn of a crop in a district was a product of the area under the crop and the standard yield deflated for the current seasonal or crop condition factor. The area was normally available to the nearest 100 acres, the standard yield was expressed separately for irrigated and unirrigated soil in pounds or Indian maunds (82 2/7 lbs.), and the crop condition factor was expressed as per cent or annas in a rupee of the standard or normal or average yield. If in

*D. O. No. D. 8486-St/46 dated New Delhi, 7 June 1946.

†*Food Statistics*, pp. 2-3. But it seems that the Food Department had failed to realise that this guesswork also involved a strong unilateral bias.

a district the area under a crop was 1,000 acres, the standard yield was 12 maunds and the condition factor was 12 annas or 75 per cent, the outturn of the crop would be 9,000 maunds.

Area Under Crops

The reliability of statistics from the 'reporting' areas in British India was broadly a function of the prevailing system of land tenure. The Temporary Land Revenue Settlement areas had a permanent revenue agency in different villages which kept records of area cultivated, classification of crops, estimates of yield, revenue assessed and collected, etc. On the other hand in the Permanently Settled Areas the revenue had been fixed once and for all and no permanent staff existed for the purpose.* This classification was not very strict and much depended on whether a province was predominantly under Permanent Settlement or not. Thus Bengal had no permanent revenue agency in temporarily settled areas, while in the United Provinces the Permanently Settled areas fell in line with other areas in having a permanent revenue agency. Thus the reliability varied provincewise rather than on the basis of total area under Permanent or Temporary Settlement.

In case of areas where there was a permanent revenue agency the basic unit of information was the village, and the official supplying the information was known as the *Patwari*. He was described as "well-paid literate, drawn from men of social standing . . . and trained in his duties." He made a field-to-field inspection of the villages under his charge, and had an adequate number of senior officers above him to supervise his work. It was hence commonly

*Permanently and Temporarily settled Area in British India.
(000 acres).

Province	Year	Permanently Settled	Temporarily Settled	Total
(1)	(2)	(3)	(4)	(5)
Ajmer-Merwara	1938-9	778	784	1,562
Assam	1938-9	3,919	31,566	35,485
Bengal	1937-8	39,158	10,100	49,258
Bihar	1936-7	39,694	4,630	44,324
Bombay	1935-6		48,653	48,653
C. P. and Berar	1938-9		63,112	63,112
Coorg	1937-8		1,012	1,012
Delhi	1938-9		368	368
Madras	1938-9	21,246	58,515	79,761
N. W. F. P.	1938-9		8,579	8,579
Orissa	1936-7	9,861	10,745	20,606
Punjab	1938-9		60,176	60,176
Sind	1935-6		30,180	30,180
United Provinces	1936-7	7,306	60,660	67,966
			+ 1	+ 1
		121,962	389,081	511,043

Source : *Agricultural Statistics, 1938-9, Volume 1, p. 10.*

acknowledged that where the *Patwari* system obtained the reporting of area and classification by crops was fairly accurate.*

The statistics of area under predominantly Permanently Settled Provinces hardly compared in accuracy with those in which the *Patwaris* were employed. The returns here were made by the village *chowkidar* (policeman), who had many police duties, who was "ill-paid and illiterate, and there were no persons corresponding to the circle officers connecting the village officials with the district officials." The village agency was too ill-equipped and untrained for field-to-field inspection and hence the sub-divisional officials roughly ascertained the proportion the area under the crop was to the normal average for the crop and passed on these estimates to the district officials. Through these the reports finally reached the Director of Agriculture and at every stage the several officials allowed the weight of their subjective estimation of the situation to bear on the primary figures. The acreage estimates, hence, could not be accurate† and they generally erred on the side of underestimation. The attention to this aspect was specially drawn after the Bengal Famine. The Famine Inquiry Commission found that whereas the area under rice as reported by the Director of Agriculture was 22.39 million acres the area under rice compiled from the Settlement Reports totalled 25.54 million acres.‡ The random sample surveys of acreage carried out by Professor Mahalanobis at the instance of the Bengal Government showed the official returns of the area under rice to contain an underestimation of about 3.5 million acres. The underestimation was also established by a plot-to-plot enumeration which was carried out by the Bengal Government in 1944-45 which gave a figure of area under rice 2 million in excess of corresponding official figure. The significance of these could be ascertained from the footnote to the Final Forecast of the Rice Crop 1944-45.

* Hubback, however, remarked: "It is usually believed that the estimate of cropped area is sufficiently accurate. It may be, but the belief is intuitive, rather than rational," and he observed: "It would certainly be a great advantage if the harvested area could be obtained by some form of sampling." 'Sampling of Rice Yields in Bihar' Reprinted in *Sankhya*, Volume, 7 Part 8.

† "For these tracts, the acreage as well as the outturn cannot be more than a rough estimate. Such estimates of areas, once formed, are liable to become stereotyped and repeated year after year without regard to the influence of exceptional seasons or changes in the economic conditions of the tracts." Appendix 1, *Estimates*. "In 1936 the agricultural authorities in Bihar were confronted with an inexplicable fall of some 100 000 acres under rice in a certain district but no explanation has ever been forthcoming. In another case an actual survey of the jute area in an important district in Bihar revealed the real acreage to be nearer 800 000 than the stereotyped figure of 120 000 which had been appearing in the official estimates year after year without change. A third example is revealed by a recent examination by the marketing staff of the Indian Central Jute Committee of statistics relating to jute grown in Bengal. This disclosed that the official estimates were liable to fall short of the probable area sown by as much as 45 per cent." *Report on the Marketing of Rice in India and Burma* (1941) p. 18. Of course, the error should be much smaller for a large unit like the province.

‡ Not much reliance, however, can be placed on Settlement Reports either. It may be mentioned, however, that there was no evidence of a fall in area under rice since before the beginning of this century to which period these Settlement Reports probably related.

TABLE 3
Estimates of Effective Area under Crops by Random Sampling
Method in Bengal and Bihar.

B E N G A L

Crop	Year	Number of Districts surveyed	Size of Grids* Acres	Estimated effective Area under the crop 000 Acres	Standard Error of Estimate in Col 5. 000 Acres	Corresponding Official Estimate 000 Acres
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Jute	1941	21	1, 2, 2, 5, 3, 4, 6, 9	1,573	..	1,583
	1942	21	1, 2, 2, 5, 3, 4, 6, 9, 16	2,996	..	2,704
	1943	25	2.25	2,755	78.2	2,146
	1944	25	2.25	2,106	24.3	1,694
	1945	25	2.25	2,520	17.3	2,018
	1946	25	2.25	2,273	..	1,490
Autumn rice ..	1944	25	2.25	7,873	68.8	8,081
	1945	25	2.25	6,884	32.1	6,671
	1946	25	2.25	6,262	..	6,699
Winter rice ..	1944	25	2.25	22,201	275.5	20,798†
	1945	25	2.25	21,087	51.4	19,471
	1946	25	2.25	..	....	19,909

B I H A R
(000 Acres)

Crop	Survey Estimate	Settlement‡ Report	Forecast¶ 1948-4
(1)	(2)	(3)	(4)
District Shahabad. (Area 2,798 000 acres)			
Wheat	300.35 ± 19.87	227.9	263.8
Barley	78.40 ± 9.51	105.4	102.5
Gram	337.33 ± 26.86	339.5	232.3
Arhar	58.60 ± 12.59	51.4	41.0
	774.68 ± 68.63	724.2	689.6
District Monghyr. (Area 2,370 000 acres)			
Wheat	284.08 ± 31.62	144.9	219.8
Barley	66.90 ± 5.32	81.4	81.9
Gram	193.43 ± 26.86	210.5	210.5
Arhar	103.71 ± 23.22	42.5§	81.0
	648.12 ± 87.02		593.2

* 'Grid' is the technical term used for the sample unit.

† Revised figure after plot-to-plot enumeration.

‡ Settlement period : Shahabad 1907-16, Monghyr 1905-12.

¶ Forecast for Rabi crops dated 26-4-1944 and Fourth Wheat Forecast issued by Director of Agriculture, Bihar

§ Figure for North Monghyr alone.

The figures arrived at by "usual procedure" were 18,592,000 acres and 6,775,000 tons of the winter crop of rice in Bengal. "Alternative methods, however, indicate a larger figure for winter crop acreage. The area, according to plot-to-plot enumeration is 20.6 million acres, while by a sample survey it is found to be 22.1 million acres. The corresponding yield figures are 7.50 million tons and 8.05 million tons respectively."*

The results of Professor Mahalanobis' Area Surveys in Bengal and Bihar are given in Table 3.†

Practically in every instance official estimates are below sample estimates, except Autumn rice in 1944 in Bengal and barley crop in Bihar. The latter only shows that the barley acreage estimates remained stationary since the Settlement Period and did not reflect the fall it had taken since.

The statistics of area related to area actually sown and not area successfully cropped. "The general rule is that the returns should exhibit the areas actually sown whether the crop comes to maturity or not, the principle underlying this rule being that the failure of a crop should affect not its area but outturn. An exception to this rule is, however, made when fields, owing to the failure of the first sowing have been devoted to other crops."‡ In this case the area first sown was omitted. It was difficult to ascertain how far errors of eye estimation in this respect led to faulty estimates of the area under the crop. So far as there was any crop at all the crop condition factor would be affected. When there was a total failure of crops it should be fairly easy for the district officer to ascertain the extent in a rapid survey by a motor car. A perusal of Hubback's note seemed to suggest that this factor tended to overestimate the actual area under the crop. This might not bear out. His suggestion, however, is quite helpful. A sample-survey random over time as well as space would give a fair approximation of total outturn and hence of partial or complete failure of crops. The first might not decrease the area but give a low outturn in crop-cutting experiments, the latter would give reduced area under crops.

Another product of irregular information was the estimation of the area under mixed crops. There was some ambiguity in the term 'mixed'. Mixed crops might have two different meanings. In one plot of land one portion might be sown with one crop, another with another crop and so on with two or more crops. In this case there is no ambiguity in the area under each individual crop. But the usual form of mixed crop sowing is to sow the plot with a mix-

* *Indian Trade Journal*, Volume, CLVIII, No. 2049, dated 27-9-45, p. 532.

† Sources: Bengal, through the courtesy of the Superintendent of Crop Surveys, Government of Bengal, D. O. No. 154/8/47 dated 18 March, 1947, and Bihar, 'Report on the Bihar Crop Survey: Rabi Season 1943-4,' *Sankhya*, Vol. 7, Part 1, p. 47.

‡ *Estimates Appendix* 1.

ture of two or more crops over the whole plot. The problem then was to estimate the net or effective proportion of land under each crop in the mixed plot. A further complication was added by the fact that the relative composition of land under each crop and the number of crops vary from field to field. "The areas covered by the several crops in a mixed field are estimated in various ways in the different provinces, and the estimates are based on formulae prescribed by the provincial authorities in individual cases, as it has not been found practicable to prescribe one uniform method of calculation."* The main item affected were oilseeds. In the *Ag. Stats.* "in case of the United Provinces areas reported for oilseeds represent areas under 'pure' crop, i.e., seeds sown unmixed with any other crop and exclude oilseeds which are thinly sown in combination with wheat, barley, gram, and other foodcrops.† For the purposes of the forecasts and hence in the *Estimates* the statistics of acreage refer to 'net' or 'effective' area under the crop. "The estimates for the mixed crop in the United Provinces", however, "are highly conjectural"‡ and were kept separate. The significance of this inaccuracy can be gauged from the following figures for 1937-8.

TABLE 4
Area under Oilseeds, 1937-38

(000 Acres)

Crop	United Provinces		India and Pakistan Crop excluding the Mixed Crop in the United Provinces
	"Pure" Crop	Mixed Crop¶	
(1)	(2)	(3)	(4)
Linseed	2,480	682	3,258
Rape & Mustard	209	2,875	3,086
Sesamum	368	955	3,495

In the case of Bihar, of the plots examined by Mahalanobis in the two districts, 6.2 and 8.0 per cent only were under pure crop. He inquired about the way in which the Department of Agriculture was arriving at figures for area under each crop when sown in mixed condition. "No definite information could be secured but I was given to understand that the Agricultural Department was not using any standard method for the purpose. The area figures for individual *mauzas* are supposed to be supplied by local officers, and nothing was known as to how the acreage for individual crops

* *Estimates* Appendix 1.

† Note to the Table on Area under Crops, *Ag. Stats.*, Volume 1.

‡ Footnote to the Table on linseed, Rape & Mustard and Sesamum, *Estimates*.

¶ The above footnote in the *Estimates* applies to the figures in this column. In case of castor seed even this daring attempt is given up and the figures "exclude estimates for the mixed crop for which there are no reliable data at present".

was estimated.”* In Delhi “it was found that the annual forecasts of yield were based on the area devoted solely to wheat and that mixed crop areas on which wheat is sown along with barley or gram were not taken into consideration.”†

Standard Yield

Standard Yield has been defined as “that crop which past experience has shown to be the most generally recurring crop in a series of years; the typical crop of the local area; the crop which the cultivator has a right (as it were) to expect, and with which he is (or should be) content, while if he gets more he has reason to rejoice, and if less he has reason to complain”; or in other words, it is the “figure which in existing circumstances might be expected to be attained in the year if the rainfall and the season were of a character ordinary for the tract under consideration, that is, neither very favourable nor the reverse.” Briefly, it is stated to be “the average yield on an average soil in a year of average character.”‡ The Standard (it is also called ‘normal’ or ‘average’) yield was generally obtained by crop-cutting experiments over a number of years on plots selected by district officers or officials (belonging to the category ‘responsible’) of the Provincial Agricultural Departments on the basis of what they considered to be average or standard for that locality. No objective procedure was laid down for the selection of the plots. It depended entirely for its accuracy “on the ability of the officer to select.”§ On the basis of the yields obtained by these crop-cutting experiments annually for major crops, every five years a revision was supposed to be made by the Director of Agriculture or Land Records at the Provincial Centre, who revised these in the light of his own intuition or further inquiries. Till the next revision a list was maintained by these agricultural Departments of the standard yield of each crop in each district for irrigated and unirrigated soil separately, and on the basis of this the current outturn per acre was determined. In actual practice these standard yields in quite a number of cases had been going on without revision for a series of quinquennial periods.

Another possible source of error lay in the different sizes of sample cuts in different provinces. Thus the size of the cut was 1/10 of an acre in Madras, the Central Provinces, Bengal, Sind and the United Provinces; between 1/3 and 1/5 of an acre in the Punjab

* *Sankhya*, Vol. 7, Part 1, p. 66.

† *Report on the Marketing of Wheat in India and Burma* (1937), p. 9.

‡ *Estimates*. Appendix 1. The wording is the same as in a circular dated 1897.

§ Hubback, ‘Sampling of Rice Yields in Bihar,’ *Sankhya*, Volume 7, Part 8. He continues: “The method is comparable to estimating the average income of the population of a town by watching the streets for a few days and then picking out a man, who looked to be in average circumstances and discovering what his income is.” He also observed: “There is no possible way (in the official method) of estimating what is the probability that the result of such selections is within a given range from the true mean yield.”

and between $1/20$ and $1/80$ of an acre in the North-West Frontier Province. Smaller sizes generally tended to overestimate the yield. The accuracy of the results also depended on the number of cuts taken per unit of survey and these also varied from place to place and in the same place from time to time. Lack of uniformity in these respects, as also the personal bias involved in the selection of the plots, involved unjustifiable elements in experiments intended to secure unbiased estimates of yield.

Condition Factor

The height of subjectivity was reached in the estimation of the seasonal or crop condition factor. The *Patwari* sent his subjective estimation of the current yield as a proportion of the normal to the Circle Officer. The Circle Officer checked the figures from personal experience and intuition. The Subdivisional Officer added his own personal experience. And finally the District Collector and then the Director of Agriculture at the top pulled their weight of personal intuition, knowledge, experience and inspection on the figures received by them. The methods were not uniform. In Madras correction was only made by the Director of Agriculture, all others reporting the arithmetic average of the reports of their sub-ordinate officers. In other cases the correction proceeded at the district level. This game of successive guessing stands condemned on account of bias. In the Permanently Settled Provinces the primary agency was the *chowkidar*, but there was no superior agency corresponding to the circle officers checking the primary figures.

That the system tended to underestimate the outturn had been maintained for a long time past. The errors arising from this subjective reporting instead of cancelling out tended to be systematic in the direction of underestimation. Various reasons were mentioned for this. The one that was persistently given was the pessimism of the *patwari* or *chowkidar* who underrated good seasons and exaggerated bad seasons.* The incidence of the *Patwaris'* pessimism on official statistics of outturn is, however, exaggerated. Firstly, the results as available involved the correction of preliminary reports by circle officers or revenue officers, and this reduced the inaccuracy. But so far as correction was supposed to be involved in the process of averaging it might be mentioned that no amount of averaging would wipe out an error which was not random but systematic. Second, in some cases the underestimation was corrected for by adopting a lower anna equivalent for the normal.

* The *Patoari* or the *Chowkidar* "being generally untrained and pessimistic by nature is hardly able to form a correct estimate of outturn in terms of the normal crop. His idea of a normal crop is that which he longs to see but rarely sees and the result is that the standard with which he compares a crop is really something above the normal. Consequently, his estimates generally fall below the mark." Dr. Meek in Evidence before the Royal Commission of Agriculture, *Evidence*, Volume 1, Part II, p. 358.

Thus a 10 anna condition report was adjusted to a 12 anna normal instead of 16 annas. In his inquiries the author often queried the grounds on which this lower anna normal was adopted, but did not succeed in getting an unambiguous reply. Sometimes the Director concerned intuitively considered the standard yield as too high and ruled a lower anna equivalent for the normal and in this case the primary purpose was not to correct the underestimation of the *Patwari*, but to correct the overestimation in the results of selective crop-cutting experiments. Since, however, taken over a long period the average of the condition factors was lower than the corresponding anna equivalent of the normal, a priori it may be said that the condition estimates were underestimates. On the other hand Hubback strongly maintained* and other evidence available from the results of the crop-cutting experiments by the random sampling method went to support the conclusion that the normals themselves were very highly pitched. Thus on these grounds alone the direction or the extent of bias could not be determined.†

* 'Sampling of Rice Yields in Bihar,' *ibid*.

† The suspicion that the official estimates were underestimates was particularly strong among commercial classes. Thus with regard to the outturn of wheat the Season and Crop Report of the Punjab noted in 1922-3 : "The principal exporting firms get fairly good results by assuming that the outturn is 33 per cent greater than the official estimates." (The exaggeration in this figure of 33 per cent is reduced if it is intended only to refer to the outturn that is marketed). The Punjab Marketing Report in 1935-6 referring to this quotation observed that there was no reason to suppose that conditions had changed since then. There was also a parallel discrepancy between the Trade estimates of cotton and jute. The latter also have defects of their own, still the disparity is significant.

Divergence of Official Forecasts from Trade Estimates of Jute & Cotton

(000 bales of 400 lbs. each)

Year	Jute			Cotton (Indian)	
	Exports, Mill Consumption and other Consumption	Exports, Mill Purchases and Extra-factory Consumption	Official Forecast Estimate	Exports, Mill Consumption and Extra-factory Consumption	Official Forecast Estimate
(1)	(2)	(3)	(4)	(5)	(6)
1931-2	7,883	6,704	5,542	4,369	4,008
1932-3	8,381	8,878	7,072	5,670	4,618
1933-4	9,068	8,853	7,987	6,183	5,057
1934-5	9,466	9,966	8,500	6,166	4,797
1935-6	9,657	8,670	7,215	6,526	5,867
1936-7	11,443	10,932	9,611	7,340	6,234
1937-8	10,914	10,132	8,656	5,544	5,722
1938-9	10,609	9,920	6,819	6,875	5,051
1939-40	10,595	10,500	9,738	5,812	4,909
1940-1	7,867	9,696	18,172	n.a.	6,080†

† Revised

Note.—The figures are taken from the *Estimates* with the only change in Column 5 where consumption of Burma of the order of 9-11 000 bales was excluded. Before 1936-37

Crop-Cutting Experiments by Random Sampling

The only confirmation lay in a scientific system of crop-cutting experiments which could get rid of all subjective elements in crop estimation. The earliest crop-cutting experiments by random sampling were carried out by Hubback during 1923-5 in Bihar and Orissa. Deshmukh and Rau also made experiments in the Central Provinces in 1929 and 1930. But these early experiments failed to make any impression on the Government. The reason probably was the inevitable tendency to resent any innovation in the departmental routine, particularly if it involved heavy additional expenditure as well. While the Government were marking time, at the instance of the Indian Central Jute Committee the Indian Statistical Institute,‡ under the direction of Professor Mahalanobis, took up a five year scheme to estimate the area and outturn of jute crop in Bengal. While this was being carried out the Imperial Council of Agricultural Research§ proposed a scheme using the same *Patwari* agency and demonstrating the practicability of technique of a suitable random sampling method so that the Provinces could take it up as departmental routine on a permanent basis. The first series of experiments planned on these lines were carried out by the Indian Central Cotton Committee under the direction of Dr. V. G. Panse covering the cotton crop in the Akola district in the Central Provinces and Berar. It was extended to another district in 1943-4 and finally covered the whole cotton belt of the Central Provinces and Berar in 1944-5, and was being since repeated. The result for 1944-5 showed that the official estimate was lower than the survey estimate by about 10 per cent for the province as a whole, while the discrepancy was larger for individual districts.

War conditions generally and the Famine in Bengal immediately impressed upon the Government the necessity of obtaining accurate information on the outturn of food. There were three inquiries in connection with the area under rice in Bengal.* All the three showed underestimation which averaged about 10 per cent. Another inquiry for the two districts of Shahabad and Monghyr in Bihar was undertaken on behalf of the Government by

since when the Indian Central Cotton Committee has after a survey (pp. 226-7) revised extra-factory consumption of cotton at 450 instead of the conventional 750,000 bales, adjustments included a deduction of 800,000 bales. No other changes were made as the purpose of this table was only to indicate what the commercial estimate corresponding to the official estimate was and not to revise these estimates. Corrections would involve deduction, from trade estimates of jute consumption, of the quantities of jute imported from Nepal of the order of about 50,000 bales and changes in the stocks of cotton and jute, statistics for which were available for a few years only. After deducting the Burma consumption, exports to Burma should be added up to the Trade estimate. The adjustments are small in magnitude and the main conclusion is not affected.

‡ Hereafter referred to as ISS.

§ Hereafter referred to as ICAR.

* By the Famine Commission into Settlement Records, by ISS through random sample survey, and by the Government by plot-to-plot enumeration.

TABLE 5

Estimates of Yield per Acre obtained from Crop-Cutting Experiments by Random Sampling Method and Corresponding Official Estimates.

Province and Crop				Year	Crop-Cutting Expt. Yield per acre lbs.	Standard Error of Estimate Col. 8 per cent lb.	Official es- timate of current Yield per Acre lbs.	Col. 5 per cent of Col. 5.
(1)				(2)	(3)	(4)	(5)	(6)
Jute								
Bengal	..	..	..	1942*	1,522	1.51	..	..
				1943†	1,251	2.56	1,186	90.8
				1944	1,267	4.025	1,465	115.6
				1945	1,254	2.20	1,251	101.4
				1946	980	..	1,210	180.1
Wheat								
U. P.	..	..	..	1943-4	569		785	129.2
				1944-5	681		750	110.1
				1945-6	685		689	100.6
Punjab	..	..	..	1943-4	829		795	95.9
				1944-5	918		867	94.4
				1945-6	851		712	83.7
C. P. & Berar	..	..	..	1944-5	388		408	108.9
				1945-6	418		365	87.3
Sind	..	..	..	1944-5	538		572	106.3
				1945-6	662		572	86.4
N. W. F. P.	..	..	..	1945-6	619		547	88.4
				1946-7	521		526	100.95
Autumn Rice								
Bengal	..	..	..	1944-5	778	4.15	782	94.6
				1945-6	617		691	112.0
				1946-7	576		658	114.2
Orissa	..	..	..	1945-6	448		445	99.3
				1946-7	412		..	..
Bihar	..	..	..	1945-6	453		..	..
				1946-7	447		..	..
Winter Rice								
Bengal	..	..	..	1943-4	782	1.24	815	111.3
				1944-5	708	1.74	889	118.5
				1945-6	..		856	..
U. P.	..	..	..	1945-6	582		576	108.8
Orissa	..	..	..	1944-5	743		556	74.8
				1945-6	788		565	71.7
C. P. ..	..	..	..	1944-5†	718		650	91.2
				1945-6	676		603	89.2
				1946-7§	663		..	..
Bombay	..	..	..	1944-5¶	1,080		1,048	96.6
				1945-6	983		924	99.0
Madras	..	..	..	1944-5||	901		..	..
				1945-6††	927		918	99.0
Bihar	..	..	..	1945-6	663	..	..	..

Note :—The yield of jute is in terms of dry fibre and of rice in terms of cleaned rice.

* 9 districts only.

† 15 " "

‡ Raipur District only.

§ Preliminary estimate.

¶ Kolaba District only.

|| Tanjore " "

†† 7 districts only.

ISS. The yield per acre in the inquiry was lower than corresponding official estimate as harvesting had progressed to some extent before the inquiry started and hence the results could not be compared with official statistics.

The Government of India finally adopted the scheme prepared by ICAR and under the guidance of its author, Dr. P. V. Sukhatme, the first experiments were carried out in the Punjab and the United Provinces in 1943-4. The scheme was extended to the whole wheat belt comprising of the Central Provinces, the United Provinces, the Punjab and the North-West Frontier Province, and was repeated in 1944-5 when Bihar was also included. Experiments were carried out on rice in 1944-5 in the Central Provinces, Bombay, Madras and Orissa and in 1945-6 the scheme was extended to all rice growing districts of the United Provinces, the Central Provinces, Bombay, Madras, Bihar and Orissa. Experiments were also carried out on gram and *masur* (red lentils) on a full provincial scale but results of these were not available. Bengal continued being tackled by ISS.

The author was able to obtain a few results of crop-cutting experiments from ISS and ICAR. The standard error in ICAR estimates was not available but it varied from 1 (the United Provinces, Punjab) to 3 per cent (the North-West Frontier Province). The results do not show a unilateral bias all over the country. Whatever the *Patwaris'* mood the official statistics overestimate the outturn of crop in the United Provinces. The same appears to be true for the *Chowkidar* in Bengal. A greater fault, it appears, lay not with the *Patwaris* or *Chowkidars* but with the Directors who in their offices maintained out of date and unscientific schedules of 'normal' area and 'normal' yields. Bombay and Madras came very near to random sample estimates. The underestimating provinces are Punjab, and Orissa. Orissa was the worse, and while comparable results were not available Bihar was very much the same.* In case of the Central Provinces, there is generally an underestimation but in 1944-5 the wheat crop was overestimated. Sind also overestimated its wheat crop in 1944-5 and underestimated the 1945-6 crop. On the basis of these figures the total outturn of rice and wheat would be affected somewhat as shown in Table 6.

Thus it does appear that on balance rice and wheat involved an underestimation of 3.5 and 1.1 per cent. It certainly is not so large as one inferred from the indirect evidence available so far. But the results are not conclusive. The official statistics for the year 1945-6 were rather biased. In February 1946 the Food Depart-

8 Bihar seemed to be particularly an unfortunate province. "It was pointed out" at its first meeting by the Wheat Committee appointed by ICAR "that in the case of Bihar... the crop forecast figures were most unreliable. A 10 per cent check made there recently on the estimates for sugarcane disclosed a serious understatement which amounted to a 100 per cent disparity." *Report on the Marketing of Wheat*, pp. 9-10. Possibly an exaggeration.

TABLE 6

Outturn of Rice and Wheat corrected according to the Estimates of Yield by Random Sampling Method.

(000 Tons)

Province and Crop (1)	Official Estimate of Yield* (2)	Corrected Yield (3)	Rough basis of correction Col. 2 per cent of Col. 3 (4)
Rice			
Bengal	9,084	8,213	10% overestimation
U. P.	2,024	1,874	8% "
Orissa	1,575	2,100	25% underestimation
Bihar	3,144	4,192	"
C. P.	1,509	1,748	10% "
Bombay	887	896	1% "
Madras	4,850	4,899	"
	23,083	23,917	3.5% Underestimation
Wheat			
U. P.	2,780	2,460	13% overestimation
Punjab	3,724	4,092	9% underestimation
C. P.	673	708	5% "
Sind	368	368	"
N. W. F. P.	250	263	6% underestimation
	7,795	7,894	1.1% Underestimation

Total outturn : Br. India : Rice 23,863 Coverage 91 per cent.
Wheat 8,607 " 90 "

ment had come out with a statement on the threat of an impending famine involving possibly even a break-down of the rationing system. Thus every provincial unit was interested in stating as low an estimate of its outturn as possible. How far that affected the official statistics of yield for the year 1945-6 will perhaps never be known. But from the above figures a tendency to that effect is noticeable, specially in respect of wheat for which an acute shortage was feared. The United Provinces hastened to correct its usual overestimation and ran close with the ICAR estimate. Underestimation in the case of the Punjab (the only province with an exportable surplus) increased from about 5 per cent to 16 per cent of its outturn. Sind and Central Provinces which had overestimated their outturn the previous year by 6.3 and 3.9 per cent underestimated this time by 13.6 and 12.7 per cent respectively. The North-West Frontier Province alone was an exception, but its outturn was insignificant.

If, therefore, the results for 1945-6 are taken out observations are left for a very short period to justify any definite conclusion on the direction or the magnitude of bias involved in the official statis-

* Figures in Column 2 are from the *Estimates* for the crop year 1937-8.

tics prepared by the usual methods before the war.* And even in these instances the discrepancy was rather small. It was, therefore, not felt justifiable to tamper with the pre-war statistics of yield per acre. This was, of course, no approval of all the guesswork that was involved in the preparation of agricultural statistics so far. The fact that for such a large unit as the country as a whole these guesses were not so wrong as was feared did not make them any more scientific. For any particular province they might be and were very wrong.

Mixed Crops

The irregularities in connection with the ascertaining of the 'net' area under mixed crops were noted on page 10. An equally significant problem was that of estimating the yield per acre under mixed crops. The procedure was not described anywhere. The general practice was to multiply the total 'net' acreage under the crop by the standard yield for the district and then deflate it for the condition factor for the current year. This rested on an assumption that the output of a crop per unit of soil actually under the crop sown in a mixed condition, would be the same as from an equal area in a field "purely" devoted to its cultivation. Mahalanobis in his Bihar inquiry had observed that this was not the case as thinner compositions gave proportionately higher yields and that this was the probable reason for the popularity of mixed crops in Bihar. Thus the total yield of wheat was 4.32 maunds per acre with only 1-2 anna proportion under wheat while for a field devoted 15-16 anna to wheat gave a total of 7.4 maunds per acre. The difference in the total outturn of wheat in the two districts was considerable. Converting the net acreage in the sample into gross acreages for the districts and multiplying by rates of yield appropriate to different compositions the total outturn of wheat increased from 1,947 to 3,860,000 maunds for Shahabad and from 1,832 to 4,486,000 maunds for Monghyr districts, an increase of 123.7 and 108.6 per cent.†

This was a surprisingly high figure. Mahalanobis himself did not attach much importance to the results he obtained as they were based on insufficient data. While this isolated example would not be taken as conclusive it certainly pointed out the need for further studies on these lines. Work could be undertaken along with other crop-cutting work to determine (i) the actual area by studying the composition pattern of mixed crops and (ii) yield per unit of

* It also emerged from a personal discussion with Dr. Sukhatme that the comparison of ICAR estimates with official estimates was impaired by the fact that in many cases the former were available to the Provincial Government before the issue of the Final Forecast and thus the Forecasts were not entirely independent of the results of crop-cutting experiments. It was not possible to gauge the influence of this factor but it ruled out consideration of any mark up or down on the pre-war official estimates on the basis of the results of these experiments.

† *Sankhya* Volume 7, Part 1, pp. 67-8,

area for a crop under various different compositions. On the basis of such work alone, accurate forecasting of crops in 'mixed' sowings could be made.

Estimation of Net Outturn

The estimation of net outturn in the case of grains involved deductions on account of drriage, husk, etc. The husk content is quite significant in case of rice. It had been noticed that the yield of *paddy** was deflated to obtain rice out of husk by a conversion factor, which was lower than that adopted in common trade practice and confirmed from actual hulling and commercial milling trials by the Agricultural Marketing Adviser to the Government of India. According to his *Report* "the approximate discrepancy which exists between the published official estimates of production and the probable actual outturn...on the basis of data relating to eleven major provinces and states...works out at 2.16 million tons or an underestimation of 9.9 per cent."† But this did not seem to be the case or was offset by errors in the opposite direction in official statistics which were compared with the results of the crop-cutting experiments. The Marketing Report observations and experiments hardly possessed any sampling value, and there was no other evidence to adjust the official estimation of outturn on the basis of the new conversion factors suggested by the Marketing Adviser in respect of each province and some of the states. No evidence could be obtained either, that the official conversion factors had been changed since the defects were pointed out by the Marketing Adviser in 1941.

Notes on Major Adjustments

The threads in the discussion might be gathered in so far as these necessiated adjustments.

(a) *Non-Reporting Areas*. Adjustments for non-reporting units involved tackling all the general and specific sources for each unit and in respect of each crop. Apart from the general sources described above, publications on specific crops like the *Marketing Reports*, *Indian Tea Statistics*, *Indian Coffee Statistics*, *Annual Review of Sugar Industry in India*, etc., or on specific units like *Season and Crop Reports* for the major provinces or *Administration Reports* for Centrally Administered Provinces and for individual states like Hyderabad and Mysore were referred to. By adopting the most comprehensive estimates in respect of each unit and each crop the scope of the non-reporting areas was considerably narrowed down. The gaps still left were filled up primarily by

* The term is used throughout this study to indicate rice in husk, and the term 'rice' is confined only to rice out of husk.

† *Report on the Marketing of Rice* (1941), p. 15.

guesses, which were based mainly on the extent and significance of the crop concerned in surrounding regions for which statistics were available.

(b) *Years for which Reports were not available.* The official statistics related to the 'crop year' which ended on 30th June. In Assam, however, the crop year ended on 31st March and in the Central Provinces it ended on 31st May. The 'crop' year relevant to a given 'consumption' year depended on the harvest time of the produce and the time it took in subsequent processing and distribution. Crops which were harvested in autumn or in the early months of winter were assumed to be consumed in the same consumption year ending on 31st March. The crops so considered were rice, *jowar*, *bajra*, maize, *ragi*, pulses other than gram, small millets, unclassified foodgrains and pulses and miscellaneous foodcrops. The rest of the crops were assumed to be consumed in the following year, either because these were harvested late in the crop year (wheat, for instance, in May) or had to be processed before they were available for consumption (oilseeds, tobacco). Rice in Assam, Bengal, Bihar and Orissa was raised in three sowings, autumn, winter and, to a very small extent, in spring or summer. Small adjustments were therefore necessitated for spring and summer crops. Thus the estimation for the consumption year 1937-8 in the case of Bengal involved a total of 1936-7 summer crop and 1937-8 autumn and winter sowings. The relevant period of agricultural statistics for the study covered the eleven crop years 1930-1 to 1940-1. Of the above publications the *Estimates* covered the entire period. The *Ag. Stats.* covered the period only in respect of British India, and up to 1938-9 only in respect of the princely states. The *Food Statistics* covered only the years beginning with 1936-7 in respect of the additional information obtained by it. *Marketing Reports* dealt with the three to four years preceding publication and were spread over the entire period. Most of the gaps were filled up by 'grafting' of the various available estimates, and thus the discrepancy for years common to two or more publications was narrowed down. The discrepancy was then inter-or-extrapolated by linear regression if a good fit could be obtained, or by simple inspection where the quantities concerned were very small.

(c) *Area Underestimation in Permanently Settled Areas.* While there was a general evidence as to the underestimation of acreage in Bengal it was not easy to determine the magnitude in respect of each crop. In Bengal the two most important crops are rice and jute. With jute this study is not concerned. The area under rice was marked up by 10 per cent. A small mark up of 25,000 acres was made on the reported acreage under gram. In Bihar and Orissa underestimation was corrected for by the marking up by 10 per cent the reported acreage under rice, wheat, gram,

CROPS

TABLE 7
Adjustments of Area under Mixed Crop in the United Provinces.
(000 Acres)

	1930-1	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	Notes
<i>Deduct</i>											
Wheat	394	411	397	436	391	366	388	404	433	412	5% of reported total
Barley	437	418	398	441	422	392	420	388	402	386	10% " acreage "
Gram ..	1,040	1,150	1,092	1,070	1,112	1,150	1,304	1,164	1,118	1,090	20% " " "
Sm. mill	..	326	353	344	371	384	336	352	291	318	20% " " "
Pulse ..	3,000	1,860	1,860	1,860	1,860	1,860	1,920	1,920	1,865	1,983	40% " " "
Others	..	127	167	171	128	99	128	133	121	86	35% " " "
	4,871	4,292	4,267	4,322	4,284	4,251	4,496	4,361	4,230	4,225	Total
<i>Add—</i>											
Linseed	644	589	624	598	622	650	600	632	643	630	'Estimates'
Rape & Mustard	3,230	2,659	2,484	2,594	2,444	2,330	2,499	2,375	2,485	2,502	'Estimates'
Sesamum	847	882	839	902	805	921	774	955	979	979	'Estimates'
Castor	20	20	20	20	20	20	20	20	20	20	Guess
Others	130	142	300	213	393	330	603	379	103	94	Residual
	4,871	4,292	4,267	4,322	4,284	4,251	4,496	4,361	4,230	4,225	Total

and unclassified foodgrains and pulses. The mark ups are indeed arbitrary. No mark down was adopted in respect of barley crop in Bihar as was observed in Mahalanobis' survey for two districts as the *Marketing Report on Barley* observed that these districts were relatively unimportant in respect of barley cultivation in the Province, and hence the conditions there might not be representative of the Province.

(d) *Acreage Under Mixed Crops in the United Provinces.* It was noticed on page 10 that the area under oilseeds in mixed sowings in the United Provinces was included entirely under foodgrains, and thus the reported acreage in the *Ag. Stats.* exaggerated the net area under foodgrains and pulses and underestimated the acreage under oilseeds by about 4 million acres. Oilseeds are generally mixed with wheat, barley, gram, small millets and pulses in varying proportions. Since no one (not even the Director of Agriculture in the United Provinces knew the extent of mixed area under each crop arbitrary mark downs were resorted to. The reported acreage and outturn of wheat in the United Provinces were marked down by 5 per cent, barley by 10 per cent, gram and small millets by 20 per cent, other pulses by 40 per cent and unclassified foodgrains and pulses by 35 per cent. The acreage was allocated to linseed, rape and mustard, and sesamum as 'estimated' in the *Estimates*, 20,000 acres were uniformly allocated to castor, and the residual were allocated to 'Other Oilseeds'. The adjustments are given in the Table 7.

(e) *Yield Adjustments.* It was decided not to tamper with the estimates of yield per acre generally, and hence the only adjustments in the outturn as published were caused by corresponding area adjustments. The general principle was to assume the same per acre yield on adjusted figures as on the previous estimates. Where for a few years only acreage, and not the outturn, was available the yield was obtained by regression on area or on the total outturn or on the outturn of neighbouring regions. In units with smaller significance simple averages of per acre yield for at least more than five consecutive years were adopted.

Notes on Individual Crops

It would be impossible within the scope of this study to describe in detail the specific changes made in the various estimates. A few illustrative instances only are given to indicate the nature of revision and the adjustments made in the case of practically each of the commodities. Adjustments in case of Hyderabad were necessitated as outward exports from the State often continuously exceeded reported production. In the case of Mysore the acreage under gram was reported in the *Ag. Stats.* at about 8,00,000 acres and by the

Estimates, the *Food Statistics* and the *Marketing Report* at about 40,000 acres. It appeared that some variety of pulses was being mistakenly reported as gram in the *Ag. Stats.* The adjustments, therefore, were made as follows :

TABLE 8
Adjustments for Acreage under Gram and Pulses in Mysore.

(000 Acres)

Publication	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9
Gram <i>Ag. Stats.</i>	801	824	1,173	740	819	821	821	772
Other Pulses <i>Ag. Stats.</i>	821	838	515	804	791	760	702	813
	1,621	1,662	1,688	1,544	1,610	1,581	1,522	1,585
Gram <i>Marketing Report</i>	48	44	43	45	54	38	38	35
Pulses * <i>Food Statistics</i>	943	981	960	888	945	965	897	963
Others Residual	630	637	685	611	611	578	587	587
	1,621	1,662	1,688	1,544	1,610	1,581	1,522	1,585

In the case of cocoanuts the sudden variations in the reported area in the *Ag. Stats.* were indicative of errors in reporting. Owing to the long term nature of the crop acreage could not fluctuate widely from year to year. The *Marketing Report* was the only source for ascertaining the yield of nuts. The yield varied with the density of growth, the proportion of bearing trees and the average yield of nuts per tree. All these factors had been considered by the *Marketing Report* in terms of an average of a few years. A constant yield for the entire period except for 1932-3 and 1936-7 was adopted. For 1932-3 there was evidence of a low yield, and hence the yield was marked down by 10 per cent. Similarly the yield was marked up by 10 per cent for 1936-7, which was a bumper year.

In the case of sugarcane the DGCIS published as supplement to the *Indian Trade Journal, Review of the Sugar Industry in India* for the sugar years ending on October 31st. Production estimates were issued by the Directors of Agriculture and were available in the *Forecasts* and the *Estimates* not in terms of sugarcane, but in terms of one of its products, viz. *gur*.† This was due to the fact that prior to the phenomenal growth of the sugar industry during the thirties practically the whole crop was devoted to the production of *gur*. While *gur* still is the most important single product of sugarcane, about 40 per cent of the cane supply is devoted to direct consumption and manufacture of crystalline sugar. Production statistics of *gur* should have referred only to the quantity of *gur* produced

* Excluding gram, avarer, and cow peas.

† Unrefined sugar.

and not to the gur equivalent of the total crop of sugarcane. Adjusted gur outturns were, therefore, converted into corresponding sugarcane figures on the basis of conversion ratios given in the *Marketing Report*.^{*} The reported acreage in the *Ag. Stats.* under 'Sugar yielding crops other than sugarcane' referred to palm trees. The position with respect to the area under these trees was uncertain. Thus Bihar and Orissa did not report any acreage the reason being that palm juice was not utilised to any appreciable extent for producing gur. On the other hand Travancore, an important gur producing state, did not report any area either. There was another complication. Some provinces reported acreage, irrespective of whether the whole area was tapped or not. In other cases only trees that were tapped were reported. The trees were tapped for two products—fermented juice, such as toddy, etc., and unfermented juice which was consumed by itself or was used for producing gur or sugar. The number of trees tapped for sweet juice, and the product obtained in terms of gur were taken from the *Marketing Report*. Toddy is considered in a later section along with other alcoholic drinks.

In the case of tea and coffee estimates of acreage and production were directly obtained from planters and published in the *Indian Tea Statistics* and the *Indian Coffee Statistics*, and subsequently in the *Estimates*. In many cases especially in South India the returns were incomplete and inaccurate. In the case of coffee, plantations of less than 10 acres were omitted prior to 1931-2 and less than 5 acres since. The acreage estimates, therefore, were revised with reference to returns filled in by village *patwaris* in the *Ag. Stats.* A significant revision of yields was also necessitated for coffee in light of the revisions suggested by the *Marketing Report* for holdings of 10 acres and above.

And such was the procedure practically for every crop.

Adjusted Estimates

In Tables 9 and 10 adjusted area and outturn estimates in respect of each crop for the crop year 1937-8 are set off against corresponding estimates in major official publications to indicate the magnitude of adjustments. The mark ups in respect of non-reporting areas and Permanently Settled areas in so far as they involved guesswork are separately stated. The adjusted overall estimates over the entire period are given in Tables 11 and 12.

^{*} The *Review of Sugar Industry* also gave cane equivalent by reconverting gur estimates in the Forecasts, but these were based on antiquated ratios, and were misleading.

TABLE 9

Area under Crops, Crop Year 1937-8

(000 Acres)

Crop	<i>Ag. Stats.</i>	<i>Estimates</i>	<i>Food Statistics</i>	Adjusted Acreage Total	Markups	
					Non-reporting Areas	Permanent Settlement Areas
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rice	77,148	72,568	77,585	84,485	1,000	3,686
Wheat	84,144	85,640	86,610	86,847	250	110
Jowar	34,634	33,489	36,634	37,697	500	..
Bajra	18,735	17,242	19,811	20,446	250	..
Barley	7,184	6,245	7,155	6,902	..	..
Maize	7,920	6,276	8,052	8,655	500	..
Ragi	5,792	..	5,690	6,442	500	..
Gram	19,058	15,742	14,995	18,176	..	163
Small Millets	34,814	..	8,352	7,292	..	..
Pulses (ex. Gram)			20,050	22,218	..	..
Foodgrains and Pulses-Unclassified	..	..	..	9,899	1,500	446
Linseed	3,431	3,890	..	4,410	..	..
Rape & Mustard	3,449	5,461	..	6,033	200	..
Sesamum	4,296	4,450	..	5,782	300	..
Groundnuts	8,360	8,898	..	9,375	..	..
Coconuts	1,482	..	..	1,508	..	..
Castor	1,335	1,148	..	1,551	150	..
Other Oilseeds	2,855	..	..	3,431	100	..
Sugarcane	4,021	3,866	..	4,191	..	70
Other Sugar	178	..	..	178*	..	..
Condiments & Spices	2,354	..	..	2,413	50	..
Potatoes	4,597	..	..	446	..	..
Bananas				399	..	..
Grapes				4	..	..
Cashewnuts				n. a	..	..
Citrus Fruits				108	..	..
Other Fruits & Vegetables				4,587	..	..
Miscellaneous Foodcrops	2,515	..	..	2,638	100	..
Tea†	824	884	..	834	..	..
Coffee	209	182	..	209	..	..
Tobacco	1,083	1,288	..	1,460	25	..

Note :—Column 5 includes figures given in Columns 6 and 7.

* Unadjusted acreage as in the *Ag. Stats.*

† Calendar Year 1937.

TABLE 10.

Outturn of Crops, Crop Year 1937-8

(000 Tons except coconuts 000,000 and Tea and Coffee 000,000 lbs.)

Crop	<i>Estimates</i>	<i>Food Statistics</i>	Adjusted Total Outturn	Mark Ups	
				Non-Reporting Units	Units under Permanent Settlement
(1)	(2)	(3)	(4)	(5)	(6)
Rice	26,699	28,834	31,525	500	1,375
Wheat	10,764	11,072	11,274	200	43
Jowar	6,506	7,249	7,450	100	..
Bajra	2,625	3,143	3,223	50	..
Barley	2,088	2,408	2,459	..	..
Maize	2,117	2,717	2,961	200	..
Ragi	..	1,801	2,071	200	..
Gram	3,525	3,449	4,100	..	57
Small Millets	..	1,515	1,355	..	..
Pulses (ex. Gram)	..	4,116	3,516	..	..
Linseed	461	..	526	..	..
Rape and Mustard	1,021	..	1,068	20	..
Sesamum	465	..	574	30	..
Groundnuts	3,501	..	3,681	..	..
Coconuts	..	..	2,996	..	..
Castor	104	..	138	10	..
Sugarcane	..	..	57,435	..	850
„ (Gur equivalent)	5,403	..	5,774	..	85
Other sugar („ „)	..	..	167	..	..
Potatoes	..	..	1,792	..	..
Bananas	..	..	3,997	..	..
Grapes	..	..	14	..	..
Cashewnuts	..	..	40	..	..
Citrus Fruits	..	..	401	..	..
Tea*	430	..	430	..	..
Coffee	34	..	60	..	..
Tobacco	505	..	633	10	..

Note :—Column 4 includes figures in Columns 5 and 6.

The outturn of the rest of the crops could not be determined and valuation of these is made on acreage basis.

* Calendar Year 1937.

TABLE 11.
Adjusted Area under crops, Crop years 1930-1- to 1940-1.
(000 Acres)

Crops	1930-1	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Rice ..	..	82,780	81,062	81,284	80,303	81,499	83,780	84,485	84,967	84,912	82,986
Wheat ..	..	34,750	33,862	36,921	35,824	34,629	34,279	36,847	36,400	34,963	..
Jowar ..	..	36,398	37,827	37,529	37,665	36,998	41,644	37,797	38,913	38,690	38,707
Bajra ..	..	22,009	22,282	21,069	20,283	20,300	19,323	20,446	20,743	20,977	22,136
Barley ..	..	7,129	7,068	7,367	7,102	6,807	7,127	6,902	6,707	6,641	..
Maize ..	..	8,890	8,905	8,782	8,833	8,841	8,782	8,655	8,800	8,914	8,814
Ragi ..	..	7,365	7,258	7,059	6,971	6,824	6,645	6,642	6,443	6,392	6,502
Gram ..	..	20,719	17,960	21,861	17,901	20,083	20,221	18,176	15,131	15,117	..
Small Millets ..	..	7,418	7,745	7,630	7,308	7,288	7,852	7,292	7,779	7,515	7,395
Pulses (ex. Gram)	..	24,011	23,632	23,695	23,481	23,313	22,427	22,218	22,995	23,363	22,757
Foodgrains & Pulses—Others	..	10,877	11,588	11,664	11,165	10,905	10,595	9,899	9,999	10,221	10,297
Linseed ..	..	3,816	3,711	3,657	3,850	3,902	4,169	4,410	4,352	4,247	..
Rape and Mustard	..	7,221	6,843	6,587	5,799	5,907	6,519	6,033	6,034	6,693	..
Sesamum ..	..	5,941	5,533	5,607	4,861	5,250	5,397	5,782	5,646	5,866	..
Groundnuts ..	..	6,489	6,024	7,768	5,836	5,459	7,115	9,375	9,066	8,996	..
Coconuts ..	..	1,418	1,446	1,454	1,480	1,485	1,490	1,503	1,503	1,519	..
Castor ..	..	1,687	1,804	1,768	1,687	1,551	1,667	1,531	1,649	1,460	..
Other Oilseeds	..	2,656	3,163	2,923	2,915	2,995	3,587	3,431	2,884	2,834	..
Sugarcane ..	..	3,043	3,235	3,571	3,754	4,324	4,777	4,191	3,415	3,938	..
Other Sugar*	..	154	152	153	149	141	160	178	167	165	..
Condi. & Spices	..	2,328	2,551	2,406	2,933	2,531	2,531	2,413	2,607	2,726	..
Potatoes ..	..	419	421	432	443	440	441	446	469	470	..
Bananas ..	..	..	393	427	429	405	391	399	407	404	403
Grapes ..	..	..	..	..	..	..	..	..	..	..	..
Citrus Fruits ..	..	..	..	..	..	..	..	..	..	..	..
Other Fruits, Veg.	..	..	..	..	..	..	..	..	..	..	..
Misc. Foodcrops	..	..	..	..	..	..	..	..	..	..	..
Tea†	..	..	..	..	..	..	..	..	..	..	..
Coffee ..	..	..	..	..	..	..	..	..	..	..	..
Tobacco ..	..	..	..	..	..	..	..	..	..	..	..

* Unadjusted acreage as given in the Ag. States.

† Calendar Years 1931 to 1940.

TABLE 12.
Adjusted Outturn of Crops, Crop years 1930-1 to 1940-1.
(000 Tons except coconuts 000,000 and tea and coffee 000,000 lbs.)

Crop	1930-1	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Rice	..	33,419	30,711	30,288	30,015	26,962	32,665	31,525	28,543	30,128	25,070
Wheat	..	9,471	9,831	9,800	10,150	9,897	10,228	11,274	10,392	11,167	..
Jowar	..	7,144	7,390	7,361	7,195	7,093	8,058	7,450	7,545	7,602	8,200
Bajra	..	3,555	3,484	3,300	3,186	3,339	2,981	3,223	3,140	2,977	3,795
Barley	..	2,804	2,748	2,813	2,899	2,723	2,700	2,459	2,198	2,347	..
Maize	..	3,135	2,992	2,773	3,027	3,019	2,801	2,961	2,757	3,120	3,119
Ragi	..	2,484	2,541	2,448	2,094	2,164	2,242	2,074	1,892	2,059	2,180
Gram	..	4,763	4,206	4,900	4,250	4,643	4,766	4,100	3,832	3,815	..
Small Millets	..	1,591	1,706	1,560	1,388	1,509	1,425	1,355	1,475	1,434	1,590
Pulses (ex. Gram)	..	3,843	3,647	3,767	3,695	3,726	3,569	3,516	3,673	3,687	3,454
Linseed	..	446	503	450	487	477	481	526	502	530	..
Rape and Mustard	..	1,059	1,095	995	942	1,001	1,013	1,068	966	1,163	..
Sesamum	..	567	544	592	424	504	547	574	501	520	..
Groundnuts	..	2,789	3,071	3,379	1,990	2,319	2,855	3,681	3,417	3,485	..
Coconuts	..	2,818	2,785	2,890	2,945	2,966	3,265	2,996	3,002	3,015	..
Castor	..	140	166	174	123	138	149	138	151	134	..
Sugarcane	..	34,417	42,181	51,894	54,770	62,570	68,234	57,435	36,404	49,227	..
Other sugar (Gur eqt.)	..	3,503	4,267	5,003	5,242	6,303	6,862	5,774	3,707	4,997	..
Potatoes	..	1,716	1,728	1,754	1,885	1,784	1,779	1,792	1,894	(2,000)	..
Bananas	..	..	3,980	4,315	4,328	4,051	3,908	3,997	4,061	4,231	4,035
Grapes	..	..	14	14	14	14	14	14	15	14	14
Cashewnuts	..	21	23	29	32	34	37	40	43	45	..
Citrus Fruits	..	..	174	217	256	294	351	401	465	512	574
Tea*	..	..	393	383	399	394	395	430	452	452	465
Coffee	..	..	54	58	70	79	65	60	69	69	..
Tobacco	..	552	582	522	653	600	559	633	619	613	..

* Calendar Years 1931 to 1940.

CHAPTER 2

CROP PRODUCTS

The whole or a proportion of the crops described in Chapter 1 undergo some processing or the other before being available for direct consumption. To that extent the crops are 'unfinished' commodities and this chapter describes the methods of estimating the quantities of 'finished' products available from these. The main source of information has been the various *Marketing Reports*. The chief defect of the data presented in the *Marketing Reports* was a lack of complete year to year information on the products, and guesses—scientific or otherwise—had to be resorted to in order to fill up the gaps. In many cases the information was available on a percentage basis, and adoption of these percentages as constant over the period involved an unwarranted assumption of unit elasticity, generally with respect to available supplies of 'unfinished' materials. The defect could only be remedied by comprehensive rural survey which should form the real basis of a study of the utilisation of crops.

The estimation of the 'net' available quantities for conversion into products in any region involved a consideration of five factors : seed requirements, stockfeed usage, trade balance internal as well as external, deduction for losses in storage and transit and, finally, the allocation of the residual between direct consumer purchase and manufacture of products. This chapter considers only the last. Allowances for the rest have the same nature as crops directly consumed as 'finished' products and are considered in a later section on consumer purchase in Part Two.

Products of Cereals and Pulses

In the case of cereals and pulses the consumer generally buys the unprocessed product and then arranges for its processing. Price data in such cases relate to unprocessed products and it was found convenient to ascertain only the quantities so purchased and no attempt was made to ascertain the quantities of products obtained. Value mark ups instead were used to obtain the total cost to the consumers. In a few cases the proportion so purchased is negligible and processing is done on a commercial scale before the consumer buys the final product. The dichotomy is not always definite and in many cases, wheat for instance, processing is done partly by flour

mills and partly by the consumers. Brief notes on individual crops are given below.

Rice. Paddy is dehusked on a commercial scale by rice mills and by ordinary hulling by the producers themselves. The outturn estimates in Table 12 refer to dehusked rice and hence no mark down was necessary to account for the loss of weight involved in dehushing.

About 50,000 tons of rice are annually converted into flour on a commercial scale.* Of this approximately 3 to 4 000 tons are used for laundry purposes.† About 1.5 million tons of paddy and 350,000 tons of parboiled rice were estimated to be consumed for making *murmura* (parched rice), *chura* (beaten rice) and *khcel* (parched paddy). The yield of *murmura* is about 90 per cent of rice, and *chura* 64.5 per cent. The yield of *khcel* on an average is 61 per cent of paddy. In all about 1,255,000 tons of products were estimated to be obtained from an equivalent of 1,350,000 tons of rice used.‡ The estimates of quantities of products were not computed. Value mark ups over the cost of rice were used instead.

Wheat. On a guess only about 1 per cent of the outturn was taken to be consumed in the form of whole wheat. The rest is consumed in the form of flour of different types and the various preparations of flour. There are 80 large roller mills which consume approximately 1 million tons of wheat annually and turn out product like flour, *ata* (flour with bran unremoved), and to a smaller extent semolina. The official statistics of production in about 25 only of these larger mills (having an employment of approximately 60 per cent of total in all firms employing not less than 20 persons each) were available. The production of the rest was not known. About 7 to 8 000 tons of mill-produced flour are consumed by textile mills in sizing.§ The rest of the supplies of wheat available for human consumption are processed after the consumer collects whole wheat on the farm or buys on the market. The bulk of *ata* consumed in India and Pakistan is produced by housewives in the hand driven stone mills particularly in the rural areas. In the urban areas mechanically operated stone mills are driven by electricity or by oil engines. The consumer buys his wheat (the usual unit is 10 to 15 seers) and then "wraps up his purchase in a piece of cloth (or at the end of his *dhoti*) or places it in an old kerosene tin and carries it himself to the nearest *chakki* (rotary mill)", and pays a charge per maund of wheat turned into *ata*. Since the statistics of production on a commercial scale were incomplete, and in case

* *Report on the Marketing of Rice in India and Burma* (1941), p. 109.

† *Ibid.*, p. 108.

‡ *Ibid.*, pp. 415-9, Appendix XXXV, p. 532.

§ *Report on the Marketing of Wheat in India* (1937), p. 61.

of the bulk of the rest the payment was made per unit of the weight of wheat, valuation was based as a mark up, and no attempt was made to ascertain the quantities of products obtained.

Jowar, Bajra, Maize, Ragi. Practically the whole of these grains is processed after consumer purchase, and hence estimates of quantities of products were not attempted. Deduction, however, was made for 15,000 tons of maize (a guess) used as starch in sizing of cloth in textile mills.

Barley. About 1,700 tons of barley is used for the manufacture of pearl barley and barley powder.* The quantity of pearl barley obtained comes to 850 tons. Barley Powder was valued at a mark up over the value of pearl barley. Estimates of barley consumed for beer were available in the *Marketing Report* for the years 1935-6 to 1940-1.† Estimates for the remaining years were obtained by regression on the estimated consumption of beer in British India, which could be correctly estimated for the entire period. Production of beer is discussed along with other alcoholic drinks in Chapter 9. About 80,000 tons of barley is used for *sattu* making.‡ The product is consumed in the form of a drink sweetened with sugar. The yield of *sattu* is 75 per cent of the quantity of barley used, i.e., 60,000.

The rest of the available net supplies of barley are consumed as flour. A proportion of flour is prepared on a commercial scale by roller mills and *ata* dealers for adulteration with wheat flour. Being too coarse it is hardly sold as such for direct consumption. The quantity used for adulteration is not unsurprisingly large. "The evidence collected during this survey shows that at least 90,000 tons of barley are used annually for mixing with wheat by large roller mills."§ To this has to be added the quantities mixed by shopkeepers. The barley flour thus sold may involve a very high mark up from the point of view of money spent by consumers, but this involves fraud and the resultant excess of exchange value paid by the consumer may be taken as a transfer, and hence was not included in the total value of consumer purchase.¶ A mark up on the same lines as wheat to cover the services of cleaning and processing was, however, included.

* *Report on the Marketing of Barley in India* (1945), pp. 18-4.

† *Ibid.*, pp. 12-4. Appendix XII, p. 58.

‡ *Ibid.*, pp. 18-5.

§ *Ibid.*, p. 15.

¶ A comment of Mr. C. F. Carter on this might be quoted : "I note that frauds are treated as transfers. It is very difficult to draw the line. It is universally understood in France that if you haven't a bread coupon you must pay a higher price for your bread. Is this a fraud or a social custom? To adulterate wheat may be illegal; but if the consumer knows well that it happens and that he is powerless to prevent it, is not the price he pays properly a part of the value? To argue otherwise suggests that there is some standard of absolute value apart from the custom of the market."

Gram. Only a small proportion (5 per cent) of the market supplies of whole gram available for human consumption (net after deduction for seed and stockfeeding) is consumed after boiling it. The proportions converted to products are as follows :*

	Per cent
Ata	15
Dal	41
Baisin	22
Parched gram and products	17

Ata is mainly made by housewives and the value of gram was marked up. The outturn of *dal* from a given quantity of gram is 70 per cent, the rest being *chooni* and husk which "are always fed to animal."† The outturn of *baisin* is the same as that of *dal*, and is obtained by crushing dal in a mill. Parched gram and its products were valued at a mark up above the corresponding value of gram.

The reported outturn of 'Other Pulses' was in terms of final products, and no other estimates were required.

Products of Oilseeds

Consumer Purchase of seed. (For direct consumption as seed). Direct consumption of linseed was taken uniformly at 21,000 tons in villages and 6,000 tons in towns. Of the latter 500 tons were taken as the quantity fed to cattle specially in the Punjab and Eastern part of the United Provinces.‡ The production of coconuts consumed when tender was taken at §

	per mille of production
Bengal	100
Orissa	200
Bombay	50
Madras	20
Travancore	1
Cochin	2
Others	200

The rest are mature nuts. Of these the proportion used for copra making was taken at¶

	per cent of mature nuts
Madras	48
Travancore	57
Cochin	75
Mysore	48
Bombay	10

* *Report on the Marketing of Gram in India* (1945), pp. 15-6, Appendix XIV, p. 72.

† *Ibid.*, p. 15.

‡ *Report on the Marketing of Linseed in India* (1938), pp. 44-5.

§ *Report on the Marketing of Coconuts in India* (1944), p. 29.

¶ *Ibid.*, p. 39.

and for other areas 5 million nuts, for all the years except the crop years 1932-3 (4 millions) and 1936-7 (6 millions). Taking into account the balance of trade the rest were assumed to be directly consumed. This included about 1 million nuts offered to the rivers. A proportion of the supplies of nuts is used as religious offerings in the temples but ultimately this finds its way to human consumption, and except for the nuts offered to the rivers the whole balance was taken as part of food consumption. In the case of groundnuts in shell direct consumption was taken at 2 per cent of the production on the farm, and at 5 per cent through the market.* The rest of the supply is available for decorticating into kernels. Castor is not directly consumed. No information was available on the direct consumption of sesamum and rape and mustard. It was guessed at 5 and 10 per cent respectively of the net supplies, the rest being available for oil extraction. 'Other Oilseeds' were valued on the basis of the acreage under crop.

Outturn of Oil. The oil outturn from a given weight of seed varies from place to place according to the quality of, and the methods by, which seeds are pressed. The usual means of oil extraction are village *ghanis* and only to a smaller extent mechanically operated hydraulic presses, expellers and rotary *ghanis*. In arriving at estimates of oil recovery proportions handled by these were taken into consideration. The yield of oil from linseed as received by the mills, i.e., including its impurity content, is about 33 per cent from small seed and 34 to 36 per cent from bold seed crushed in mechanical expellers.† In the case of village *ghanis* the yield varies from 25 to 30 per cent only. The over-all yield was taken at 1/3 of seed by weight. Of the nuts available for copra making the yield of copra was calculated as follows:‡

	Nuts required to make 1 ton of copra
Travancore and Cochin	6850
Madras	6316
Mysore	8000
Bombay	6200
Others	8000

The copra manufactured in India is of two qualities, edible and milling. Of the local production 19.7 per cent is directly consumed in Madras, 10.0 per cent in Travancore and 100.0 per cent in Mysore. The rest including all imported copra is available for milling. The overall yield from mechanical expellers and village *chekkus* was taken as follows:§

* Report on the Marketing of Groundnuts in India and Burma (1941), p. 58.

† Report on the Marketing of Linseed, p. 212.

‡ Report on the Marketing of Coconuts, p. 46.

§ Ibid., Appendix XXI, p. 198.

	Yield of Oil per cent of weight of copra crushed
Madras	60.6
Bombay	62.7
Sind	63.0
Travancore	61.9
Cochin	62.9
Others	61.7

For groundnuts the recovery of kernels was taken at 69.3 per cent or nuts in shell. The recovery of oil in expellers generally yields 40 to 44 per cent of the weight of kernels, in rotary mills it varies between 36 to 42 per cent while in case of *chekkus* and hand presses it varies from 35 to 39 per cent.* The yield of oil, therefore, was taken at 35 per cent in respect of farm presses and at 40 per cent for marketed quantities. In the case of sesamum, Madras experiments mentioned by Sir George Watt yielded 31.25 per cent from 1st quality black seed, 24.375 per cent from 2nd quality, 27.75 per cent from white seed and 28.125 from red seed.† In the United Provinces the recovery was 33 per cent. In the Punjab 15 seers were reported to give 6 seers of oil, which works out at 40 per cent. In the Central Provinces it was 33 per cent. An overall recovery of 33 per cent was adopted. In the case of rape and mustard a good deal of confusion appeared in trade information on the varieties of rape and mustard seeds. Rape seeds ordinarily yield about 33 per cent of oil, while mustard yields about 20 to 25 per cent of oil. Since separate production of each was not available, an overall recovery on balance was taken at 30 per cent. In the case of castor the evidence in Watt's *Dictionary* indicated variation from place to place. The general estimate for Madras was 25 per cent. In Patna District in Bihar the yield was only 18 per cent, while in Shahabad District in the same province it varied from 25 to 30 per cent. In Bengal in Dacca Division it was 25 per cent, in Bhagalpore it varied from 31 to 37.5 per cent, and in the Presidency Division it was as much as 50 per cent. A Calcutta firm reported a yield of oil between 37 and 40 per cent. Another Calcutta note recorded it at 33 per cent. The recovery in Bengal jais was 34 to 37 per cent. In Orissa the recovery was 30 per cent, and in the Santhal Paraganas it was 33 per cent. From this welter of estimates an over-all yield of 30 per cent was adopted.

The production of oils was discussed in terms of weight, but Trade Statistics for these are available in terms of volume, and conversion factors are, therefore, required. These were obtained from the various *Marketing Reports* and from the Imperial Institute as below :

* *Report on the Marketing of Groundnuts*, pp. 260-1.

† *Dictionary of Economic Products of India* (1893), Vol. VI, Part II, p. 535.

	1 lb. per gallon	Gallons per ton
Linseed Oil	9.25	242.16
Coconut Oil	9.25	242.16
Mustard Oil	9.15	244.81
Groundnut Oil	9.2	243.48
Sesamum Oil	9.2	243.48
Castor Oil	9.6	233.33

Production of oil was obtained in terms of gallons on the basis of the above ratios.

By-products of Coconuts.

1. *Shells.* Shells are usually collected when coconuts are broken in large numbers. Shells from nuts broken by consumers for domestic consumption are generally thrown away. A small proportion, however, may be used as fuel and was taken into account. Of the shells about 10 million are used for *hookah* making. The rest are used as fuel.

2. *Coir and Coir Products.* Of the supplies of mature nuts husks are taken in the following proportions:

	Per cent of mature nuts
Travancore and Cochin	80
Madras	21
Bombay	20

and from 5 million nuts elsewhere. The yield of fibre is 180 lbs. on an average from 1000 nuts. Approximately 10 per cent of fibre is used in furnishing industries for stuffing, and allowing 5 per cent wastage the approximate quantities of yarn can be calculated. Coir yarn is a multi-purpose raw material and consumer allocation was rather arbitrary. The whole group of products was divided into two main uses: household furnishings such as mats, rugs and carpets, and industrial uses such as ropes, beltings, bags, nets etc. The ratio of production of ropes and mats and matting to the total was taken from corresponding quantities in the Coasting Trade. So far as ropes are purchased as household equipment to draw water from wells it would represent a consumer purchase. After taking into account quantities in foreign trade 20 per cent of the net available supplies of ropes by weight (and value) was adopted as involving consumer purchase. All the net supplies of mats and matting were allocated to consumers.

Products of Sugarcane and Palms, Dates, etc.

The estimates of the utilisation of the sugarcane crop were based on the information obtained by the *Marketing Report* as a result of "enquiries covering in all about 5,000 villages and more than 500 (town) markets."* The global estimates of utilisation were prepared on the basis of the data available for each unit for the years 1935-6 to 1938-9 in the *Report*.

Relatively small proportions of the supplies of sugarcane (net after deducting seed and stockfeed requirements) are consumed as chewing cane and as juice on farms and in towns. The recovery of juice from cane "may vary from 45 to 70 per cent of the weight of cane crushed".† As most crushing on the farms is done by extremely primitive means the recovery was taken at 50 per cent. Market consumption of juice was valued at a mark up above the value of cane and quantity estimates were not prepared.

The balance is available for conversion into products. These are (a) white crystal sugar produced in vacuum pan factories, direct from cane or from *gur*, (b) *khand*‡ produced by *khandsari* concerns which purchase either cane or *rab* from the producers, (c) *gur* or *jaggery*§ produced either by canegrowers or professional classes and (d) miscellaneous products, such as a *minja dana*,¶ *batasha*,|| syrup, vinegar, etc.

Of the available supplies the demand of the factories has the highest priority. The quantities of sugar manufactured and of cane used in the process were available in the Market Report.** The estimates of the outturn of *khand* were also taken from the *Marketing Report*.†† *Khand* is localised both in its production and demand. The estimates in the *Marketing Report* were based on the statistics of arrivals by rail and roads at the various markets where *khand* is assembled in appreciable quantities. The production of *minja dana*, *batashas*, etc., is small and has only a local significance. Production of these was obtained by regression on total consumption of sugar and *khand* for the four years in the *Marketing Report*. The quantity of cane used to make syrup and vinegar is negligible and was reported to be about 8000 tons. The residual was taken as the

* *Report on the Marketing of Sugar* (including the various kinds of Gur and White Sugar) in India and Burma (1948), p. 27.

† *Ibid.*, 49.

‡ White sugar is obtained by first preparing *rab* by concentrating cane (or palm) juice on open pan furnaces and then treating it according to the indigenous process known as the *khanchi* process or by centrifuging.

§ Cane juice boiled to semi-liquid or solid consistency, and may be roughly described as unrefined brown sugar.

¶ Muscavado sugar.

|| A light spongy sugar product.

** Appendix XXI, P. 300.

†† Appendix XXV, p. 308.

quantity available for the production of *gur* which is the most significant product of sugarcane, taking about 60 per cent of the total crop.

Gur is produced from three sources—cane, palm and molasses. No wastage of cane was allowed for processing of *khand*. But cane juice is very perishable and considerable quantities are lost before marketing it or converting it into *gur* or *khand*. The usual recovery of *gur* works out at 10.1 per cent of the weight of cane consumed. Quantities of *gur* calculated at this rate were deflated by 5 per cent to allow for the wastages of juice in the production of *gur* and in marketing for the production of *gur* and *khand*. *Gur* obtained from the various palm trees was directly estimated on the basis described on page 23. The value of sweet juice directly consumed is small and was neglected. Production of molassein *gur* was available in the *Marketing Report* for the four years. Estimates for the rest were obtained by regression on the net consumption of *gur*. Of the *gur* produced from cane and palm juice some quantities are used for producing refined sugar in vacuum pan factories. *Gur* used in the manufacture of *khand* was included in the allowances of cane for the purpose, and did not need a separate deduction.

For the purposes of valuation cane and palm *gur* were further classified into (i) lumps, (ii) powder and (iii) semi-liquid *gurs*. Molassein *gur* is all in lumps. Accounts for crystal sugar, refined, sugar, imported sugar, *khand* and *minja dana* were kept separate for individual valuation.

Products of Tobacco

After allowing for wastage and driage the products to be considered were cigarettes, cigars and *cheroots*, *Bidis*, and other sorts such as *hookah* tobacco, chewing tobacco and snuffs.

Year to year statistics on the production of cigarettes were not available. Before the First World War the consumption of cigarettes was estimated at 1060 millions. The *Marketing Report* estimated a consumption of 6500 millions in 1929. There was scientific basis, however, for these estimates. The *Marketing Report* carried out a detailed 'survey' of the production and consumption of tobacco products in each province for the year 1934-5.* The production of cigarettes came to 7500 millions. Of this quantity roughly 75 per cent was the cheaper quality, 20 per cent was medium quality and only 5 per cent belonged to Virginia type superior qualities. Production for the different years was obtained by assum-

* *Report on the Marketing of Tobacco in India and Burma* (1939), Appendix XXVIII, p. 448.

ing arbitrary figures of consumption and deducting imports from these.

About 30 million cigars were estimated to have been produced in 1934-5. *Cheroots* are cigars which are thinner at both ends and are cheaper in quality. The production of *cheroots* is estimated at 18,500 millions. The *Marketing Report* noted a very pronounced tendency towards decline in cigar consumption, and while the consumption of *cheroots* also showed a decline it did not show a great fall. The position in the 'thirties appeared to have been fairly steady, a declining trend in cigar and *cheroot* consumption being offset by a general increase in the smoking habit. An index for cigar production was obtained by a little tinkering with the import and export statistics; the index of the production of *cheroots* is entirely arbitrary.

"The making of *bidi* (the indigenous cigarette) is an industry widely spread over the country."* "There is practically no area in India where *bidis* are not manufactured to a smaller or greater extent."† And still next to nothing is known about this industry. The consumption might have risen with increasing industrialisation and the general increase in the smoking habit. On the other hand, the increasing popularity of cigarettes might have offset the increase in the consumption of *bidis*. Rising incomes might have also led to a substitution of cigarettes for *bidis*. Thus there were no grounds to depart in either direction from the estimated production of about 75,000 million *bidis* reported by the *Marketing Report* for 1934-5.

Hookah tobacco is almost entirely confined to Pakistan and Northern India. The annual production was estimated to be 1300 million pounds by the *Marketing Report*. Chewing tobacco was estimated at about 156 million pounds of dry leaf tobacco and about 25 million pounds of manufactured chewing tobacco. Production of snuffs was estimated at about 21.7 million pounds.

Tobacco consumption in the manufacture of these products was estimated at 400 cigarettes, 60 cigars, 200 *cheroots*, and 1,070 *bidis* per pound of farm cured dryleaf tobacco. The balance was expected to give the quantities available for conversion into other products or for direct chewing.

In view of the many arbitrary assumptions estimates of production of the various types of tobacco products are individually inaccurate. The gross total, however, is less inaccurate.

* *Report of the Royal Commission on Labour in India* (1931), p. 96.

† *Report on the Marketing of Tobacco*, p. 326.

Utilisation of Barley, Groundnut, Coconut, Sugarcane and Tobacco Crops

The following tables on the utilisation of crops are given as illustrations, with reference to the consumption year 1937-8 :

TABLE 13-A. BARLEY.

(Tons)

Supplies		Utilisation	
Production crop year 1936-7..	2,700,000	From Village Retention	
Imports 1937-8..	2,279	Seed for area sown in Crop	
		Year 1937-8	212,100
		Stockfeeding	154,100
		Net retention for human consumption	1,546,800
			1,913,000
		From supplies on the market	
		Seed	400
		Stockfeeding	161,300
		For converting into flour for adulteration	100,000
		For manufacture of pearl barley and barley powder ..	1,700
		For malting	1,618
		For making <i>sattu</i>	80,000
		Exports	35,144
		Direct consumer purchase* ..	409,117
			789,279
	2,702,279		2,702,279

* Includes quantities lost in storage which were not deducted for reasons given in Chapter 7.

TABLE 13-B. GROUNDNUTS.

(Tons)

(a) in shell

Supplies		Utilisation	
Production 1936-7 ..	2,855,000	Seed for area sown in crop year 1937-8	484,538
		Direct consumption	
		On farms	57,100
		Through market	142,750
		Supplies available for decorating—	
		On farms	57,100
		On market	2,168,517
	2,855,000		2,855,000

(b) kernels

Supplies		Utilisation	
Production : On farms ..	39,570	Exports 1937-8	954,127
On market ..	1,499,817	Oil extraction : On farms ..	39,570
Imports 1936-7.. ..	107	On market ..	545,297
	1,538,994		1,538,994

Production of oil : On farms 3,366,000 gallons ; on market, 53,008,000 gallons.

STANDARD OF LIVING

TABLE 13-C. COCONUTS.

(a) Nuts

(000)

Supplies				Utilisation			
Production :				Direct consumption of tender			
Tender Nuts	..	..	52,720	nuts	..	..	52,720
Mature Nuts	..	..	3,212,280	Exports	..	..	6,876
				Offerings to rivers	..	..	1,000
Imports	..	..	6,525	Seed	..	..	200
				Direct consumption of mature			
				nuts	..	..	1,580,623
				Production of copra	..	..	1,680,106
			3,271,525				3,271,525

(b) Copra

(Tons)

Supplies				Utilisation			
Production	..	..	242,155	Direct consumption	..	..	51,675
				Exports	..	..	6,876
Imports	..	..	52,473	Available for milling	..	..	241,051
			294,628				294,628

Production of oil : 89,488, 000 gallons.

(c) Coir : Fibre

(Tons)

Supplies				Utilisation			
Production from nuts husked*			112,197	Exports	..	..	197
Imports	..	..	1,084	For manufacture of yarn	..	..	113,034
			113,231				113,231

* 1,396 million.

(d) Coir : Yarn

(Tons)

Supplies				Utilisation			
Production	..	..	96,079	Exports	..	..	42,821
				Manufacture of Products			
				Ropes etc.*	..	..	18,600
				Mats and Matting	..	..	35,158
			96,079				96,079

* Consumer use 8,720 tons.

CROP PRODUCTS

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TABLE 13-D. SUGAR CANE.

(ooo Tons)

(a) Sugarcane

Supplies		Utilisation	
Production : Crop Year 1936-7	68,284	Seed for area sown 1937-8 ..	3,810
		Stockfeeding	775
		Direct Consumption :	
		On Farms	2,747
		In Towns	1,567
		Consumption as juice :	
		On Farms	1,215
		In Towns	179
		Production of Sugar	11,666
		Production of <i>Khand</i>	3,696
		Production of <i>Minja Dana</i> , etc.	470
		Production of Vinegar, Syrup, etc.	8
		Balance available for conversion into <i>Gur</i>	42,151
	68,284		68,284

ooo tons

Production : Juice on Farms	607.5
Sugar	1,109
<i>Khand</i>	143
<i>Minja Dana</i> , etc.	31
<i>Gur</i>	4,044

(b) Gur

Supplies		Utilisation	
Production :		From Village Retention	
Cane <i>Gur</i> : Lumps	3,313	Stockfeeding	217
Powder	165	Available for human consumption	636
Semi-liquid	566		
Palm <i>Gur</i> : Lumps	99		
Powder	73		
Semi-Liquid	6		
Molassein <i>Gur</i> : Lumps	42		853
	4,264		
		For Supplies on market	
		Production of Sugar :	
		Cane <i>Gur</i>	21
		Palm <i>Gur</i>	14
		Exports :	
		By Sea	79
		By Land	4
		Balance available for Consumer Purchase	3,293
			3,411
	4,264		4,264
Imports*	—		

Production of Refined Sugar, 22,000 tons

*Only 5 tons.

STANDARD OF LIVING

(c) Sugar

Supplies				Utilisation			
Initial Stock :				Exports :			
In Ports	..	..	24	Indian Sugar :			
In Principal Markets	..	..	5	By Sea	..	..	15
With Factories	..	..	130	By Land	..	..	10
				Imported Sugar :			
				By Sea	..	..	6
				By Land	..	..	6
			159				37
Production : Year ending				Closing Stock :			
October 31, 1937—				In Ports	..	..	22
From Cane	..	..	1,109	In Principal Markets	..	..	15
From Cane <i>Gur</i>	..	..	13	With Factories	..	..	170
From Palm <i>Gur</i>	..	..	9				207
<i>Khand</i>	..	..	143				
<i>Minja Dana</i> , etc.	..	..	31	Available for Consumer			
			1,805	Purchase :			
				Indian Sugar	..	..	1,230
				Imported Sugar	..	..	18
Imports : By Sea	..	..	28				1,248
			1,492				1,492

TABLE 13-E. TOBACCO
(000 Lbs.)

Supplies				Utilisation			
Production : Crop Year 1936-7.			1,252,160	Exports : By Sea	..	..	41,184
Imports : By Sea	..	..	7,974	By Land	..	..	9,128
By Land	..	..	8,213	Driage and Wastage in Manu-			
				facture of Products :*			
				On Farms	..	..	17,427
				On Market	..	..	226,191
				Manufacture of Cigarettes	..	..	21,495
				Manufacture of Cigars	..	..	525
				Manufacture of <i>Cheroots</i>	..	..	97,125
				Manufacture of <i>Bidis</i>	..	..	70,000
				Balance available for manufac-			
				ture of other Products :			
				On Farms	..	..	69,709
				On Market	..	..	715,618
			1,268,347				1,268,347

Millions			
Production : Cigarettes	..	..	8,598
Cigars	..	..	31.5
<i>Cheroots</i>	..	..	19,425
<i>Bidis</i>	..	..	75,000
Tobacco content of Other Products :			
On Farms			69,709 000 lbs.
On Market			715,618 000 lbs.

*20 per cent of gross village retention and market supplies less exports.

Manufacture of Products from Oilseeds, Sugarcane and Tobacco

The manufacture of oilseeds, sugar and tobacco products is summarised below for the entire period. The years referred to are consumption years ending on March 31.

TABLE 14.
Manufacture of Oilseeds, Sugar and Tobacco Products, Consumption Years 1931-2 to 1940-1.

	Unit	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-41
Linseed Oil ..	000 Gals.	23,478	30,070	7,159	14,070	14,418	11,314	16,996	13,091	19,575	19,860
Coconut Oil ..	000 Gals.	27,582	27,543	27,395	51,276	52,711	36,447	39,433	36,526	36,276	35,661
Groundnut Oil :											
On Farms ..	000 Gals.	3,288	2,731	3,620	983	2,346	2,734	3,366	4,339	4,028	4,108
In Market ..	000 Gals.	69,351	81,217	110,530	144,014	35,700	64,464	53,003	116,221	66,183	108,965
Sesamum Oil ..	000 Gals.	40,355	37,541	42,220	41,754	29,676	35,650	37,480	40,352	35,050	35,504
Mustard Oil ..	000 Gals.	64,849	62,151	66,102	62,076	59,989	62,288	63,847	68,966	61,040	73,137
Castor Oil ..	000 Gals.	2,289	2,713	5,031	4,408	2,471	4,665	6,546	5,842	9,181	5,753
Coconut Shells ..	Million	1,450	1,450	1,350	1,500	1,500	1,500	1,700	1,500	1,550	1,550
Coir : Ropes ..	000 tons	10	9	7	11	11	16	19	15	16	22
Coir : Mats, Mat- tings etc.	000 tons	38	34	32	38	35	37	35	31	26	42
Sugarcane Juice on Farms ..	000 tons	281	370	433	423	442	532	608	519	276	389
Crystal sugar ..	000 tons	118	156	286	453	571	916	1,109	931	651	1,242
Khand ..	000 tons	200	250	275	200	150	114	143	124	78	125
Refined Gur Sugar ..	000 tons	32	70	80	61	39	51	22	19	14	32
Minja Dana etc. ..	000 tons	40	36	38	37	39	28	31	23	23	39
Cane Gur ..	000 tons	2,108	2,397	3,035	3,231	3,377	3,751	4,044	3,891	1,918	2,263
Palm Gur ..	000 tons	175	175	175	178	177	168	178	167	182	180
Molassein Gur ..	000 tons	55	53	50	47	47	50	42	49	49	55
Cigarettes ..	Million	6,323	7,054	7,453	7,500	7,742	8,168	8,596	8,725	9,468	10,746
Cigars ..	Million	48	38	34	30	26	29	32	24	30	34
Cheroots ..	Million	24,050	23,125	21,275	18,500	17,575	18,500	19,425	18,500	20,350	21,275
Bidis ..	Million	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
Tobacco content of Other Pro- ducts :											
On Farms ..	Million lbs.	69	70	72	64	84	77	70	78	75	77
In Market ..	Million lbs.	689	722	758	687	883	788	716	845	793	777

CHAPTER 3

LIVESTOCK PRODUCTS AND FISH

This Chapter is concerned with the estimation of the outturn of Milk and its products, Mutton, Beef, Poultry, Eggs, Fish, Hides, Skins, Raw Wool, Raw Silk and Dung Fuel.

Livestock Censuses

The basic data on Livestock population during the period were the 3 Censuses for the years 1930, 1935 and 1940. None of these three, however, was comprehensive. They also differed in their coverage and classification.

TABLE 15.
Coverage of Livestock Censuses.

Census Year	British India Coverage	Coverage of Princely States
1930	All British India	50 per cent of bloc area of all States
1935	Excluded Bengal, Bihar & Orissa	66 per cent ,,
1940	Excluded the United Provinces and Orissa	79 per cent ,,

As regards classification, the information got more detailed in each successive census. To take an instance: 1930 Census gave only the total number of cows (excluding calves). In 1935 Census, 3 year old female cattle were divided into (a) Breeding Cows, that is, cows kept for breeding or milk production, (b) Cows used for work, and (c) Cows not in use for work or breeding purposes. Taking British India alone, of the reported total of 25 million 3 year old cows only 20 million were returned as 'breeding' cows. This, however, did not mean that these actually did breed or were in milk; the classification was based on the purpose of their existence, and not its realisation. In 1940 the 'Cows over 3 years used for breeding or milk production' were further subdivided into (i) in milk, (ii) dry, and (iii) not calved. Taking again the British India provinces (only those covered by the 1940 Census), of the 26 million breeding cows reported only 10 million were in milk at the time. The Census was taken in January, which appears to be the month of calving, when a large number of cows are not milked at all. The production of milk mounts up and reaches a peak in March. In case of cow buffaloes—a major source of Indian production of milk—the maximum yield appears to be in October-November. Of the

9 million cow buffaloes 'kept for breeding or milk production' only about 5 million were in milk in January. A better estimate of the performance of Indian bovine population can only be obtained if along with the Censuses a 1|50 or 1|100 sample census is held each month in the year so as to get an average for the year.

In the Censuses, livestock in cities and cantonments were included only when enumeration was possible. The numbers in urban areas were recorded separately since 1940. Following the Population Census urban areas were defined as towns with a human population of 5,000 and above. The 1940 Census covered cattle in urban areas with a human population of 33,668,000 out of the India and Pakistan total of 49,696,000 in 1941.

The reliability of the Censuses was also questionable. The work was done by the village revenue staff where it existed and by the *chowkidars* in the Permanently Settled provinces. "Owing to the lack of uniformity in the time and method of enumeration it is believed that the reported figures even in villages with trained revenue staffs are not free from error." Subsequent checking by superior officers could hardly improve the situation very much except in cases of grave discrepancy. The *Guide to Official Statistics* claimed that no bias was involved as in the case of reporting of the yield of crops, and thus it was presumed that the errors would cancel out.*

Another limitation of the earlier censuses was that these were carried out over a period and not on a particular day. Since 1930 the censuses were generally taken in January.

The returns received from Indian States were described as "continue(ing) to be unreliable".†

* *Guide to Current Official Statistics*, Vol. I, (8rd edition, 1945), p. 16.

† *Ibid.*, p. 16.

Estimation of the Numbers of Livestock

The number of Livestock in the 'reporting' areas in the 1940 Census was as follows :

TABLE 16.
Number of Livestock Reported in the 1940 Census.

(ooo omitted)

					<i>a</i> British India	<i>b</i> States	Total
Cattle	Bulls and bullocks	..	..	..	30,412	17,002	47,414
	Cows	..	..	..	28,909	15,889	44,798
	Young stock	..	..	..	28,353	14,191	42,544
	Total Cattle	..	..	..	87,674	47,082	134,756
Buffaloes	Male buffaloes	..	..	..	8,804	1,370	5,174
	Cows	..	..	..	10,746	6,761	17,507
	Young stock	..	..	..	7,866	5,214	13,080
	Total Buffaloes	..	..	..	22,416	13,345	35,761
Total Bovine..					110,090	60,427	170,517
Sheep		..	..	..	25,188	19,024	45,107
Goats		..	..	..	30,212	19,507	49,719
Donkeys		..	..	..	1,157	520	1,677
Camels		..	..	..	429	532	961
Pigs		..	..	..	1,955	822	2,777
Poultry		..	..	..	61,120	24,694	85,823

a. Excludes the United Provinces, Orissa and Br. Baluchistan.

b. Excludes States with a bloc area 21 per cent of total.

Horses, ponies and mules were not taken into account as their contribution was in the form of intermediate services and not final products with which alone this Chapter is concerned.

The trend of numbers over the period was difficult to ascertain. Owing to the difference in coverage only a partial comparison of the three Censuses could be made. It was possible to deduce the trend of numbers in areas common to all the three censuses from the following figures :

TABLE 17.

Number of Livestock in Areas Common to the Censuses of 1930, 1935 and 1940.

	Numbers (000)			Index base 1940	
	1940	1935	1930	1935	1930
(1)	(2)	(3)	(4)	(5)	(6)
Cows 3 years old ..	26,952	28,503	28,757	105.75	106.69
Cow buffaloes 3 years old ..	13,748	13,451	13,230	97.84	96.23
Sheep ..	39,038	37,344	37,013	95.66	94.81
Goats ..	31,825	30,041	29,901	94.39	93.95

If we take areas common to the Censuses of 1935 and 1940 only, the picture is :

TABLE 18.

Number of Livestock in Areas Common to the Censuses of 1935 and 1940.

	(000)		Index base
	1940	1935	1940
(1)	(2)	(3)	(4)
Cows 3 year old	29,364	31,072	105.82
Cow buffaloes 3 years old	15,033	14,714	97.87
Sheep	42,455	39,994	94.06
Goats	35,588	33,066	92.91

On an assumption that the same conditions held in the non-reporting areas as well it would emerge that the total number of cows had shown a fall while the numbers of cow buffaloes, sheep and goats had shown an increase over the period.

Interpolation to estimate the numbers for the years between the two censuses was a difficult task. Livestock acts as a buffer to reduce the impact of famine on man. During a shortage of food in areas livestock is the first (to borrow a Malthusian phrase) to be "asked out", and thus year to year variations in the number of cattle might have a greater range than the variations in the numbers of human beings. An assumption of a uniform rate of increase as between the censuses was therefore unjustifiable.

Production of Milk

The first problem to solve was the number of animals from whom milk is drawn. The number of 3 year old breeding cows and cow buffaloes was given in the Livestock Census of 1940 as follows :

TABLE 19.
Number of 3 Year Old Breeding Animals in 1940.
 (000)

	Br. India	States	Total
Cows	25,764	14,576	40,340
Cow buffaloes	10,019	6,452	16,471

On the basis of the numbers reported in the previous Censuses, *Marketing Report* "inquiries" and a few guesses to cover the non-reporting areas the corrected numbers were taken to be 47,561,000 cows and 21,435,000 cow buffaloes. The number of goats from whom milk is drawn was estimated by the *Marketing Report* at 9,772,000. "Sheep are generally not milked and are mostly kept for wool and meat. The capacity of sheep to yield milk is estimated to be much less than that of the goat and is generally sufficient (only) for the lambs." Ass milk "has a market value only in exceptional cases for feeding of infants under medical advice. The total number so milked may be as negligible as 15,000." "Camel milk is seldom drawn for sale, but nomadic breeders may use it for drinking."*

While there was an absolute decrease in the total numbers of cows the number of breeding cattle had not decreased as could be seen from the following figures :

TABLE 20.
Comparative Numbers of Breeding Animals in 1935 and 1940.

	Number (000)		Index base 1940	'Breeding' Animals Per cent of Total	
	1940	1935	1935	1940	1935
Cows	27,224	25,789	95	93	83
Cow buffaloes	14,402	13,121	91	96	89

It appears, therefore, that the proportion and absolute numbers of cows as well as cow buffaloes kept for "breeding or milk production" increased at the expense of workers on the farm and "spivs". The greatest increase, however, had been in Southern and Eastern parts of India where cattle are poor milkers, and the increase in milk outturn was, therefore, less than what the increase in the numbers would suggest.

The problem of numbers is followed by the question of average milk yields. This involved a consideration of the actual numbers from whom milk is drawn and the factors affecting the milk yield per animal such as the length of lactation and the daily yield. To ascer-

*Report on the Marketing of Milk in India and Burma, 2nd Edition (1948), pp. 11-2.

tain correct yields sampling experiments of an all-India character comparable with the recent crop-cutting experiments for ascertaining the yield of crops were needed. The available data discussed below were admittedly inadequate.

Farm Records. These covered only about 7,500 animals recorded individually and about 17,000 buffaloes in the city of Bombay whose collective records were maintained. This was by no means a sample random over space or species. Secondly, the animals were "the best specimens of well-known breeds and some of them, particularly on the government farms, had pedigrees extending over several generations. The controlled farm conditions under which these animals were maintained were also greatly different from the village conditions under which most cattle are kept."*

ICAR Inquiry. A village inquiry was taken up by the ICAR in 1936 in seven cattle-breeding tracts in India. A random sample of 370 villages with 20 observations in each was adopted. Milk yields were recorded for 6,160 cow buffaloes and 4,310 cows for a period of seven consecutive days. Based on a week's recording, approximate stage and average length of lactation as obtained from queries to the producers, the yields were computed as below :

TABLE 21.
Milk Yields of Animals Recorded in the ICAR Inquiry.

Province	Tract	Cows			Cow Buffaloes		
		Milk Yield per day lbs.	Length of Lactation months	Lactational Yield lbs.	Milk Yield per day lbs.	Length of Lactation months	Lactational Yield lbs.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Punjab	Montgomery	4.72	10.43	1,344	8.24	11.24	2,470
	Haryana	4.46	7.62	986	11.21	8.65	2,575
U. P.	Kosi	3.89	8.25	865	7.06	9.29	1,768
Bihar	Deltaic	2.74	8.14	651	5.46	8.82	1,255
C. P.	Malwa	1.67	8.94	411	5.44	8.82	1,255
Bombay	Kankrej	3.90	7.90	920	7.97	9.14	1,890
Madras	Ongole	4.64	9.54	1,236	6.53	11.30	1,903
Average		3.74	8.81	943	7.82	9.98	2,160

The report on the Inquiry, however, stressed that the tracts were not even representative of the Provinces in which they were situated, much less of the sub-continent as a whole.†

* Report on the Marketing of Milk, p. 5.

† Report on a Village Enquiry regarding Cattle and the Production and Consumption of Milk in Seven Breeding Tracts of India (1939), p. viii.

Marketing Report. Short of any other data the *Marketing Report* estimates of yield were adopted. The basis of the *Report* might be quoted :

"According to the data available, one or more of the above bases (farm records, ICAR survey, quality distribution of cattle, etc.) were employed in computing the production of milk in each area of survey. . . . In arriving at these figures percentage of animals that calve annually, interval between calving, length of lactation and yield per lactation were all taken into account. In some areas, e.g., in Rajputana where greater attention is paid to the rearing of male calves certain cows are partially milked or some are not milked at all. . . . In order that the yields in different areas may be comparable they have been adjusted on the basis of annual milk yield per animal for all the 3 year old cows and she-buffaloes kept for breeding or production of milk."*

Estimates of the production of milk from goats were also taken from the *Report*.

The milk of sheep is not generally used for human consumption. About 15,000 donkeys would yield at the rate of 230 pounds of lactational yield about 3.45 million pounds of milk. Lactational yield of camels is 1,500 pounds, and about 5,000 camels serving the needs of nomadic breeders would yield 7.5 million pounds. Roughly a total of 11 million pounds was taken as the production from animals other than cattle, buffaloes or goats.

Since the price data related to the year 1938-9, small adjustments (on the arbitrary assumption of a unitary rate of increase during the period 1935 to 1940) were made to obtain the approximate numbers for the year, and production was calculated. The estimated numbers and the production of milk estimated separately for individual provinces and states worked out to the following total :

TABLE 22.
Production of Milk in 1938-39.

	Number of Animals (000)	Milk Production 000,000 lbs.
Cows	47,085	23,726
Cow buffaloes	21,485	26,458
Goats	9,592	1,585
Other Animals :		
Donkeys	15	} 11
Camels	5	
Total	78,082	51,775

* *Report on a Village Enquiry regarding Cattle and the Production and Consumption of Milk in Seven Breeding Tracts of India (1939)*, p. 8.

The question of the changes in numbers of milch animals was considered above. More significant than these comparatively small changes in numbers might be the changes in yields. Nothing definite was known about this aspect. The *Marketing Report* might again be quoted :

"No precise information is available in regard to the changes that may have taken place in the milk yielding capacity of the cattle. Farm records are useless for this purpose, and show no trend whatever. On this point the opinions of those who have been purchasing and dealing in cattle for a long time are conflicting, but the general consensus of opinion seems to be that the milking capacity of Indian cattle has deteriorated in as much as it is not so easy nowadays to obtain good quality cows and she-buffaloes as was the case some twenty to thirty years ago. The opinion is also strongly held that the deterioration in cows has been generally greater than in she-buffaloes.

"There is also no indication to show that the milking quality of cattle on the whole has improved during recent years, except perhaps in restricted areas where intensive work done by the government departments may have resulted in some good. But even in this field there are no published data to support that such a thing has actually happened. On the contrary, there has been in recent years continuous failures of rains in some of the important breeding tracts, viz. Kathiawar, Gujarat, Sind, Rajputana, and South Eastern Punjab, with the result that due to the famine, large numbers of cattle have died and the performance of those that have survived has been severely affected. The output of ghee in these areas has been considerably reduced in late years.

"The extent to which the deterioration, if any, in the milking quality of cattle has offset the rise in the production of milk due to increase in numbers cannot, therefore, be even approximately estimated for any tract or province, much less for the country as a whole."*

After this verdict it was doubtful if much could be gained by any elaborate statistical operations involving a number of assumptions of uncertain justifiability. After assuming yield as fairly constant over the period and taking into account the effect on numbers of the crop conditions in each part of the country in the preceding year the following index of outturn was adopted. The index and estimated quantities of milk produced are given below :

* *Report on a Village Enquiry regarding Cattle and the Production and Consumption of Milk in Seven Breeding Tracts of India (1939)*, p. 22.

TABLE 23.
Production of Milk, 1931-2 to 1940-41.

Year	Index of Production Base 1938-9	Quantities Produced 000,000 lbs.
1931-2	94	48,669
1932-3	93	48,151
1933-4	93	48,151
1934-5	94	48,669
1935-6	95	49,186
1936-7	98	50,740
1937-8	102	52,811
1938-9	100	51,775
1939-40	103	53,328
1940-1	105	54,361

Utilisation of Milk and Outturn of Milk Products

The next problem was to allocate the quantities of milk produced between its different products and uses. With slight modifications in the light of other data a detailed utilisation table was prepared for each unit mainly on the basis of the information in the *Marketing Report*. The global figures for the year 1938-9 were arrived at as follows:

TABLE 24.
Utilisation of Milk, 1938-39.

Utilisation	000,000 lbs.	Per cent of Total	Products obtained 000,000 lbs.
Consumed as Fluid	15,063	29.1	....
Manufactured into :			
<i>Ghee</i>	29,394	56.8	1,837
<i>Khoa and Chena</i>	2,186	4.2	547
Curd	2,617	5.1	2,250
Butter : country and creamery	915	1.8	70
Ice Cream	192	0.4	300
Fresh Cream	171	0.3	17
Other Products : <i>Rabri</i> , etc. ..	1,207	2.3	not ascertained

The by-products included 49,602 million pounds of butter milk, about 395 million pounds of skimmed milk, and considerable quantities of skimmed curds and casein.

It was not possible with the available data to ascertain the changes in the proportion (of the total supply of milk) devoted to the different products from year to year. All that could be done was to take constant proportions of outturn. It was noticed in the above quotation from the *Marketing Report* that the output of *ghee* in some areas had lately been severely restricted, which was explained as due to famine conditions. It might, however, be that the proportion consumed as milk became higher in the later years than in the earlier years of the decade. The market value of fluid milk worked out higher than the equivalent value per pound realised from milk converted into *ghee*. Quite a few speculations were hence permissible. The Depression had spent its force by the middle of the 'thirties and rising incomes might have led to an increase in the demand for fluid-milk. This would include the demand of the producers themselves, who being better off from the realised better sale prices of their crops, did not find it necessary to sell as much of milk as before. Growth of population and urbanisation might also have led to an increased proportion being devoted to consumption as fluid. The residual available for turning into products should, therefore, have declined. This, however, is only a speculation. There was no evidence to support the contention. The estimates of utilisation for the purpose of this study were based on the assumption of constant proportions and are to be considered arbitrary.

Number of Livestock Slaughtered

Passing from milk to meat, the number of livestock slaughtered for meat had first to be ascertained. The following paragraph deals with slaughter in urban areas, and the next with the estimates of slaughter in rural areas, which because of their relative poverty are comparatively less significant consuming units in spite of the immensely larger population they contain.

Number of slaughtered animals in urban areas. Most of the Municipalities allow slaughter in licensed houses only, and a fee is charged per head of slaughter. In other cases returns of slaughter have to be filled in by the butchers. The *Report on the Marketing of Cattle** did not give separate estimates of urban slaughter. The *Report on the Marketing of Goats and Sheep*† estimated urban slaughter of sheep at 62.5 per cent and of goats at 61.5 per cent of the total slaughter.

* *Report on the Marketing of Cattle in India* (1946), p. 17.

† *Report on the Marketing of Sheep and Goats in India* (1945), Appendix XII, p. 58.

In 1934-5, Rao had received a good response to his inquiry from the municipalities.* He had received information from 182 municipalities in respect of slaughter in licensed houses. This comprised a total population of 9,476,000 out of the British India total of 28,087,000 urban population recorded by the All-India Census of 1931. 74 municipalities with a total population of 6,315,000 reported slaughter both for 1931 and 1934. The reported total number of goats and sheep slaughtered in these 182 urban units in 1934 was 4,726,000 and of cattle 571,000. The number of urban slaughter on the basis of Rao's assumptions works out as below :†

TABLE 25.
The Number of Livestock Slaughtered in Urban Areas, 1934.

	Population (1931)	Number of Heads of Slaughter 1934	
	(000)	Sheep & Goats (000)	Cattle (000)
Urban Areas covered by Inquiry	9,476	4,726	571
Towns having no licensed slaughter houses	276	....	....
Remaining urban areas	18,335	9,144	1,105
Private Slaughter .. ..	....	694	84
Total	28,087	14,564	1,760

The total of urban slaughter of sheep and goats in British India reported by the *Marketing Report* for the year 1935-6 was 17,236,000. This did not include Delhi and Ajmer which reported a slaughter of 445,000 in Rao's Inquiry for the year 1934. Thus the discrepancy between the two estimates was of the order of 3 million. The *Marketing Report* estimates were accepted for the reasons given in the next paragraph.

The Number of Livestock Slaughtered in Rural Areas

Few data were available on this subject. Rao's guesses were based on scattered data available in village inquiries, and he broadly adopted a consumption of "1 pound of mutton per head per year for the entire rural population". Estimates of the rural consumption of beef were arrived at "on the assumption that on the average

* Rao : *The National Income of British India, 1931-2* (1940). In all reference to figures in this book care has been taken to take out figures for Burma and Aden which had since 1st April 1937 been separated from India.

† 1. "Municipalities having no slaughter houses, and presumably therefore either consuming no meat or obtaining their meat supplies from neighbouring towns."

2. "Assuming that the number of cattle, goats and sheep per head of the urban residents for whom we have obtained statistics is the same also for the remaining."

3. Add 5 per cent to cover slaughter carried on outside licensed houses.

Ibid., pp. 108-4.

one head of cattle is slaughtered per year in each of the 500,000 villages in British India." These were rather large guesses, the estimates of slaughter of sheep and goats separately available for rural and urban areas, and the overall (total of urban and rural) estimates for cattle as available in the *Marketing Reports* were adopted, as they were the results of specific inquiries in respect of each province and State. The *Marketing Report* estimates were also guesses to a large extent, and it should be admitted that at the time of writing no adequate statistics of the annual slaughter of livestock in India and Pakistan were available.

The numbers slaughtered as given in the *Marketing Reports* are summarised below :

TABLE 26.
The Number of Animals Slaughtered.

				(000)
Sheep (1985-6)	✓	..	Urban	9,971
			Rural	6,014
			Total	15,985
Goats (1985-6)	..	..	Urban	16,845
			Rural	9,417
			Total	25,762
Cattle (1987-8)	..	..		5,270
Buffaloes (1987-8)		..		1,380

The next task was to ascertain the number slaughtered in each year during the period. The data available in the *Marketing Reports* covered only a few years and related to the statistics of slaughter in a few cities only. The following index was based on the data for the slaughter of goats and sheep for 16 cities and for the slaughter of cattle for 13 cities.

TABLE 27.
Index Numbers of Livestock Slaughtered in Urban Areas, 1932-3 to 1939-40.
(Base Year, 1935-6)

		Sheep	Goats	Cattle
1932-3	..	..	..	88.7
1933-4	..	..	..	89.3
1934-5	..	..	..	96.8
1935-6	..	100.0	100.0	100.0
1936-7	..	95.8	107.75	104.6
1937-8	..	98.0	100.55	107.5
1938-9	..	96.8	98.8	..
		99.2	104.6	..

Rao's figures for 74 towns for 1931 and 1934 compare as below :

TABLE 28.

Number of Livestock Slaughtered in 74 Towns Covered by Rao's Inquiry.

	1931	1934	Col. 3 per cent of Col. 2
(1)	(2)	(3)	(4)
Sheep and Goats	2,908,426	3,203,257	112.2
Cattle	813,657	809,080	98.5

Of the 16 cities studied by the *Marketing Report* 7 were available in Rao's inquiry of which 4 gave figures both for 1931 and 1934.

	1931	1934	1935-6
4 Cities	897	1012	1027
8 „		860	828
7		1872	1855

From the evidence so far it appears that at some stage between 1931 and 1934 the slaughter of mutton-yielding animals had risen by about 12 per cent, and stayed at the level till 1935-6. It then fell by about 5 per cent and had been fluctuating above that level since, till it showed a rise in war years. Nothing was known about the trend or fluctuations in the numbers slaughtered in the rural areas. Cattle slaughter seemed to be on an increase during the period, though Rao's figures for 1934 showed a fall of 1.5 per cent from 1931. The following indexes were finally adopted on a rather slender assumption that the conditions in the slaughter in these towns were representative. The estimates should be treated as conjectures only.

TABLE 29.

Estimated Slaughter of Livestock, 1931-2 to 1940-1.

Year	Sheep and Goats Index base 1935-6	Cattle		
		000	Index base 1937-8	000
(1)	(2)	(3)	(4)	(5)
1931-2	88.0	14,067	92.26	1,218
1932-3	95.0	15,186	82.54	5,448
1933-4	98.0	15,665	88.04	5,481
1934-5	100.0	15,985	90.02	5,941
1935-6	100.0	15,985	98.01	6,189
1936-7	95.3	15,234	97.26	6,419
1937-8	98.0	14,866	100.00	6,600
1938-9	96.8	15,394	102.00	6,732
1939-40	99.2	15,857	105.00	6,936
1940-41	103.0	16,465	110.00	7,260

Production of Mutton and Beef

The question of meat yields has received no attention at all. Without discussion Rao adopted "an average rate of 100 pounds to a head of cattle slaughtered and 24 pounds per goat or sheep."* All possible material which might have a bearing on this subject was, therefore, consulted.† An attempt was made to collect information on a regional basis on the main types of sheep and goats available in the country, and their live and deadweights. While it was possible to get liveweights one could get deadweights only in a few instances. The data† lacked coherence and the following is rather a short script presentation than a proper table.

S H E E P

Region	Type	Live-weight lbs.		Deadweight lbs.	
		Marketing Report	Other Sources	Marketing Report	
Assam	.. Average	22			
Bengal	.. "	40			
Bihar	.. "	50			
Bombay	.. Deccani	40	ram	70-80	
			ewe	45-55	
	Kathiawar	60	ram	100	
			ewe	60	
	Other types	40-50			
C. P.	.. Dhamda	40			
	Godavari	80			
	Other types	50-65			
Madras	Coimbatore	40			
	Bellari	60	ram	100-120	
			ewe	70-80	
	Ganjam	65			
	Godavari	80			
	Nellore	80			
			Littlewood		
			ram	150	70-80 large well grown
			Average	80-100	
			Indian Farming		
N. W.F.P.	Madras woolly		ram	90	
			ewe	30	20-80
	.. Balkhi	80-120		80-160	
	Dumari	55		60-70	30-40
	Hashtnagri	60		40-100	
	Kaghni	50			
	Tilahi	80			
	Waziri	60			
	Other types	50-80			
Orissa	.. Ganjam	65			

* *National Income of British India, 1931-2*, p. 105.

† *Report on the Marketing of Sheep and Goats*, pp. 2-10.

Sir George Watt: *Dictionary of Economic Products of India*, Vol. VI, Part II, pp. 549-588.

R. W. Littlewood: *Livestock of South India* (1936), pp. 208-5.

Indian Farming: Vol. III 3, p. 125; Vol. II 4, p. 179; Vol. IV 11, p. 550.

STANDARD OF LIVING

SHEEP—(contd.)

Region	Type	Live-weight lbs.		Deadweight lbs.	
		Marketing Report	Other Sources	Marketing Report	
Punjab	.. Bagri	65			
	Balkhrwal	70			
	Biangi	55			
	Bikaneri	55	ram	140	
			ewe	80	
	Gaddi	55		70	
	Lohi	70	ram	153	
			ewe	81.4	
	Thal	40-60			
Kashmir	.. Balkhrwal	70			
	Chanthan	150			
	Gaddi	55		70	
	Gurez	75	ram	180 maximum.	
	Kumah	75			
Sind	.. Babrik	60		60-80	40-50
	Kooker	60			
	Dumari	55		60-70	80-40
Delhi	.. Bagri	65			
	Other types	44			
U. P.	.. Bagri	65			
	Bikaneri	55	ram	140	
			ewe	80	
Hyderabad	.. Godavari	80			
Central India	Bagri	65			
	Bundelkhandi	50			
Rajputana	.. Gaddi	55		70	
	Kathiawari	60	ram	100	
			ewe	60	
Mysore					
95 per cent.	Hassan	40		50	
5 per cent.	Mandya	65		65	

G O A T S

Assam	.. Average	17			
Bengal	.. "	28-50			
Bihar	.. "	40-60			
Bombay	.. Surti	50			
	Kathiawari	55			
C. P.	.. Berari	50			
	Barbari	40	male	80-100	
			female	60-80	
	Tellingani	60			
	Other types	30-40			
Madras	.. Ganjam	50			
N.W.F.P.	.. Barbari	40	male	80-100	} Hills 40 per cent of liveweight. Plains 22 per cent of liveweight
			female	60-80	
	Damari	50			
	Kaghani	80			
Orissa	.. Ganjam	50			
Punjab	.. Beetal	55	male	170	
			female	100	
	Bikaneri	45			
	Dera Din Panna	75			
Kashmir	Beetal	55	male	170	
			female	100	
	Kashmiri			-150	

SHEEP—(contd.)

Region	Type	Live-weight lbs.		Deadweight lbs.	
		Marketing Report	Other Sources	Marketing Report	
Sind &					
Baluchistan	Barbari	40	male 80-100 female 60-80		
	Chaper	40			
	Kaumdi	60-80			
	Baluchi		60-70		
Delhi	.. Average	40-50			
U. P.	.. Barbari	40	male 80-100 female 60-80		
	Bikaneri	45			
	Jamnepari	60-100	male 150-200 female 100-140		
Gwalior					
Hyderabad	} Barbari	40	male 80-100 female 60-80		
Central India					
Hyderabad	.. Tellingani	60			
Rajputana	.. Bikaneri	45			

Apart from these, the *Marketing Report* gave price quotations for goats and sheep in some principal markets with various mutton-ranges. Types or liveweights of these were not indicated. A short summary is given below.

Market					Mutton yield of animals marketed (lbs)
Sheep	Multan	..	..	..	10-40
	Quetta	..	..	..	10-40
	Peshawar	..	..	..	10-40
	Nagpur	..	..	..	10-20
	Poona	..	..	..	17
	Dacca	..	..	..	18
Goats	Karachi	..	..	..	10-40
	Delhi	..	..	..	10-40
	Calcutta	..	..	..	10-40
	Agra	..	..	..	10-40
Kids	Sukker	..	..	..	14
	Dera Ismail Khan				24

This was about all by way of data on mutton yields. It was rather arbitrary to arrive at any average figure for the yield. Since practically all slaughter is under municipal license it should be possible to take a census of meat production. Short of any such information, on the basis of the above sources and other descriptive material on the possible utilisation of the animals, etc., the following rates of mutton yield on a regional basis were adopted. Being arbitrary, they are subject to a significant error.

TABLE 30.
Average Yield of Mutton per Unit of Slaughter.
 (lbs.)

	Sheep	Goats
Assam	10	10
Bengal	20	20
Bihar	24	30
Bombay	25	25
C. P.	30	25
Madras	30	25
N. W. P.	35	30
Orissa	30	25
Punjab	35	30
Sind	40	30
U. P.	30	30
Baroda	25	25
Gwalior	30	30
Hyderabad	35	25
Mysore	25	25
Travancore	30	25
Other Areas	25	25

Much less information was available on the yield of beef. All sorts of cattle—"old, young, emaciated, pregnant, and even diseased"—are slaughtered for food. The unit of price quotation in respect of cattle for slaughter was 3 maunds of dressed beef per head, i.e., 267 pounds. If the average was about 75 per cent of this 'standard' yield, an approximate average yield of 200 lbs. per head of slaughter could be adopted. Further information, however, needs to be collected before this could be confirmed.

The production of mutton and beef at the yields mentioned in the above paragraphs worked out as follows :

					000 lbs.
Production of mutton : (1985-86)	From Sheep in rural areas	..	..	..	171,650
	From Goats in rural areas	..	..	..	246,005
	Rural Production	..	..	..	417,664
	From Sheep in urban areas	..	..	..	277,022
	From Goats in urban areas	..	..	..	428,930
	Urban Production	..	..	..	705,952
				Total	1,123,616
Production of Beef (1987-8):	..	..	..	..	1,320,000

It was not possible to work out any index of meat yield per head during the period. The year to year variations in the following table are due to variations in the numbers as accepted in the previous section. Meat yield was assumed to have remained constant over the period.

TABLE 31.

Production of Mutton and Beef, 1931-2 to 1940-41.

(000,000 lbs.)

Year	Mutton	Beef
1931-2 ..	989	1,218
1932-3 ..	1,068	1,090
1933-4 ..	1,102	1,096
1934-5 ..	1,124	1,188
1935-6 ..	1,124	1,228
1936-7 ..	1,071	1,284
1937-8 ..	1,045	1,320
1938-9 ..	1,082	1,346
1939-40 ..	1,115	1,886
1940-1 ..	1,158	1,452

Poultry and Eggs

An attempt to ascertain the total number of poultry was made only in the *Livestock Census* of 1940. Previous to that except for stray village studies* the only source of information was the *Report on the Marketing of Eggs in India and Burma* (1938), in the preparation of which "various methods had to be devised to arrive at the estimates" of the total poultry population in India. A good idea of the usual methods employed in the preparation of these *Marketing Reports* can be had from the following quotation on their estimates of poultry in Kashmir :

"The keeping of hens is mainly confined to the Moham-medans. There are about 8,942 towns and villages in the State, with an average of about 75 houses in each. Of these about 75 per cent are estimated to keep poultry. Enquiry further shows that an average Mohammedan house keeps about 2 hens or pullets. Thus a total about 10 lakhs (1 million) laying pullets and hens for the State is estimated."†

Conjectural estimates of this sort could hardly describe the true situation. The Census of 1940 provided a check. The period of the "inquiries" of the Marketing Report was 1937, that of the Census 1940. If anything, there had been a net increase in the fowl population during the interval. The Census instead showed numbers smaller than the *Marketing Report* in areas common to the two.‡

* A survey of two villages in South Travancore (1925), Census of fowls taken in 28 districts in the Punjab (1932), a survey of 148 villages in Hyderabad (1932), and of nine "typical" villages in Cochin (1934).

† Appendix I, p. 240.

‡ Bengal, Bombay, C. P., Coorg, Delhi, Madras, N. W. F. P., Punjab, Sind, British Baluchistan, Baroda, Hyderabad, Kashmir, Madras States, Mysore, Punjab States, U. P. States and Baluchistan States.

TABLE 32.

Number of Poultry Reported* in the Livestock Census and in the Marketing Report.

(000)

	Marketing Report	Livestock Census	Column 8 per cent of Column 2
(1)	(2)	(3)	(4)
Fowls	126,184	78,872	58.6
Ducks	18,074	5,780	44.2

The Census even for its limited coverage described on page 44 did not give poultry statistics for all the areas. The total numbers of poultry for areas not covered by the census were, therefore, estimated by taking deflated estimates of the numbers in the *Marketing Report*.

The distribution of the total numbers as reported in the Census was as below:

TABLE 33.

The Distribution of Poultry by Types in the Livestock Census of 1940.

(000)

	Hens	Cocks	Chicks	Total	Ducks	Drakes	Ducklings	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
British India	18,079	7,719	29,995	55,793	3,342	1,274	919	5,535
States	8,209	2,970	13,321	24,500	257	86	50	393
	26,288	10,689	43,316	80,293	3,599	1,360	969	5,928
Percentage Distribution	32.7	13.3	54.0	100.0	60.7	22.9	16.4	100.0

The number of chicks was relatively large as the Census was taken in January, after the peak of the hatching season, in November. The next peak was in March. The number of layers per cent of total population in the *Marketing Report* was 30.3 for fowls and 33.4 for ducks. Numbers of laying fowls and ducks were, therefore, compared for the same common areas in the two publications:

* Fowls include hens of indigenous and improved varieties, turkeys and guinea fowls, and ducks include geese.

TABLE 34.
The Number of Laying Birds.
(000)

	<i>Marketing Report</i>	<i>Livestock Census</i>	Column 3 per cent. of Column 2
(1)	(2)	(3)	(4)
Hens	37,571.5	24,408.9	65.0
Ducks	4,510.2	3,510.2	77.8

The overestimation in the *Marketing Report* was still considerable. The total number of laying birds in areas not covered by the Census also was estimated by deflating the reported numbers in the *Marketing Report*.

The *Marketing Report* had to be trusted for the yield of eggs per bird, and percentage of eggs lost before collection due to the attack of crows, kites, etc.

The table below sets out the global estimates arrived at by considering each province and state individually on the basis of data in the *Census* and the *Marketing Report*.

TABLE 35.
Production of Eggs.

(000)

	Total Number of Birds	Number of Laying Birds	Produc- tion of Eggs	Average Num- ber of Eggs per Laying Bird	Eggs Lost before Collec- tion	Loss per Cent	Number of Eggs Collected	Eggs Collec- ted per cent of India and Pakis- tan total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Indigenous Hens ..	99,941	33,876	1,784,951	52	39,695	2.3	1,695,256	79.1
Hens of Improved Variety	2,140	730	79,209	103	1,202	1.5	78,007	3.6
Turkeys	17	10	408	38	1	.3	402	....
Guinea Fowls ..	642	424	27,743	60	653	2.4	27,090	1.3
Total Fowls ..	102,740	34,540	1,842,306		41,551	2.26	1,800,755	84.0
Ducks	7,131	4,349	350,000	80.5	10,064	2.9	339,936	15.9
Geese	499	123	2,363	19	59	2.5	2,304	.1
Total Ducks ..	7,636	4,472	352,363		10,123	2.86	342,240	16.0
Grand Total ..	110,376	39,012	2,194,669		51,674	2.35	2,142,995	100.0

No estimates for the production individually for each year of the ten year period could be obtained as the only source, the *Live-stock Census* of 1940, was the first in this respect. "Nevertheless", the *Marketing Report* had some observations to offer, "enquiries in most of the areas have given an indication that production is on the increase. The basic reason given for this was that the eating of eggs is becoming popular or rather less objectionable from the orthodox (Hindu) view-point, and as such the production was generally keeping pace with the increased demand per capita, and also with the increase of population on the whole." An arbitrary index of a uniform decrease of 2 per cent in each preceding year was adopted, with the above figures for 1939-40 as the base. The production in 1931-2 was taken at 84 per cent and in 1940-1 at 102 per cent of the total given in Table 35.

It was also assumed that the number of poultry killed for table was the same as the total, and the same index as in the case of production of eggs was used to indicate the numbers available each year. The estimates are just conjectures.

Fish

Of all the major articles of diet the least information was available on fish. Only the *Marketing Report** and the *Administration Reports* of the Department of Fisheries in Madras were available. The *Marketing Report* observations mostly related to the year 1939-40, though the *Report* did not appear in print till August, 1946.

The landings of fish can be divided into two categories: Sea Fish and Freshwater or River Fish. Collection of statistics for each category of fish is difficult because of the scattered character and primitive nature of the industry. The estimates given below are quoted from the *Marketing Report*. Its basis of estimation might be quoted:

"In the case of sea fish these estimates have been made after taking into account (i) fish curing yard figures, (ii) number of fishing boats in use, (iii) the number of adult fishermen engaged in fishing, (iv) published and unpublished fish statistics of Madras Province, (v) import and export figures. . . , (vi) figures of movement of fish by rail and figures of arrival of fish in municipal markets, ports, etc., in the principal cities. As regards freshwater fish the estimates are based mainly on information supplied by local officers, the trade and municipalities, as no exact data of any kind are available."†

* *Report on the Marketing of Fish in India* (1946).

† *Ibid.*, p. 14.

TABLE 36.
Estimated Catch of Fish.
(000 Tons)

	Sea Fish*	Freshwater Fish†
<i>British India</i>		
Assam .. .. .	....	26.5
Bengal	68.5	115.1
Bihar .. .. .	....	35.2
Orissa	11.1	12.0
United Provinces .. ..	....	5.4
Punjab .. .. .	....	.9
Delhi .. .. .	....	.2
N. W. F. P. .. .. .	....	.1
Sind	7.8	9.8
Bombay	50.0	3.0
Central Provinces .. ..	....	5.7
Madras	171.4	6.9
<i>States</i>		
Baluchistan	3.4	..
Kathiawar	3.7	..
Baroda	..	.4
Gwalior	..	.3
Hyderabad	..	.7
Mysore	..	.4
Travancore	95.1	2.7
Cochin	28.0	.6
Kashmir	..	.7
Other States	..	3.4
	428.5	230.0

(*) Includes fish caught in estuaries and backwaters.

(†) Excludes fish retained for own consumption by professional and non-professional fishermen.

If 25,000 tons at a guess for freshwater fish retained by fishermen and those caught by non-professional persons were added, a total catch of 683.5 000 tons could be estimated for the year 1939-40. There was nothing at all to give reliable estimates for all the years covered by the study. Only the quantities of fish landed along the west coast of Madras Presidency were available.

TABLE 37.

Quantities of Fish landed on the West Coast of Madras Presidency.

					Tons	Index base 1939-40
1931-2	..	..	..	..	198,720	186.7
1932-3	..	..	..	..	115,104	108.1
1933-4	..	..	..	..	124,780	117.2
1934-5	..	..	..	..	90,371	84.9
1935-6	..	..	..	..	134,677	126.5
1936-7	..	..	..	..	117,180	110.1
1937-8	..	..	..	..	90,665	85.2
1938-9	..	..	..	..	73,524	69.1
1939-40	..	..	..	..	106,435	100.0

The supply of fish being generally governed by local conditions, it would have been rash to apply this index to other areas. Nor was it possible to estimate the trend of catch from employment statistics. The last occupational census was in 1931, and what had happened since was not known. Neither were there any estimates over the period of the number of fishing boats, etc. "Regarding freshwater fish no figures are available which can illustrate the trend of production. The increase of population has undoubtedly increased the demand for fish, while the opening of railways has led to a freer and more profitable distribution. But the consensus of opinion everywhere is that the inland fisheries are rapidly deteriorating. Taking India (and Pakistan) as a whole, a progressive decline is believed to be taking place in the production of freshwater fish."* It would have been rash indeed to construct an index on generalisations of the sort. Constant quantities were adopted, and the estimates should be treated as conjectural.

Production and Utilisation of Hides and Skins

In India and Pakistan, the value of hide obtained is often a relatively more significant factor than meat yield. Most of the hides available in the countries are of the 'fallen' type: i.e. obtained from animals who died a natural death. As regards sheep and goats the primary consideration is meat yield and hence a larger proportion of production is represented by 'slaughtered' skins.

"Commercially, only the hides of cattle and buffaloes are important."† The Indian cattle hides being low in weight are generally referred to as 'kips' in the export trade. Technically 'kips' stands for hides of less than 12 pounds dryweight. Of the skins the most important are goat and sheep skins, obtained as by-products

* *Report on the Marketing of Fish in India* (1943), p. 19.

† *Report on the Marketing of Hides in India and Burma* (1943), p. 5.

of slaughter for meat. The production of hides and skins as available in the *Marketing Reports* for the year 1935-6 was as below :

TABLE 38.
Production of Hides and Skins in 1935-36.

(000)

	Fallen	Slaughtered	Total
<i>Hides</i>			
Kips	14,740	5,270	20,010
Bufs	4,380	1,330	5,710
Others* ..	350	....	350
	19,470	6,600	26,070
<i>Skins†</i>			
Goats	4,170	23,320	27,490
Sheep	3610	14,470	17,080
	6,780	37,790	44,570
<i>Furs : ‡</i>			
Lamb			2,100
Kid .. ..	....	....	770
Others .. ..	....	....	65
			2,935
<i>Fancy Skins : ‡</i>			
Snake .. ..	....	....	143
Lizard .. ..	....	....	1,121
Crocodile ..	....	....	37
Others (Tiger, deer &c.) ..	....	....	33
			1,334
Total Skins ..	....	....	48,839

* "Of the horses, mules, donkeys and camels in India (and Pakistan), the production of hides may be taken at about .3 to .4 million per annum. Most of these are of the fallen type, except in the case of a few camel hides, which may be of animals slaughtered on special occasions." *Ibid.*, p. 11.

† *Report on the Marketing of Skins in India and Burma* (1948).

‡ Production figures refer to the year 1934.

Year to year statistics of production were not available. Production of hides was roughly estimated on the basis of an index of exports. Production of slaughtered skins was obtained on the basis of an index of slaughter in Table 29. Production of fallen skins was estimated on the basis of an index of growth in the population of sheep and goats during the period. The production of furs and fancy skins was taken as constant during the entire period.

TABLE 39.

Production of Hides and Skins, 1930-31 to 1939-40.

(000,000)

				Hides	Sheep and Goat Skins	Furs and Fancy Skins
1930-31	..	..	..	23.8	40.0	4.8
1931-32	..	..	..	22.2	40.0	4.8
1932-33	..	..	..	21.0	42.7	4.8
1933-34	..	..	..	23.8	44.0	4.8
1934-35	..	..	..	23.8	44.6	4.8
1935-36	..	..	..	26.1	44.6	4.8
1936-37	..	..	..	31.4	42.9	4.8
1937-38	..	..	..	30.1	42.1	4.8
1938-39	..	..	..	30.0	43.4	4.8
1939-40	..	..	..	35.0	44.6	4.8

Supplies available for manufacture of products could be ascertained by deducting exports and adding imports.* The supplies available for the manufacture of products available for consumption in 1937-8 refer to the year 1936-7 and are given below :

* Since Trade figures were available in terms of weight the numbers of pieces were obtained on the basis of the following ratios calculated from data in the *Marketing Reports*.

			Number of Pieces per Ton
Hides : *	Imports : Land Frontier	..	230
	Raw : Imports : Sea	..	150
	Dressed : Imports : Sea	..	320
	Unwrought Leather	..	745
	Raw : Kips : Exports	..	235
	Raw : Bufts : Exports	..	167
	Raw : Calf Skins : Exports	..	612
Skins :	Raw : Imports	..	1,485
	Raw : Exports	..	1,353†
	Tanned : Imports	..	3,321
	Tanned : Goat : Exports	..	1,968
	Tanned : Sheep : Exports	..	3,542
Furs and Fancy Skins :	Raw : Exports	..	4,800‡
	Tanned : Exports	..	6,000§

* The ratio of average weight of exports of tanned hides was taken at 70 per cent. of the weight of corresponding raw hides.

† Average of actual figures for 1929-30 to 1938-39. 95 per cent of exports consisted of goat skins.

‡ Indirectly calculated from a *Marketing Report* estimates in numbers, and *Seaborne Trade Accounts* in tons.

§ A Guess.

TABLE 40.

Supplies and Utilisation of Hides and Skins.

(000)

HIDES

Supplies				Utilisation			
Production	..	..	..	81,400	Exports :		
Imports :					Raw : Buffs	..	548
Land Frontier	..	..	..	886	Kips	..	3,518
Sea : Raw	..	..	..	190	Calf Skins	..	192
Dressed	..	..	..	18	Others	..	9
Unwrought leather	..	..	..	992	Tanned : Buffs	..	345
					Kips	..	4,992
Total Imports	..	..	..	2,086	Calf Skins	..	1,885
					Unwrought leather	..	988
					Total Exports	..	11,972
					Available for manufacture of		
					Products	..	21,514
				33,486			33,486

SKINS

Supplies				Utilisation			
Production :				Exports :			
Goat and Sheep	..	..	42,980	Raw : Goat and Sheep	..	..	26,290
Fur	..	..	2,935	Other Skins	..	..	900
Fancy	..	..	1,334	Tanned : Goat	..	..	7,472
Total Production	..	..	47,199	Sheep	..	..	12,681
				Other Skins	..	..	780
Imports :				Total Exports	..	..	48,078
Land Frontier	..	..	3,518	Re-Exports :			
Sea : Raw	..	..	2,241	Raw	..	..	682
Tanned	..	..	438	Tanned	..	..	6
Other Skins	..	..	335	Total Re-Exports	..	..	688
Total Imports	..	..	6,532	Available for manufacture of			
				Products	..	..	4,970
			53,731				53,731

Of the available supplies the *Marketing Reports* gave a use-distribution as below :*

						(per cent of supplies)	
						Hides	Skins
1.	Country pattern shoes†	..	..	..	..	50	27.6
2.	Western style shoes	..	..	..	..	12	29.0
3.	<i>Mole, charas or kose</i> for drawing water from wells	..	..	..	..	17	24.0
4.	Leather ropes, straps and other articles of agricultural or industrial use	..	..	..	..	16	..
5.	Suitcases, ladies handbags, harness and saddlery and leather for repairs	..	..	..	..	5	16.6
6.	Musical Instruments	..	..	..	..	..	2.8

* *Report on the Marketing of Hides*, p. 90, and *Report on the Marketing of Skins*, p. 48.

† Includes sandals (*Chappals*).

Items 3 and 4 were 'intermediate' products, with which this study was not concerned. Skins used for shoes (items 1 and 2) are used as linings, and production could be estimated at 8 pairs of shoes (country type or western style) per piece of hide consumed.

Production of country type shoes for each year was taken at a fixed proportion (50 per cent) of the total supply of hides each year. Production of western style shoes was estimated on the basis of an index of employment in shoe factories employing not less than 20 persons each.* No separate estimates of the production of suit-cases, handbags, saddlery, etc., were prepared. These were valued only at a mark up over the value of hides and skins used for the purpose.

Production of Raw Wool and Hair

The adjusted numbers of sheep and lambs up to 1 year old worked out as follows for the year 1940 :

TABLE 41.
Number of Sheep and Lambs, 1940.

(000)

	Adult Sheep	Lambs	Total
British India	28,148	6,249	29,897
States	17,021	5,050	22,071
Total	40,169	11,299	51,468

The total numbers of sheep did not show any significant increase between 1930 and 1935 in areas common to the two Censuses. The increase between 1935 and 1940 was 6 per cent for common units. (Table 18).

Not all the population, however, is clipped. In some cases particularly in South India sheep carry only hair and are not considered wool bearing. In Orissa and certain parts of Bihar sheep are not clipped at all. The proportion clipped was obtained for each region by the *Marketing Report*† "largely through enquiries from shepherds, civil veterinary officials, village *patwaris*, local *bantias*, etc." The global proportions are :

* Rubber. Footwear: Dr. Thomas estimated a pre-War production about 12 million pairs of rubber footwear. *Report on the Development of Industries for War supplies*, 1944, p. 17. An arbitrary production ranging from 8 million pairs was adopted for the pre-War period. Production since the War had been curtailed due to the shortage of rubber and was taken at 8,000,000 pairs in 1939-40 and 4,000,000 in 1940-41.

† *Report on the Marketing of Wool and Hair in India* (1946), pp. 9-10.

TABLE 42.

The Percentage of Sheep and Lambs which is Clipped.

	Number Clipped per cent of Total	
	Sheep	Lambs
British India	59.3	45.0
States	81.6	71.0
India and Pakistan	68.7	56.6

The number of clips taken in a year also varies. The usual is two clips a year. In some parts of Bengal, Bihar, Punjab, the United Provinces, and Central Provinces, however, sheep are clipped three times in a year. In some other parts of the United Provinces and Madras, on the other hand, only one clip is taken a year.

The yield of wool varies. In Bengal where three clips are taken during the year it is on an average 2 pounds per sheep per year. In the Punjab, Sind, the United Provinces and Madras in the areas where two clips are taken the yield is 4, 4, 3 and 0.9 pounds respectively. Taking all the units, the yield worked out as follows :

TABLE 43.

Annual Production per Wool Bearing Sheep.

(lbs.)

	Adult Sheep	Lambs
British India	2.57	1.25
States	2.28	0.94
India and Pakistan	2.42	1.08

Some wool is also obtained from dead animals. The estimated production, including wool pulled from carcasses, worked out as follows :

TABLE 44.

Production of Raw Wool in 1940.

(000 lbs.)

	From Adult Sheep	From Lambs	From Carcases	Total
British India ..	35,280	3,517	6,318	45,065
States ..	31,652	3,366	1,114	36,132
India and Pakistan ..	66,882	6,883	7,432	81,197

Working out yearly figures was again difficult. The trend in the numbers was noticed above. Nothing was known about the changes in the wool-yielding capacity of the sheep during the period. The volume of exports over the period had also been extremely erratic, and provided no clue to probable outturn. A rough estimate of production is given below. The estimates are largely conjectural.

TABLE 45.

Production of Raw Wool, 1930 to 1940.

Year						Production of Raw Wool 000,000 lbs.
1930	..	..	..	..	..	77
1931	..	..	..	..	..	77
1932	..	..	..	..	..	75
1933	..	..	..	..	..	74
1934	..	..	..	..	..	78
1935	..	..	..	..	..	78
1936	..	..	..	..	..	75
1937	..	..	..	..	..	78
1938	..	..	..	..	..	78
1939	..	..	..	..	..	80
1940	..	..	..	..	..	81

The production of hair in 1940-1 was estimated as below :

TABLE 46.

Production of Hair in 1940-41.

	Goat Hair			Camel Hair		
	No. of Goats clipped	Yield per Clip	Produc- tion	No. of Camels clipped	Yield per Clip	Produc- tion
	(000)	lbs.	000 lbs.	(000)	lbs.	000 lbs.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
British India ..	8,126	1.8	5,639	807	8.1	957
States ..	6,005	0.98	5,895	215	1.14	245
India and Pakistan ..	9,181	1.26	11,584	522	2.3	1,202

Production of Raw Silk

The quotation below from the *Report on the Grant of Protection to Sericultural Industry* by the Tariff Board in its first Inquiry in 1931-2 summed up the statistical atmosphere.

"In its present attenuated form the mulberry silkworm industry is mainly confined to four districts in Mysore, four

districts in Bengal, one *tahuk* in Madras and certain tracts in Kashmir and Jammu States and a few villages in Assam and the Punjab. Besides the *tasar* silkworm is reared in the forest areas of Bihar and Orissa, Central Provinces, and the Mirzapur District in the United Provinces, the *muga* worm in Assam and the *eri* silkworm in Bengal and Assam and a few places in Bihar and Orissa and Madras. No reliable statistics of production are available except in Kashmir where the industry is a state monopoly. In Mysore, Bengal and Madras production is deduced from unreliable figures of acreage under mulberry cultivation. In Mysore these figures are checked to some extent by figures of rail-borne traffic and the observations of the officers of the Sericulture Department which is more thoroughly equipped than in any part of British India. Units of weight and measurement not only vary from province to province, from place to place in the same area, but from one branch of the industry to another.”*

TABLE 47.

Production of Mulberry Silk in India and Pakistan.

(000 lbs.)

Province or State (1)	Cocoons			Silk Reeled			Silk Waste		
	1931-2	1933-4	1937-8	1931-2	1933-4	1937-8	1931-2	1933-4	1937-8
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Bengal	14,500	6,000	6,000	1,000	400	400	500	400	400
Mysore	9,620	10,200	10,300	740	789	795	376	394	351
Kashmir	2,016	2,113	2,204	200	219	169	98	135	88
Jammu	640	590	718	32	35	41	15	31	29
Madras	1,260	1,430	1,483	90	107	115	45	53	55
Assam	102	(100)	(100)	6	(6)	(6)	(4)	(3)	(3)
Punjab	16	(25)	32	1	(2)	3	1	(2)	3
Total	28,154	20,458	20,832	2,069	1,558	1,529	1,039	1,018	929

The main sources of information were the *Reports* of two Tariff Board Inquiries, one in 1931-2 and the other in 1937-8 and the voluminous published evidence.

The Second Tariff Board *Report* quoted production estimates for 1931-2 from the First, and estimated the production for 1933-4

* *Report of the Indian Tariff Board regarding the Grant of Protection to the sericulture Industry* (Reprint 1934), pp. 27-8.

and 1937-8 on the basis of replies received to questionnaires sent to the Departments of Industries of each Province and State concerned. The figures in brackets in the Table 47 indicate the guesses which were filed in for lack of information.

The production of other silks was estimated as below for the year 1931-2.

TABLE 48.
Production of Tasar, Muga and Eri Silk.
(000 lbs)

	Tasar	Muga	Eri	Total
Bihar & Orissa	240	..	..	240
Central Provinces	160	..	..	160
United Provinces	1	..	..	1
Assam .. ..	....	100	50	150
Total	401	100	50	551

The production of *tasar* had doubled in Bihar and Orissa by 1937-8. 800,000 pounds were, therefore, added to the estimate of the production of mulberry silk. The production of silk waste for the entire period was taken at a constant figure of 1,300,000 lbs. The quantities of silk reeled were estimated as below. Production for all years other than 1931-2, 1933-4 and 1937-8 is a guess.

TABLE 49.
Quantities of Silk Reeled in India and Pakistan.
(000,000 lbs.)

1930-1	2.7
1931-2	2.6
1932-3	2.3
1933-4	2.2
1934-5	2.1
1935-6	2.1
1936-7	2.3
1937-8	2.3
1938-9	2.3
1939-40	2.3

Outturn of Dung Fuel

Dung cakes are by far the main source of fuel for the vast masses of the rural population in India and Pakistan. A few guesses were available, but how much of the available supplies of dung was used for fuel was doubtful.

The ICAR estimated the production of wet dung from cattle at 800 million tons, and from goats and sheep at 36 million tons, equi-

valent to a dryweight of 167.2 million tons. Of this 40 per cent (67 million tons) was given as being used for fuel.*

The *Report on the Marketing of Cattle* estimated on the basis of a daily evacuation of

119 million adult oxen	at	25 lbs.
47 „ young stock	at	18 lbs.
29 „ adult buffaloes	at	60 lbs.
and 18 „ young stock	at	40 lbs.

at 1021 million tons of wet dung or 204 million tons dryweight. Utilisation as fuel was again given at 40 per cent. that is, 82 million tons.†

A round figure of 90 million tons of dryweight fuel was adopted, so as to include the evacuations of sheep and goats along with those of cattle as estimated by the *Marketing Report*.

—————: 0 :—————

* *Memorandum on the Development of Agriculture and Animal Husbandry in India* of the Advisory Board of the ICAR (1944), p. 27.

† *Report on the Marketing of Cattle*, pp. 66-7.

CHAPTER 4

COTTON : TEXTILES

Production of Handspun and Factory Produced Yarn

The estimation of the production of handspun yarn involved a consideration of two factors : the number of spinners or wheels, and the yarn produced per spinner or wheel. In all available discussion on the subject there lurked an implicit assumption of one wheel for each spinner.

Arno Pearse* had guessed the number of wheels at 50 million which was indeed a gross exaggeration. Puntambekar and Vardachari's guess† of 5 million was considered by the Fact Finding Committee‡ and was accepted by them. There had been no census of spinning wheels in India, and frankly no one knew what the correct number was.

Arno Pearse had imputed a yield of 48 pounds of yarn each to his 50 million spinning wheels per annum. M. P. Gandhi§ gave 25 pounds as a moderate estimate for the outturn of yarn per wheel. Since the wheels were not working regularly he gave 12 pounds as the lower limit to his estimates. Total production was estimated by him at between 60 and 125 million pounds. The Tariff Board of 1932¶ accepted the estimate of 25 pounds as the 'maximum' production per spinner per year. The Fact Finding Committee accepted the lower estimate of 12 pounds|| and estimated production from 5 million wheels at 60 million pounds. They added 10 per cent for the production on small *taklis* to give a total of 66 million lbs.

The estimate of the Secretary of the All-India Spinners' Association that its production "might be about one-third of the total handspun yarn produced in India" worked out at 9.2 million lbs., which was regarded by the Fact Finding Committee as "too low".**

* *Cotton Industry of India* (1930), p. 25.

† *Hand Spinning and Handweaving*.

‡ *Report of the Fact Finding Committee (Handlooms and Mills)* (1942).

§ *How to Compete with Foreign Cloth* (1931).

¶ *Second Report of the Tariff Board on the Grant of Protection to Cotton Textile Industry*.

|| "The Tariff Board in their Report (1932) estimated the production of handspun yarn... on the basis of 25 pounds as the maximum production per spinner per year. This maximum is not indeed beyond the capacity of the average spinner but the question is whether this maximum is reached by spinners as an average over the year." The Fact Finding Committee took into consideration the production of the members of the All-India Spinners' Association for 1939 (16.5 lbs.) and 1940 (18.7 lbs.), and since the AISA workers are "more regular, we think 12 pounds per spinner would be a reliable approximation." Page 110.

** Page 111.

The Fact Finding Committee sent a circular to the various provincial and state governments and obtained rough estimates of "the annual consumption of cotton yarn (hand-spun) by handlooms" in their areas. They made "rough estimates" for other uses "on the basis of data obtained by us through enquiries in different provinces". The utilisation estimate was as below :

	000 lbs.
On handlooms†	54,400
For Sacred Thread‡	1,375
„ Ceremonial Purposes§	1,375
„ <i>Mangalasutram</i> , etc.¶	3,600
„ Sundry Domestic Use	4,000
Total	64,750

The production estimate of 60 million pounds being conjectural a rounded consumption estimate of 65 million pounds was accepted by the Fact Finding Committee. Neither was really trustworthy,

† Consumption of Handspun Yarn on Handlooms. (Million pounds)

Assam	.48	
Bengal	.17	
Bihar	.50	
Bombay	3.09	
Central Provinces	.12	
Madras	.82	(assuming handspun yarn to form 1% of total yarn consumption of handlooms.
D. Narayan Rao: <i>Report on Madras Cottage Industries.</i>)		
Orissa	.06	
Punjab	35.38	
United Provinces	6.51	
Baroda	—	negligible
Gwalior	.05	
Hyderabad	.30	
Indore	—	negligible
Jammu and Kashmir	.74	
Deccan States	1.17	
Mysore	.04	
Travancore	.05	
Total	49.48	

plus 10 per cent for the remaining provinces and states such as Sind, Delhi, N.W.F.P. Ajmer, and a few states.

‡ About 1/3 oz. of cotton yarn of 9 yards consisting of 3 strands twisted together in each thread, and on the average three such are used every year by male persons belonging to the castes permitted to wear such threads. 8 02 million Brahmins (1931 Census). Deduct 25% boys up to 10 years age. Of the 6 million Brahmins if 80% keep sacred thread, the total Brahmin wearers 4½ millions. Among 'inferior castes' 85 6 million males. Deduct 25% as boys under 10. If 25% of the 64 2 millions wear sacred thread it would give 16 million wearers. Total consumption of 22 million wearers 1,375 000 lbs.

§ On occasions such as marriages, *upanayana*, *sraddha*, *puja*, *Sravani*, etc. Approximately 1 oz. per head for above numbers would give another 1,375,000 lbs.

¶ *Mangalasutrams* worn by Hindu women, and *kavachas*, amulets and charms by Hindus and Moslems alike. The average consumption was 'reported' to be 2 oz. per wearer, and if 10% of the total number of women wore these, the consumption would be 8.6 million lbs.

and while the figure of 65 million pounds was adopted it might be considered conjectural.

The statistics of production of yarn in Mills were obtained by the DGCIS under the Cotton Industry (Statistics) Act of 1926 and published in the *Monthly Statistics of Cotton Spinning and Weaving in India*. The figures were assumed to be accurate.

Supplies and Utilisation of Yarn

Supplies of yarn are obtained by adding imported yarn to the production of hand-spun and factory yarn. Utilisation of handspun yarn was considered above. After deducting exports by sea as well as across the Land Frontiers the utilisation of the available supplies of factory yarn (home-produced as well as imported) involved a consideration of yarn consumption for the production of all textiles except handloom products output of which was estimated on the basis of residual quantities of yarn available. A running account of yarn consumption was maintained along with the estimates of production before the quantities of yarn available and the cloth produced on handlooms was estimated. To anticipate the ten year Table 54, Table 50 indicates the supplies and utilisation of factory yarn in the year 1936-7, so as to obtain the residual balance to cover the handloom production available for consumption in the year 1937-8.

TABLE 50.
Supplies and Utilisation of Factory Yarn, 1936-7.
(000 lbs.)

Supplies				Utilisation			
Home Production	..	..	1,050,686	Exports : By Sea	..	..	22,941
Imports	..	..	26,849	By Land	..	..	5,244
				<i>Production :</i>			
				Cloth : Textile Mills	..	..	694,858
				Small Powerloom			
				Units	..	..	7,200
				Hosiery	..	..	19,682
				Rope and Twine	..	..	5,025
				Thread	..	..	2,887
				Braids	..	..	600
				Miscellaneous Products	..	..	11,718
				Fishing Nets	..	..	4,800
				Jute Products	..	..	250
				Cotton Mixtures : Textile			
				Mills	..	..	598
				Yarn available for Production			
				of Cloth on handlooms	..	..	301,692
1,077,485				1,077,485			

Production of Cotton Textiles in 1937-38

Table 51 presents the estimates of the production of cotton textiles and mixtures during the year 1937-8.

TABLE 51.

Production of Cotton Textiles and Mixtures, 1937-8.

	000 lbs.	000 yards
Cloth : Textile Mills (subject to Cotton Statistics Act).		
Grey and Bleached :		
Chadars	27,683	67,291
Dhoties	227,946	1,215,845
Drills and Jeans	39,254	152,596
Cambrics and lawns	24,550	192,878
Printers	4,657	23,313
Shirtings and Long Cloth	226,088	1,084,478
T. Cloth, Domestics and Sheetings	47,966	191,332
Tent cloth	5,256	12,211
Khadi, Dungri &c.	38,638	126,621
Other sorts	25,246	124,282
	+1	
Total ..	667,185	3,190,547
Coloured, Printed or Dyed	169,197	893,629
Powerlooms (not subject to Cotton Industry Statistics Act)	8,512	40,482
Handlooms :		
From Handspun Yarn	55,488	163,000
From Factory Yarn	307,726	1,532,000*
Total Cloth ..	1,208,108	5,819,708
Grey and Coloured Goods other than Piecegoods ..	6,158	
Hosiery	22,488	
Rope and Twine	5,555	
Thread	3,502	
Braids	800	
Miscellaneous Products	12,026	
Total Cotton goods	1,258,637	
'Mixtures' : Textile Mills	8,156	

Production of Cloth in Textile Mills

The Cotton Industry (Statistics) Act applied to units with not less than 9 Powerlooms in production.† Statistics of Production in textile mills subject to the Cotton Industry (Statistics) Act were available in the *Monthly Statistics*, published by the DGCIS.

* 1709 million square yards.

† The Act as passed in 1926 applied to all units working with mechanical power. Since the advent of smaller units during the great Depression, units with less than nine powerlooms were exempted from the operation of the Act according to a Governor-General-in-Council Notification (Under Section 8 of the Act) in the *Gazette of India*, Part I, dated 31st October 1931, p. 1020.

Tariff Board after Tariff Board had complained against the presentation of grey and bleached piecegoods together. It was believed that in recent years the production of bleached goods had increased considerably and this was not reflected in the statistics published by the DGCIS. Coasting and foreign trade figures were classified according to grey, bleached and coloured piecegoods, and the lack of this classification in production statistics reduced the possibilities of comparison.

Of the items that were given lumping together of shirtings and long cloth was not very happy. Shirtings generally are in medium counts while long cloth is almost always in coarser counts. Thus the yardage of shirting per pound of production is likely to be higher than for longcloth. Widths may also differ. Conversely, the foreign trade figures of *chadars* and *dhoties* are given in a combined total. *Chadars* are coarse cloth generally in 20s or below, while *dhoties* are generally made of medium and fine counts, 40s and 60s, and in the case of those used by upper middle classes go up to 120s.*

Yardage statistics by themselves are hardly of any use. Thus sheets, *saris* and *dhoties* with a usual width of 54" should have been distinguished from shirtings, drills and jeans with 28" width as a rule.

The yardage statistics should have at least been given in terms of square yards, if the quantity of weave (counts of warp and weft and the number of reeds and picks per inch) could not be practically classified.

All trade statistics were given in terms of yards only, and the weight equivalent of these was not available. In order to estimate consumption the yardage classification, which involved varying widths, counts of yarn and qualities of weave had to be used under compulsion.

The Tariff Boards had also recommended a parallel breakdown of that omnibus group of piecegoods, 'coloured, printed or dyed'. But the DGCIS did not appear to have been instructed accordingly.

* This can easily be demonstrated by taking the ratios of *chadar* and *dhoti* production in pounds to the production in terms of yards during the period of the inquiry.

				Yards per pound of Cloth	
				Chadars	Dhoties
1931-2	..	..	2.63	5.12	
1932-3	..	..	2.69	5.22	
1933-4	..	..	2.66	5.20	
1934-5	..	..	2.54	5.16	
1935-6	..	..	2.51	5.30	
1936-7	..	..	2.46	5.09	
1937-8	..	..	2.435	5.33	
1938-9	..	..	2.43	5.21	
1939-40	..	..	2.53	5.10	
1940-41	..	..	2.39	5.19	

Yarn Consumption. The Industrial Commission of 1916-8 accepted the ratio of 112 pounds of cloth to equal 100 pounds of yarn as given by the Millowners' Association, Bombay. This ratio was accepted by successive Tariff Board inquiries till the 1932 Tariff Board held that with improvement in the quality of cloth the gain in weight after sizing would be below 12 pounds. The Millowners' Association accordingly agreed and suggested an alternative ratio of 110 pounds of cloth to 100 pounds of yarn. This ratio was also accepted by the Fact Finding Committee and was accepted for all the years under study.

Production of Cloth on Powerlooms in Units Not Subject to Cotton Industry (Statistics) Act

Statistics of the production on powerlooms not subject to Cotton Industry (Statistics) Act, which had been a recent phenomenon in textile production, were not available. During the Depression a number of mills had gone into liquidation, and the smaller capitalists in the vicinity of these mills bought up a loom or two and started production on small scale. The Fact Finding Committee obtained statements from various provincial and state governments regarding the number of powerlooms in production.* The Committee estimated a round figure of 8,900 looms,* and estimated their yarn consumption, at the rate of 1000 pounds per loom, at 8.9 million pounds.†

* Number of Powerlooms in Production (1938-9)

			Cotton	Mixtures	
Assam	..	..	9	....	
Bengal	..	..	16	....	
Bombay	..	..	4225	100	
Madras	..	..	210	15	
Punjab	..	..	109	300	
Baroda	..	..	.	75	
Hyderabad	..	..	....	240	
Mysore	..	..	600	....	(Total cotton and artificial silk 800 Cotton assumed as 1/2.)
Travancore	..	..	17	....	
			6378	730	

Bombay in the table above was an underestimate. The Central Provinces had 745 looms under all textiles; separate figures for cotton were not available. Add non-reporting areas. A round total of 8,000 powerlooms entirely devoted to cotton. Approximately 1,000 looms producing cotton mixtures, with a cotton content of 90 per cent, giving an adjusted total of 8,900 powerlooms.

† Annual yarn consumption estimates supplied by the Governments of

Punjab	at	566.8 lbs.
C. P.		695.8 "
Deccan States (Ichalkaranji)		1080.0 "
Mysore		8780 0 "

"Mysore figure appears to be an impossibility, while as regards the first two provinces it is not known whether the figure refers to full-time annual production. Ichalkaranji figure appears nearer the mark. In the course of evidence, 1000 lbs. per annum was considered to be a good average by some witnesses. We, therefore, take this as the basic average." *Report of the Fact-Finding Committee, p. 274.*"

Before the Depression there was hardly any production of cotton cloth on such powerlooms. An index to the growth of powerlooms was obtained from the Madura Mills' figures of cotton yarn supplied by them to weaving factories, "no doubt largely to powerloom factories".* "We feel that the rate of the progress of the small-scale powerloom industry can be fairly gauged by the rate of growth of sales of cotton yarn by the Madura Group of Mills to weaving factories".† Production of cloth was generally in medium counts and was estimated at 112 pounds to 100 pounds of yarn.

Hosiery

The reported production of hosiery in the DGCIS' publication of cotton statistics was (according to the Fact Finding Committee) "far from being complete or accurate, as only large factories are required to make returns and numerous small factories in each province or state are not accounted for; thus in the year 1938-9 the total production of hosiery was reported to be 7,532,000 pounds in weight. We are informed, however, that the Madura Mills alone supplied nearly 8.52 million lbs. of cone yarn to hosiery factories in India. We have to add cone yarn supplied by other mills, as also imported hosiery yarn. It is probable that a large proportion of the gap in statistics is due to the exclusion of the small factories, but it is no less probable that the large-scale section of the industry has failed to make accurate returns to the Government". The main difficulty in ascertaining the production arose from the fact that the industry is scattered over the sub-continent in units both large scale and small scale.

The Fact Finding Committee accordingly called out estimates from different governments.‡ From the returns obtained, it appeared that the DGCIS statistics altogether omitted production in

* Some of it must be going to larger mills which, while carrying on their production from their own yarn, sometimes run out of stock and have to buy yarn on the market.

† *Report of the Fact-Finding Committee*, p. 274.

‡ Production of Cotton Hosiery, 1938-9. Lbs.

	Estimate supplied by respective Govts.	Statistics published by DGCIS.	
Madras	1,304,744	1,304,744	
+ small factories	88,000	....	
Bihar	33,000	....	
C. P.	127,000	....	
Punjab	2,452,500	88,568	
U.P.	1,486,600	984,587	
Mysore	139,468	308,856	(including Indore, Mysore, Baroda, Nandgaon, Bhav- nagar, Hyderabad, Gwalior, and other states and French Possessions) 27
Gwalior	282,629		
Indore	108,000		
Hyderabad	16,700		

provinces like Bihar and the Central Provinces, and reported only a small part of the total in the Punjab.

The chief supplier of yarn was the Madura Mills in South India.* These Mills claimed to supply 75 per cent of the total yarn consumption for hosiery in India. The Committee, however, observed that this did not seem to be the case except for one or two years. It certainly was not the case with earlier years as the production in large scale concerns alone, as reported by DGCIS exceeded the quantity of yarn supplied by Madura Mills by 3 to 4 times.

The Fact Finding Committee based their estimates of total hosiery production on a ratio of 1:3 (reported production to total) after taking into account other sundry evidence.

The Tariff Board of 1932 had quoted evidence of 16 per cent yarn wastage in the case of underwears, and probably more in the case of socks and stockings. There was not much gain through sizing in the case of hosiery. The consumption of yarn was, therefore, taken at 110 per cent of the products by weight.

Rope and Twine

Mr. S. G. Shah of Bombay was quoted to have estimated that about 3/4 per cent of the total quantity of yarn produced was available for the manufacture of rope and twine. There was another estimate also from the same source, quoted and adopted by the Fact Finding Committee as "nearer the truth" that the making of cotton rope and twine used up 25 per cent of the yarn produced in India and Pakistan under counts 4s, 5s and 6s.

The ratio of the weight of the product to the weight of yarn consumed was not known, but it was not likely to be much higher as rope and twine are not generally sized to a great extent. Production, therefore, was taken as the same weight as that of yarn consumed.

Thread

Thread and yarn are consumed in "cotton sewing, darning, crochet and embroidery work, as also in different trades and industries, such as the manufacture of lampwicks, bandages, pyjama cords,

* The yarn supplied by them was reported by the Fact Finding Committee as follows:

				(000,000 lbs.)
1930	..	..	..	.60
1931	..	..	..	.35
1932	..	..	..	.58
1933	..	..	..	.67
1934	..	..	..	1.67
1935	..	..	..	3.14
1936	..	..	..	5.91
1937	..	..	..	8.11
1938	..	..	..	7.85
1939	..	..	..	10.49
1940	..	..	..	10.51

garland and bouquet making, toy manufacture, leather manufacture, electrical industry, book-binding, cloth button manufacture, etc".* Protection was granted to the sewing thread industry in 1937-8, and since then a number of small factories were engaged in producing these types of thread from Indian mill-spun yarn, and consequently imports had fallen.

Estimates of the consumption of thread called out from Provinces and States† excluded important producing provinces like Bombay, Madras, Bengal and the United Provinces. "If we assume that the quantity produced (?consumed) in these provinces and the rest of India amounted to twice as much as above (Footnote‡), the total quantity would be 4,306,000 lbs."‡

The Fact Finding Committee made an alternate estimate of thread consumption of 5,166,000 pounds for 1931-2 on the basis of the number and average consumption of tailors, dressmakers, shoemakers, as reported in the 1931 Census, and the thread requirements for the manufacture of padded quilts, *razais*, mattresses and pillows, etc.§ The growth of consumption since was estimated at the rate of 1 per cent per annum.

* Report of the Fact-Finding Committee, p. 280.

† The Estimated Consumption of Sewing Thread. (lbs.)

	Cotton Sewing and Darning	Crochet and Embroidery
Assam	500	500
Bihar	10,000	....
Orissa	8,537	2,935
Punjab	450,000	900,000
Baroda	58,000	....
Cochin	5,000	....
	582,037	903,435

‡ Report of the Fact-Finding Committee, p. 280.

§ Tailors, Milliners, Dressmakers and Darners' numbered 719 thousand in 1931. "These generally use ball threads in packets of 14 oz. per bundle and 2 such packets are used per worker per annum."

Boots and Shoemakers numbered 852 thousand. "It is reported that the workers generally use yarn in balls of 2 oz. each and 2 such balls are used per worker per month."

"In Northern India padded quilts and *razais* are used to a large extent by the rich and poor alike, while pillows are used all over India. Ordinarily the *dhunia* (who cards the cotton and stitches the pillowcases, etc.) uses thread in the form of balls of 2 oz. each. We have been told that two such balls, i.e. 4 oz., are used per head, and we assume that 10 per cent of the total population (852.8 Millions) use these articles."

(Consumption calculated on the above assumptions worked out as below :
(000 lbs.)

Consumption of Tailors, etc.	1,258
Consumption of Cobblers	2,556
Consumption of <i>Dhunis</i>	882
Total (1931-2)	4,696

Add about 10 per cent for sundry other trades, bringing a consumption total to 5,166,000 lbs. Production in the country was estimated by deducting imports from the estimated consumption and adding exports. Thus production in 1931-2 equalled:

Consumption	5,166,000
Imports	—1,560,247
Exports	+179,895

3,785,648 lbs.

(Report of the Fact-Finding Committee, Appendix XIV, pp. 280-2)

The weight of yarn consumed was taken the same as quantities of thread produced; the small gain in weight from sizing was assumed to offset the wastage of yarn.

Braids

In 1932, the Tariff Board had estimated the production of braids at 150,000 lbs. per annum, and imports at 200,000 lbs. In 1934, protection was granted to this branch of the industry, and in consequence the imports had fallen since. Statistics of production, however, were not available.

Production was estimated by the Fact Finding Committee at 1.2 million pounds in 1938-9.* There was no production prior to 1931-2, and after the grant of protection, the industry suddenly got a spurt. The production estimates in Table 55 are arbitrary. Yarn consumption was assumed to be the same weight as the products obtained.

Miscellaneous Products

The group of Miscellaneous Products includes all sorts of cotton tapes, cords, *niwars*, etc. The Fact Finding Committee took it that the production in small factories was equal to that reported by the DGCIS. Yarn consumption was taken as having the same weight as that of Products obtained.

Yarn Consumption in Fishing Nets, Jute Products and Mixtures

Yarn consumed in the weaving of fishing nets was estimated by the Fact Finding Committee on the basis of the information received from the Provincial and States governments at 4.7 million lbs.† An alternative guess on the basis of numbers and require-

* Estimates supplied by the respective governments of the production of cotton braids, (1938-9).

						Lbs.
Bihar	..	..	..	..	..	4,000
Punjab	..	..	..	..	..	344,400
Baroda	..	..	..	..	..	10,138
						558,538

Assumption that other production is 640,000 lbs.

† Estimates supplied by respective governments on the consumption of cotton yarn in the production of fishing nets:

						000 lbs.
Assam	..	..	..	..	..	9
Bengal	..	..	..	..	..	1,020
Bihar	..	..	..	..	..	1
Madras	..	..	..	..	..	1,439
Punjab	..	..	..	..	..	2
Cochin	..	..	..	..	..	200

2,691

"Not incorrect to assume that 75 per cent. of the above quantity of cotton yarn is consumed in other maritime and inland areas."

ments of fishermen gave a consumption of 4,355,000 lbs. for 1931.*

Jute mills utilise small quantities of cotton yarn which they mainly obtain from the Madura Mills. 25 per cent were, however, added to account for cotton yarn supplied to the jute mills by other spinning mills in the country. There was no consumption during the years 1933-4 to 1935-6 as the jute industry was then passing through acute depression.

The production of Mixtures in cotton textile mills reported to the DGCIS and published in the *Monthly Statistics* primarily referred to cloth with less than 50 per cent cotton content. These were mostly silk and artificial silk manufactures. Yarn consumption for the production of these was calculated on the following basis:

Yarn consumed per cent of the Weight of the Product

Cotton	..	..	..	..	..	..	10
Wool, Merino Type	..	..	..	..	..	..	15
Silk	..	..	..	..	..	..	25
Rayon	..	..	..	..	..	..	50

Wastage of yarn was assumed to be negligible, nor any significant gain in weight was adopted as in the case of cotton cloth.

Handloom Products

The handloom industry being the most significant of the industries outside the factory system and because of its rural affiliations had attracted the attention of all the Tariff Boards, Inquiry Commissions and Committees, Government officials and political, economic and social reformers. It had found its strongest supporters among the Directors of Industries on the Government side and among the supporters of the Indian National Congress on the popular side. A welter of descriptive material was available on the various aspects of the industry. The most exhaustive inquiry was undertaken by the Fact Finding Committee in 1941. The Committee and the various Tariff Boards had made estimates of the handloom production on the basis of the residual quantities of yarn available after deducting its manifold uses other than that on handlooms. The Fact Finding Committee also made a direct approach by submitting a detailed questionnaire to various provincial and state governments regarding the number and production of looms under various textiles, and also obtained direct estimates of production and value. Production calculated on the basis of yarn supplies was

* "We have also made inquiries from the fishing trade and we have been told that on the average a fisherman makes 3 nets of cotton yarn per year, two of which require about 2½ lbs. of cotton yarn of 22s or 24s each, and one of the same counts—a little bigger than the other two—would require about 4 lbs. of yarn. Thus we assume 9 lbs. per annum as the average consumption of a fisherman." 967,880 fishermen in 1931. If 50 per cent. owned nets, the total requirements of yarn would be at 4,855,460 lbs. Increase in consumption since, was worked out at a uniform increase of 100,000 lbs. per annum.

considered to be the most reliable estimate, though others were described as providing a useful check on the estimates indirectly calculated. The estimates, however, remained provisional, so long as there was no scientific basis for these estimates of cloth production on handlooms. As they stood they should be considered as subject to a significant margin of error.

A note on the previous estimates of handloom production. Sir V. Thackersey in a paper read before the First Industrial Conference in 1905 had taken the total quantity of yarn produced in India and had deducted therefrom the consumption of textile mills and exports, and added imports. From this balance of 'free' yarn available for sale he had deducted 10 per cent for rope and twine, and allocated residual quantities to handloom industry. In 1926, R. D. Bell, the Director of Industries, Bombay, had observed that the amount of such deduction from 'free' yarn would be offset by hand-spun yarn, consumption of which on handlooms had not been taken into account. The Tariff Board in 1932 disapproved of this procedure on the ground that "mill yarn is used in considerable quantities for such purposes as the making of hosiery, braids, ropes, nets, lampwicks, bandages, and pyjama cords, and it was impossible to form an even approximate estimate of the total amount of yarn absorbed in this manner."* Nevertheless in making their estimates the Tariff Board made precisely the same assumption which they had rejected earlier and offset "the production of hand-spun yarn" against mill yarn "used for domestic and non-textile purposes."† The Fact Finding Committee rejected this method specifically on the ground that while the quantity of handspun yarn had been diminishing or stationary, the quantity of millspun yarn going into powerlooms and hosiery works "has lately been increasing rapidly."‡ The various factors accounting for the utilisation of 'free' yarn were accordingly considered. The complete statistics of the supplies and utilisation over the period appears in Table 54.

A parallel problem which had excited some attention had been in connection with the computation of production on a yardage basis. Practically every inquiry into the textile industry had concerned itself into speculations on whether the people got better clothed or not and to what extent. The usual unit of prosperity measurement had been length as indicated by 'yards', and quite a few estimates were available on the per capita consumption of cloth as so many 'yards'.

It was noticed above that the yards of cotton cloth have a tendency to vary in widths and in the number of reeds and picks

* Para 22.

† Para 162.

‡ *Report of the Fact Finding Committee*, p. 48.

per inch or in the quality of yarn used. And thus there was little sense in lumping together all cloth. The usual computation procedure had been to work out ratios of pounds to yards of cloth from the figures given by the DGCIS both in terms of weight and length and calculate from these all cloth production in textile mills in terms of yards. The following ratios worked out from figures supplied by the DGCIS showed a variation within rather narrow limits.

					Number of yards per lb. of cloth
1931-2	..	..	..	..	4.5395
1932-3	..	..	..	..	4.6441
1933-4	..	..	..	..	4.6496
1934-5	..	..	..	..	4.7806
1935-6	..	..	..	..	4.8210
1936-7	..	..	..	..	4.7049
1937-8	..	..	..	..	4.8833
1938-9	..	..	..	..	4.7851
1939-40	..	..	..	..	4.7857
1940-41	..	..	..	..	4.5323

Speculation was, however, rife with respect to handloom cloth. Mr. Robertson in the *Review of Trade* for 1904-5 had thrown an off-hand guess that the total production of handloom cloth was double that of the mills.* Mill production in that year was 158.7 million pounds of cloth or 670 million yards. Handloom production, therefore, one was at liberty to assume, was 317.4 million pounds of cloth or 1,340 million yards. He did not specify which he meant. The Fact Finding Committee's inference from the above that "in his opinion there would be a ratio of 1 pound of yarn to 4.17 yards of cloth both for mills and handlooms" was unjustifiable. R. B. Patel in the First Industrial Conference (1905), however, had again computed the figures for handloom production stating that 1,645 million yards of cloth was produced from 317.4 million pounds of yarn, which suggested a ratio of 1 pound of yarn to 5.18 yards of cloth on handlooms. R. D. Bell gave a ratio of 1 pound of yarn to 4 yards of cloth, since most of the cloth on handlooms was coarse.† The Tariff Board in their Report in 1932 expressed the view that "4 yards per pound of yarn is too high an average for the handloom industry, in which. . . at least 80 per cent of the cloth is woven from the coarser counts of yarn" and that "the average yardage of cloth per pound is nearer 3 than 4."‡

The Fact Finding Committee went one better and asked for separate estimates of yarn consumption and cloth production (in yards) from Provincial and State governments. On the basis of the replies received they arrived at the ratio of 4.5722 yards of cloth per pound of yarn used.§

* P. 15.

† *Notes on the Indian Textile Industry with Special Reference to Handweaving*, p. 2.

‡ *Report of the Fact Finding Committee*, p. 284.

§ See Footnote, page 91.

Finally, "in regard to relation between weight of yarn and the weight of cloth we have found in our tours in Madras, Bengal and Bihar that the cotton yarn is given to handloom weavers by weight and the same weight of cloth is generally received back. In the course of evidence this was explained by witnesses who stated that the wastage of yarn in course of preparatory processes was negligible, and also that the additional weight given to the cloth by sizing the warp was equally insignificant," and hence the trade assumption of equality of weights. "In most of the provinces," however, "we have found that on some types of cloth either a small amount of starch is added to the weft yarn or a small quantity of starchy solution is applied to the cloth after a few inches are woven to give it a stiff appearance. Considering that this additional starch is applied in excess of the quantity of starch given to the warps, it is bound to affect the size retention percentage of the final cloth. The size applied to the warp is squeezed thoroughly by hand, but still a small percentage is retained by the cloth and the application of the size on the weft tends to give an additional weight to the cloth. This addition of starch together with the amount of size retained on the cloth cannot exceed 5 per cent. The amount of wastage of yarn in the handloom industry is very small and differs from place to place. But taking the figures supplied by all provinces and states, we find that the average may be safely fixed at 3 per cent. With a 3 per cent wastage in yarn and a 5 per cent increase in weight on account of size and starch we get a ratio of 102 pounds of woven cloth for every 100 lbs. of cotton yarn."* Ratio of the weight of cloth, therefore, to its length will work out at 1 pound to $4.5722/1.02=4.4825$ yards.

This search for the ratio was meaningless and in any case had gone on too long. The best way, it would appear, would be to collect a **fairly good sample** of the different kinds of cloth available on the market and get busy with weights and the measuring tape. This would help not only to clear up the ratio ascertainment of this jumble of 'yards' to a pound of cloth, but it should also be possible to reduce the samples to square yards of cloth, and to devise some 'standard' in terms of which the changes in the number of counts and the quality of weave could also be taken into account. Both the Tariff Board of 1932 and the Fact Finding Committee had called for some specimens of cloth and gave their dimensions, counts of yarn used and their weight in their Reports. It was an easy job to work out the ratios of length to weight either in terms of yards, or square yards if width was taken into account. These were worked out for coarse, medium and fine cloth in the sample. Coarse cloth was defined as cloth in which the combined total of the counts of warp

* *Report of the Fact Finding Committee*, p. 284.

and weft did not exceed 50, medium in which it did not exceed 100, and fine which had a combined total of 100 or above. A further breakdown according to the quality of weave was not possible from the printed data. The results were :

TABLE 52.

Ratio of Length to Weight in Samples obtained by the Fact-Finding Committee.

(1)	Coarse			Medium			Fine		
	No. of Samples (2)	Yds. (3)	Sq. Yds. (4)	No. of Samples (5)	Yds. (6)	Sq. Yds. (7)	No. of Samples (8)	Yds. (9)	Sq. Yds. (10)
Tariff Board ..	16	4.55	4.34	12	5.96	6.42	2	7.85	10.10
F. F. C. ..	20	3.57	3.83	16	5.55	6.56	21	7.58	10.00
Total ..	36	4.00555	4.0567	28	5.7257	6.50	23	7.6035	10.00

On the basis of the utilisation of factory yarn* the ratio for the total yarn consumed in handloom products worked out as follows :

TABLE 53.

Weighted Average of the Ratios of Length to Weight for Handloom Products.

				Yarn used on Handlooms 000,000 lbs.	Ratio of Yards to 1 lb. of cloth	Ratio of Sq. Yds. to 1 lb. of cloth
Coarse Yarn	..	..	..	181.10	4.00555	4.0567
Medium Yarn	..	..	..	86.17	5.7257	6.5
Fine Yarn	..	..	..	42.57	7.6035	10.0037
Total ..	..	..	..	309.84	4.9783	5.5540

If this was a reliable sample, the above calculations implied that the correct ratio was nearer 5 than 4, and was certainly not 3. Taking 1.02 pounds of cloth to 1 pound of yarn (irrespective of the quality of cloth, an assumption implicit in the table above) the ratios of a pound of yarn to cloth would be 5.0779 'yards' or 5.6651 square yards.

Cloth produced from factory yarn (homespun or imported) on handlooms was calculated in terms of square yards at the above rate. There was no evidence in regard to the changes that might have taken place from year to year in the qualities of yarn used and the cloth woven, and hence the reliability of the estimate for any year is questionable. Handspun yarn according to the evidence submitted by the All-India Spinners' Association representative to the Fact Finding Committee yielded 3 square yards of cloth per pound of yarn, and was accepted at that.

* Report of the Fact Finding Committee, p. 114.

The Fact Finding Committee also attempted estimates of handloom production on the basis of the data on the number and working of looms "as a result of detailed inquiries conducted by provincial and state Governments which have replied to our questionnaire." Lack of space prevents a discussion of these individually. The following is only a short script presentation.

Number of looms in 1940, 2,192,312. Classification of 2,019,532 available into 1,754,068 working looms and 265,464 (13.14 per cent) idle looms. Taking looms under mixtures as having a 10 per cent cotton content, total number of looms under cotton were taken at 1,427,682. Details of 1,297,561 of these as follows :

755,440 Throw Shuttle looms
527,347 Fly Shuttle looms
14,774 Others.

The numbers of hours worked by a loom were calculated by collecting information on the number of months worked in a year, number of days worked in a month and number of hours worked per day during busy and slack seasons, and the outturn was worked out at 1617.4 million yards,* which "may be taken as the normal

* Estimates of (i) yarn consumption, and cloth production (ii) as calculated from the data on the number and working of handlooms and (iii) as directly supplied by the Provincial and States Governments.

(1)	Yarn Consumption (000,000 lbs.)			Production of Cloth (000,000 'yards')	
	Indian Mill Yarn (2)	Imported Yarn (3)	Handspun Yarn (4)	As calculat- ed from data on looms (5)	As directly 'estimated' (6)
Asam ..	5.70	0.54	0.48	31.6	31.6
Bengal ..	25.06	4.41	0.17	154.1	148.2
Bihar ..	18.20	0.25	0.50	54.7	76.0
Bombay ..	39.83	3.83	3.09	116.0	174.2
C. P. ..	21.35	0.29	0.12	79.6	103.2
Madras ..	83.42	5.83	0.82	446.3	407.0
Orissa ..	14.43	0.24	0.06	84.5	56.2
Punjab ..	23.58	1.19	35.88	175.6	228.0
Sind ..	n.a.	n.a.	n.a.	5.1	n.a.
U. P. ..	43.05	1.65	6.51	145.2	255.1
Hyderabad ..	9.50	7.98	0.30	120.7	76.6
Deccan States ..	0.89	0.61	1.17	10.7	13.2
Kashmir ..	1.55	0.04	0.74	5.1	11.5
Baroda ..	....	....	....	5.1	9.8
Cochin ..	....	....	....	3.5	4.0
Mysore ..	....	....	....	45.1	26.3
Gwalior ..	....	....	....	3.8	....
Travancore ..	....	....	....	40.7	....

(i) Units common to Yarn Column 2, 3, 4 and 6.

Consumed :	Indian Mill Yarn	286.56 Million lbs.	
	Imported Yarn	26.61	
	Handspun Yarn	49.84	[P.T.O.]

pre-war average for the total production of handloom cloth in India."

The Fact Finding Committee also asked the provincial and state governments to make direct estimates of production of cotton cloth on handlooms including cotton cloth produced from handspun yarn. The total came to 1620.4 million yards. As was noticed above the ratio of production in terms of square yards is $5.5540/4.9783 = 111.564$ per cent of production in terms of 'yards' unadjusted for differing widths. Adjustment on this account would yield a production of 1808 million square yards. Some quantities had to be added to cover non-reporting areas like Sind, N.W.F.P., Gwalior and Travancore. The average of the 5 pre-war years 1934-5 to 1938-9 in the estimates based on the residual yarn method worked out at 1,926 million square yards. The discrepancy therefore was not very high in view of the difference of approach in the two estimates. The value of such direct 'estimates' of production as a check on residual yarn consumption method was, however, doubtful.*

Consumption of Yarn and Production of Textiles, 1931-2 to 1940-1

In the following three tables are brought together all the estimates of yarn consumption and the production of cotton goods during the years 1931-2 to 1940-1, the sources and methods for which have been discussed so far.

(Cloth Produced : From Handspun Yarn 148.02 Million yards (page 90).
From Mill Yarn 1,580.82—148.02=1432.8 Million yds.
Ratio of lb. of mill yarn to cloth in yards is, therefore, 4.5722 yards per lb. (page 88).

- (ii) Total of Column 5, 1477.4 million yards. Add 140 million yards being the assumed production of 175,000 looms in N. W. F. P. and other states on an assumption of 200 days of 9 hour working in a year. Total production, therefore, works out at 1617.4 million yards (page 91).
- (iii) Total of column 6, 1620.4 million yards.

* While the totals managed to fit in well together a perusal of individual estimates for each unit made it obvious how unreliable these data obtained from the provincial and state governments, or calculations therefrom, could be.

TABLE 54.
Supplies and Utilisation of Yarn in India and Pakistan.

(000 Lbs.)

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	Total Yarn avail-able for hand-loom produc-tion (b) less the fol-lowing year
		Home Pro-duction	Imports	Total Supplies	Exports by Sea	Ex-ports by land	Cloth in Mills	Cloth in Power-looms	Hosiery	Rope and Twine	Thre-ad	Bra-ids	Tape Niwar etc	Fish-ing Nets	Jute Mills	Cot-ton Mix-tures	Addi-tion to draft on Stocks (a)	Yarn avail-able for hand-loom produc-tion in the fol-lowing year	Total Utilisa-tion	
1930-1		864,013	27,459	891,473	38,473	6,535	528,201	300	5,504	5,075	3,697	100	8,873	4,200	121	344		290,049	891,472	344,449
1931-2		963,114	29,516	992,630	37,043	5,927	601,705	1,000	6,517	4,800	3,786	100	11,261	4,300	178	305		290,049	992,630	370,113
1932-3		1,013,142	41,616	1,054,758	27,765	6,070	623,989	2,100	8,396	4,625	3,622	200	9,013	4,400	149	201		364,528	1,054,758	418,928
1933-4		917,781	29,842	947,623	27,864	5,448	578,907	4,500	7,043	4,875	3,821	200	10,215	4,500	..	186	..	299,984	947,623	354,884
1934-5		997,897	31,734	1,029,631	24,692	4,756	656,266	5,400	14,087	5,000	3,150	200	13,087	4,600	..	383	..	297,920	1,029,631	352,020
1935-6		1,035,616	42,452	1,098,068	19,798	5,515	678,104	6,500	13,873	4,825	3,202	400	11,914	4,700	..	468	..	346,799	1,098,068	401,199
1936-7		1,090,698	28,849	1,077,485	22,941	5,234	694,358	7,200	19,682	5,025	2,857	600	11,713	4,800	..	893	..	301,692	1,077,485	406,092
1937-8		1,160,718	21,806	1,182,522	40,124	5,315	765,846	7,600	24,527	3,590	3,842	900	12,568	5,000	..	706	..	308,974	1,182,522	448,174
1938-9		1,303,246	35,174	1,338,420	48,282	4,757	846,946	8,900	24,833	3,395	3,821	1,000	13,087	5,000	..	706	..	308,974	1,338,420	448,174
1939-40		1,294,923	40,646	1,273,569	37,605	4,747	770,087	10,000	24,031	4,950	4,243	1,200	15,683	5,000	1,129	876	-9,033	396,998	1,273,569	451,380

(a) A great drawback was that there were no statistics of stocks of yarn (and also cloth) which do fluctuate a great deal. Of the ten years of inquiry into yarn consumption statistics of stocks of yarn held by mills in Ahmedabad, Bombay, Upper India, South India and Madras Mills were available for only three years, thus giving the relevant figures for the Column only in respect of 2 years.

(b) Column 18 + 34,400,000 pounds being the estimated consumption of handspun yarn on handlooms assumed constant for all years.

TABLE 55.
Production of Cotton Textiles and 'Mixtures'.
(000 lbs.)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-41
CLOTH										
<i>Textile Mills.</i>										
Grey and Bleached Piecegoods:										
Chadars ..	21,165	21,807	21,087	23,106	23,689	26,742	27,693	30,714	27,972	25,862
Dhoties ..	188,814	210,157	188,119	215,145	234,221	219,768	227,946	279,340	241,126	212,181
Drills and Jeans ..	26,241	28,281	26,505	29,525	32,137	33,787	39,254	35,169	31,379	55,606
Cambrics and Lawns ..	5,806	9,039	10,429	16,217	16,192	15,978	24,550	20,259	23,024	29,304
Printers ..	4,463	2,497	3,444	3,957	2,944	2,923	4,657	3,240	3,260	2,567
Shirtings and Longcloth ..	176,257	165,152	162,017	187,483	182,247	194,909	226,038	224,652	221,237	205,404
T. Cloth, Domestic and ..			36,684	41,322	38,836	45,183	47,966	50,317	51,642	53,445
Sheetings ..	42,505	39,583	2,189	2,504	3,046	3,958	5,256	5,439	11,165	57,324
Tent Cloth ..	2,074	2,854	30,673	35,841	37,751	39,653	38,638	36,798	31,994	26,177
Khadi, Dungri or Khaddar ..	41,571	39,545	14,648	15,532	16,860	19,635	25,246	27,869	30,456	60,975
Other sorts ..	11,620	12,876					1			—1
Adjustment (Rounding) ..		1								
Total Grey and Bleached Piecegoods	520,016	531,792	495,795	570,722	587,923	604,536	667,185	713,797	673,255	728,044
Coloured Piecegoods	138,621	150,724	137,610	147,466	152,873	154,663	169,197	178,412	174,031	213,961
<i>Powerlooms</i>	1,120	2,352	5,040	6,048	7,280	8,064	8,512	9,968	11,200	13,440
<i>Handlooms</i>	295,850	322,027	371,819	305,984	308,572	353,735	307,726	316,112	401,651	404,939
From Mill Yarn ..	55,488	55,488	55,488	55,488	55,488	55,488	55,488	55,488	55,488	55,488
From Handspun Yarn ..										
Total Production of Cloth	1,011,095	1,062,383	1,065,752	1,085,708	1,107,136	1,176,486	1,208,108	1,273,777	1,315,625	1,455,872
Grey and Coloured Goods other than Piecegoods	3,238	3,542	3,392	3,704	5,119	5,145	6,158	6,487	6,410	7,142
Hosiery ..	5,924	7,633	6,403	12,807	14,430	17,893	22,488	22,595	23,683	27,114
Rope and Twine ..	4,800	4,625	4,875	5,000	5,025	5,555	5,555	5,925	4,950	5,500
Thread ..	3,786	3,622	3,821	3,150	3,202	2,887	3,502	3,502	4,243	4,527
Braids ..	100	200	200	200	400	600	800	1,000	1,200	1,400
Tape, niwa, etc. ..	10,724	8,584	9,728	12,137	11,347	11,155	12,026	14,369	14,919	22,038
Cotton mixed with Silk,										
Rayon and Wool	3,045	2,007	1,859	3,830	4,676	5,928	8,156	7,084	8,762	12,199

Table 56.
Production of Cotton Piecegoods.
(000 'YARDS')

	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37	1937-38	1938-39	1939-40	1940-41
<i>Textile Mills</i>										
Grey and Bleached :										
Chaddars	55,726	58,627	56,154	59,946	59,459	65,875	67,291	74,620	70,636	61,887
Dhoties	964,340	1096,807	978,529	1110,044	1240,511	1117,737	1215,345	1454,789	1280,265	1101,370
Drills and Jeans ..	103,233	112,947	104,269	118,588	128,899	136,535	152,896	135,207	122,264	137,826
Cambrics and Lawns ..	43,322	67,375	77,614	121,714	139,691	123,774	192,878	167,854	188,490	238,965
Printers	21,959	13,658	18,098	20,905	15,973	14,711	23,313	16,682	16,706	15,370
Shirtings & Longcloth ..	790,914	748,050	726,079	863,484	842,844	900,680	1084,478	1040,138	1011,559	969,031
T. Cloth, Domestics and ..										
Sheetings	154,408	143,692	136,958	161,910	152,073	170,531	191,332	183,241	173,181	181,209
Tent Cloth	4,898	6,669	5,204	6,131	7,489	9,718	12,211	14,198	26,499	116,143
Khadi, Dungri or Khaddar ..	119,521	115,499	91,290	106,226	116,407	126,440	126,621	118,224	102,910	83,284
Other sorts	52,583	59,674	70,799	73,706	80,147	95,763	124,282	132,196	143,808	190,334
Adjustment (Rounding) ..		—1	1		—1	1				1
Total Grey and Bleached Piecegoods	2311,104	2422,997	2264,995	2641,654	2773,492	2761,765	3190,647	3337,129	3086,318	3165,420
Coloured Piecegoods	678,787	746,901	680,057	755,802	797,879	810,222	893,629	932,140	926,211	1104,055
Powerlooms*	5,320	11,172	23,940	28,728	34,580	38,304	40,432	47,348	53,200	63,840
<i>Handlooms</i>										
From Mill Yarn†	1473,000	1803,000	1831,000	1523,000	1511,000	1761,000	1532,000	1574,000	2000,000	2016,000
" Handspun Yarn‡	163,000	163,000	163,000	163,000	163,000	163,000	163,000	163,000	163,000	163,000
Grand Total	4631,211	4947,070	4982,992	5112,184	5279,951	5534,291	5819,708	6053,617	6219,729	6512,315

* 4.75 yards per lb. of cloth.

† 5.0779 yards per lb. of yarn. Figures in million square yards as below : (5.6651 sq. yards per lb. of yarn)

1931-32 1932-33 1933-34 1934-35 1935-36 1936-37 1937-38 1938-39 1939-40 1940-41

1,643 1,789 2,065 1,699 1,686 1,965 1,709 1,756 2,231 2,249

‡ 3 yards per pound of yarn.

CHAPTER 5

SILK, RAYON AND WOOL TEXTILES

Silk

The net supplies of reeled silk and waste available for spinning yarn were obtained by adding imports to and deducting exports from the production as calculated on page 74.

TABLE 57.

Supplies and Utilisation of Raw Silk in 1936-37.

(000 lbs.)

Supplies				Utilisation			
		Silk	Waste			Silk	Waste
Production	..	2,300	1,300	Exports	.. ..	48	604
Imports	.. ..	1,781	274	Available for yarn			
				manufacture		4,033	970
		4,081	1,574			4,081	1,574

The percentage loss on degumming had been ascertained by experiments carried out in Bengal and elsewhere on different types of silks, and the results of some of these were published in the two Tariff Board Reports. On the basis of quality weightage the Tariff Board adopted a loss percentage of 22.5 per cent. Normal yield of yarn from waste should be 30 per cent, but the methods of production being primitive, a smaller quantity is actually obtained. Yarn recovery from waste was taken, therefore, at 20 per cent.

Of the available supplies of yarn (production+imports including staple fibre* and yarn, and silk thread) a negligible quantity of thread was exported. Of the rest, consumption by cotton textile mills in the production of 'mixtures' was first deducted (page 86). The Tariff Board (1932) had estimated about 150,000 pounds as being utilised for *sari* borders, etc., mostly on handlooms. Since then the quantities had fallen because of increased competition

* Actually staple fibre imports should have gone with imports of raw silk, but prior to 1937-8 import statistics in respect of staple yarn and fibre were not available and the entire quantities were included in silk yarn, and hence their inclusion here.

from cheaper artificial silk yarn. The rest of the supply was available for the manufacture of hosiery (approximately 10 per cent) and the residual for the manufacture of cloth. Thus the balance sheet of silk yarn for the year 1936-7 read :

TABLE 58.
Supplies and Utilisation of Silk Yarn in 1936-37.

(000 lbs.)

Supplies		Utilisation	
Production : From reeled silk . .	3,126	Exports : silk thread	1
From silk waste	194	Consumed in 'mixtures' . .	2,039
Imports : Yarn including staple	2,431	" " sari borders	145
Silk thread	3	For manufacture : Hosiery . .	357
		" " Cloth . .	3,212
	5,754		5,754

Prices of silk cloth were available in terms of yards and hence the production had to be translated into 'yards'. About 10 specifications were available in the Tariff Board Reports. These yielded a ratio of 1 pound of cloth = 9.166 'yards' = 10.22 sq. yards. The Tariff Board sample contained very few items. Alternatively, imports of silk piecegoods were available both in terms of yards and pounds from 1934-5 onwards. The ratios worked out as follows :

	Yards per pound of cloth		
1934-5	..	..	12.69
1935-6	..	..	12.78
1936-7	..	..	12.38
1937-8	..	..	12.65
1938-9	..	..	12.34
1939-40	..	..	10.79
1940-41	..	..	12.56

A mid-way ratio of 11 yards to a pound of cloth was adopted. Yarn wastage is insignificant in silk, and the production of cloth, hence, was estimated at 11 yards to a pound of yarn.

A Table on the utilisation and supplies of silk yarn and the production of cloth is worked below :

TABLE 59.

Supplies and Utilisation of Yarn, 1930-1 to 1940-1.

(000 lbs.)

A. Supplies

Year (1)	Production		Imports		Total Supplies (6)
	From Reel- ed Silk (2)	From Waste (3)	Yarn* (4)	Thread (5)	
1930-1	3,495	160	1,417	12	5,084
1931-2	3,163	160	1,705	9	5,037
1932-3	4,157	247	3,005	5	7,414
1933-4	3,439	174	2,018	5	5,636
1934-5	3,284	128	3,261	4	6,677
1935-6	2,974	81	3,619	2	6,676
1936-7	3,126	194	2,431	3	5,754
1937-8	3,601	219	4,809	2	8,631
1938-9	3,439	213	3,366	3	7,021
1939-40	3,293	192	7,732	4	11,226

B. Utilisation

Year (1)	Ex- ports (2)	For 'Mix- tures' (3)	For Sari Borders (4)	For Hos- iery (5)	For Cloth (6)	Total (7)	Cloth Produc- ed 000,000 Yds. (8)
1931-2	2	761	150	417	3,754	5,084	41
1932-3	2	502	150	438	3,945	5,037	43
1933-4	2	465	150	680	6,117	7,414	67
1934-5	1	958	150	453	4,074	5,636	45
1935-6	—	1,169	150	536	4,822	6,677	53
1936-7	1	1,482	140	505	4,548	6,676	50
1937-8	1	2,039	145	357	3,212	5,754	35
1938-9	1	1,766	135	673	6,056	8,631	67
1939-40	—	2,190	130	470	4,231	7,021	47
1940-41	—	3,050	130	805	7,241	11,226	80

Rayon

There was no production of rayon yarn in India and Pakistan, and all available yarn was imported. It was, therefore, easy to ascertain the total consumption of rayon in the country. But very little was known about the utilisation and the qualities and quantities of products manufactured.

* Include imports of staple yarn and fibre separately recorded from 1937-8 as below :

	(000 lbs)
1937-8	2,491
1938-9	2,259
1939-40	6,830

"Artificial silk yarn is very much favoured by the handloom weaver throughout India and particularly in Madras, Mysore, Bengal, Bombay and the Punjab as a decorating material for borders of *saris* and other ornamental effects."* There was quite a difference of opinion, however, on the quantities of rayon yarn used by handlooms. The Fact Finding Committee quoted evidence of two witnesses, both from Bombay, one maintaining that 75 per cent of the imported yarn was used by handlooms and 25 per cent by mills, and the other giving 25 per cent for handlooms and 75 per cent for mills. It appeared from the evidence of one of the witnesses that about 6000 powerlooms covered by the Silk Yarn Association between them consumed about 18 million pounds of yarn.†

The position being unsatisfactory, the Fact Finding Committee fell back to their usual expedient of addressing a circular to the provincial and state governments. They estimated a total consumption in 1940-1 of 9.65 million pounds by handlooms on this basis.‡ This worked out at 28 per cent of the previous year's imports of 34.41 million pounds.

No importance could be attached to the results of such inquiries. It might be taken, therefore, that at that stage it was not possible to allocate utilisation of the supplies of rayon yarn available in the country. Except for deductions in respect of the consumption of cotton textile mills for the production of 'mixtures' (page 86) no attempt was made to break up the residual supplies. All products were uniformly valued per pound of yarn consumed. The following table gives the supplies so valued :

* *Report of the Fact Finding Committee*, p. 108.

† *ibid.*, p. 109.

‡

	(000 lbs.)
Orissa	12
Bihar	589
Punjab	3,750
U. P.	367
C. P.	120
Madras	1,858
Hyderabad	391
Kashmir	17
Baroda	48
Mysore	1,500
Deccan States	120
	8,772
Add	877 10 per cent for other provinces and states.
	9,649

TABLE 60.

Supplies of Rayon Yarn, 1931-2 to 1940-1.

(000 lbs.)

	Supplies*	Consumption for 'mixtures'	Supplies available for other products
1931-2	6,869	1,523	5,346
1932-3	7,848	1,003	6,845
1933-4	10,710	930	9,780
1934-5	9,669	1,915	7,754
1935-6	16,443	2,338	14,105
1936-7	14,827	2,964	11,863
1937-8	17,643	4,078	13,565
1938-9	31,593	3,532	28,061
1939-40	17,429	4,381	13,048
1940-41	34,408	6,100	28,308

Wool

The production of raw wool was estimated in Table 45. The supplies of raw wool were divided into two qualities: (i) Indian and Tibetan wools and (ii) Wools imported across the seas, primarily of the Australian Merino type. The net supplies of the Indian and Tibetan wools equalled home products *plus* imports across land frontiers *less* exports. The published statistics of land frontier imports excluded imports from border countries of India, through routes which did not terminate in railheads, for example, Kulu, Rampur, Bushair, Districts of Garhwal and Almora and other places. This quantity was established at 5.8 million pounds a year. Thus, the net supplies available for production in 1937-8 worked out as in Table 61.

TABLE 61.

Supplies and Utilisation of Indian and Tibetan Wools.

(000 lbs.)

Supplies (1936-37)		Utilisation (1937-38)	
Production	75,000	Exports	43,304
Land Frontier Imports:		Supplies available for	
Registered	21,688	manufacture	59,184
Unregistered	5,800		
	102,488		102,488

Supplies of imported wools equalled all imports across the seas, i.e., 70,42,000 pounds (1936-7).

Due to the large fluctuations in exports, the net supplies of Indian and Tibetan wools showed huge variations from year to year. There was no information on the stocks of raw wool or their variation. To smooth out the peaks and falls a 3 year running average of

* Imports of the previous year.

the supplies available for the production each year was taken, except for 1940-1 for which a 2 year average was taken. Of the supplies so calculated 70 per cent was used for the manufacture of Indian blankets, 20 per cent for carpets and rugs, and the remaining about 10 per cent for shawls,* yielding products approximately 90, 200, and 95 per cent in weight. For lack of data these proportions were taken as constant over the period. Estimates of the products were not made. Price quotations were weighted instead, and the supplies adjusted for the wool equivalent of products exported were valued per pound of wool used.

Yarn production from imported wool was taken at 85 per cent, and imports of yarn, knitting wool and braids were added up. From the available supplies deduction was made for yarn used by cotton textile mills in the production 'mixtures' (page 86). Products of the remaining piecegoods, hosiery, etc., were valued per pound of yarn used.

TABLE 62.
Supplies and Utilisation of Yarn from Imported Wools.
(000 lbs.)

Supplies (1936-37)				Utilisation (1937-38)	
Production	..	..	5,986	Consumption for 'mixtures'	1,223
Imports: Yarn	..	..	973	Available for manufacture of	
Knitting & Other	..	..		other products	6,913
Wools	..	..	1,172		
Braids	..	..	5		
			8,136		8,136

Table 63 gives the quantities of Indian and Tibetan wools used for the manufacture of products consumed in India (Adjusted supplies less Wool equivalent of products exported) in Column 2, and the quantities of yarn from imported wools available for the manufacture of products other than 'mixtures' produced in cotton textile mills (Column 3) for years in which the products were assumed to have been obtained (Column 1).

TABLE 63.
Utilisation of Indian and Tibetan and Imported Wools, 1931-2 to 1940-1.
(000 lbs.)

(1)	(2)	(3)
1931-2	49,035	3,205
1932-3	38,729	6,719
1933-4	42,156	7,744
1934-5	33,839	5,500
1935-6	35,719	7,910
1936-7	36,924	7,681
1937-8	35,040	6,913
1938-9	35,581	8,840
1939-40	35,161	8,340
1940-41	40,804	7,668

* *Report on the Marketing of Wool and Hair in India (1946).*

per cent of the total land for which classification is available was as follows :

TABLE 65.
Area under Forests in the Reporting States.

(000 ACRES)

Year (1)	Surveyed Area (2)	Area under Forests (3)	Column 3 per cent of Column 1 (4)	Area for which Classification of Land was not available (5)
1931-2	113,417	16,892	11.77	115,373
1932-3	144,793	16,884	11.66	114,533
1933-4	144,793	17,481	12.07	113,981
1934-5	146,413	18,239	12.45	111,062
1935-6	146,416	18,297	12.50	111,015
1936-7	147,822	18,710	12.66	109,936
1937-8	147,822	19,122	12.94	110,137
1938-9	151,007	19,244	12.74	106,842

Thus as the surveyed area increased, it increased the overall proportion of area under forests. It was possible that increase in the scope of the operations of Forest Departments in the native states was to a certain extent responsible for the increase in area "classed or administered as forests", but it was plausible that a large proportion of land still unsurveyed consisted of forests, and a ratio of 20 per cent for these would not be an exaggeration.

The outturn of firewood from the area under the Forest Administration in British India was available in the series of Provincial *Forest Administration Reports* and a Central Publication called the *Annual Return of Statistics relating to Forest Administration in British India* issued by the Inspector General of Forests to the Government of India. The estimates of the outturn of fuelwood involved a consideration of two elements: (i) Quantities sold and (ii) Quantities given away free or at reduced rates. Estimates of the latter were only conjectures, which were based on the number of households round the forest area, and the assumed average offtake of each. Thus sudden jumps in the global figures might only be due to a revision of these conjectures. The Provincial Administration Reports were, therefore, consulted and such revisions were put on a uniform basis over the entire period.

TABLE 66.

Outturn of Firewood in Areas under Forest Administration in British India.

Year			Area under Forests*	Quantity of Firewood Produced	Quantity given Away Free or at Reduced Rates included in Column 3	Yield of Firewood per Acre
			000 Acres	000 Cu. Ft. Solid	000 Cu. Ft. Solid	Cu. ft. solid
(1)			(2)	(3)	(4)	(5)
1931-2	..	..	65,713	212,622	98,801	3.24
1932-3	..	..	63,760	209,350	99,663	3.28
1933-4	..	..	64,090	213,347	97,943	3.33
1934-5	..	..	63,837	223,316	96,090	3.49
1935-6	..	..	63,881	232,452	95,654	3.64
1936-7	..	..	63,974	224,032	91,154	3.50
1937-8	..	..	63,348	239,226	99,457	3.78
1938-9	..	..	66,350	231,834	104,353	3.49
1939-40	..	..	60,452	223,710	100,007	3.70
1940-41	..	..	63,181	231,449	100,711	3.66

The yield of firewood per acre of private forests in British India was taken the same as in the area under Forest Department.

The yield of fuelwood in the surveyed areas of the native states was taken at 80 per cent of the yield of the Forests under Departments in British India, as these were not so adequately protected or cared for.

The yield of fuelwood in the forests in unsurveyed areas in native states should be rather low as some of these were inaccessible. 50 per cent of the British India yield was, therefore, adopted for these.

The outturn in the non-reporting states was taken to be 50 per cent of the total outturn of the reporting states including the unsurveyed land.

Considerable quantities of firewood were obtained from trees fallen by the roadside, and as a conjecture, the figure of 100,000 cubic feet was assumed to be obtained from this source.

The consumer purchase of charcoal was valued on the basis of the value of firewood required, and hence no estimates of production were separately obtained.

* Including Baluchistan and Andaman and Nicobar Islands.

The total outturn of firewood works as below :

TABLE 67.
Production of Firewood in India and Pakistan.
(000 Cubic Feet Solid)*

Year	British India		Reporting States		Non-Reporting States	Trees by the Road-side	Total Supply of Fire wood
	Government Forests	Private Forests	Classified Land	Unsurveyed Land			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1931-2	212,622	106,311	43,784	37,381	40,583	100,000	540,681
1932-3	209,350	104,675	44,304	37,567	40,936	100,000	536,832
1933-4	213,347	106,674	46,569	37,956	42,263	100,000	546,809
1934-5	223,316	111,658	50,923	38,761	44,842	100,000	569,500
1935-6	232,452	116,226	53,281	40,409	46,845	100,000	589,213
1936-7	224,032	112,016	52,388	38,478	45,433	100,000	572,347
1937-8	239,226	119,663	57,825	41,632	49,729	100,000	608,075
1938-9	231,834	115,917	53,729	37,288	45,509	100,000	584,277
1939-40	223,710	111,855	(57,720)	(35,000)	(46,360)	100,000	574,645
1940-41	231,449	115,725	(58,560)	(37,500)	(48,030)	100,000	594,264

Hair and its Products

The production of hair was estimated in Table 46. For lack of further data constant quantities were adopted for the production over the entire period.

The supplies available for manufacture could be obtained by adding imports and deducting exports. Information regarding imports through land frontier routes was not available, but "enquiries show that the quantity imported is small."† Imports through Kathiawar and Travancore Ports were also negligible. In respect of British India exports of goat hair only were available since 1935-6. No separate data on exports of camel hair were available, but "from enquiries made at different places it is estimated that about 50 per cent of the production of camel hair...are (is) exported, and the balance is consumed in the country for making ropes, sacks, *asans*, etc."‡

TABLE 68.
Supplies and Utilisation of Hair in 1937-38.

(000 lbs.)

Production : Goat Hair	11,534	Exports : Goat Hair	8,127
Camel Hair	1,202	Camel Hair	600
Imports	741	Supplies available for manu- facture	4,750
	13,477		13,477

* The outturn in terms of weight could be obtained at the rate of 1 maund for 2 Cubic Feet Solid or 4 Cubic Feet in Stack.

† *Report on the Marketing of Wool and Hair in India*, p. 17.

‡ *Ibid.*, p. 31.

"This (supply) is utilised mostly in the rural areas generally by the producers themselves, for making a variety of goods which are required daily by them in their households or in fulfilment of their agricultural pursuits."*

On the basis of data available in the *Marketing Report* the percentage distribution of supplies and their utilisation is given below :

Per cent of supplies					Utilisation
Baluchistan	..	..	..	23.1	About $\frac{2}{3}$ used for ropes, blankets, <i>durries</i> , tents and sacks.
N. W. F. P.	..	..	..	.7	Ropes and sacks. In tribal areas also carpets and <i>durries</i> .
Punjab	..	..	..	30.2	All goat hair for sacks, ropes, floor matting saddle strapping, rough clothings, etc.
Sind	..	..	..	4.8	Soft camel hair for rough overcoats worn by shepherds themselves.
Rajputana	..	..	..	38.0	Ropes, bags, etc., a declining industry.
Other areas	..	..	..	3.2	Ropes, big sacks, mattings, etc.
100.0					

50 per cent of the total was adopted as for consumer use, the rest being utilised in course of agricultural production and transport.

Glass and Glassware

During the period of the inquiry there had been quite a few attempts to estimate the production (generally in terms of value) of glass manufactures in the country. But none of these could be considered very reliable. Lately an attempt was made by the DGCIS to publish monthly statistics of production of glass factories in India and Pakistan. Accordingly the co-operation of the Provincial Departments of Industries and glass manufacturers was sought, but after a few months, the project had to be abandoned "on account of the lack of co-operation on the part of glass manufacturers in India."†

The Tariff Board in 1932 had established a value production as below :

	000,000 Rs.
Bangles	11.50
Bottleware	.65
Lampware	1.60
Sheet Glass	.25
	14.00

Dixon had estimated the value of blown glassware alone produced in India and Pakistan in 1935 at Rs. 3.65 million, of which Rs. 3 million represented the value of bangles made in factories and

* *Report on the Marketing of Wool and Hair in India*, p. 27.

† *Report of the Panel on Glass Industries* (1947), p. 8.

glass made for supply to cottage bangle factories.* His estimates were "compiled from figures obtained from the Directors of Industries and from personal inquiries made at most of the factories." The position in respect of the production of other glassware in 1935 was described by Dixon as follows :

Beads and Pearls :	Not made in any quantity in India (and Pakistan).
Bottles :	No bottles made by machinery then, but possible "in future".
Funnels, Globes, Lamps :	Indian lampware competing successfully with imports.
Scientific Glassware :	Only small quantities of cruder type produced in India.
Sheet and Plate Glass :	Only one factory "equipped for the manufacture of sheet glass at present and it has suspended operation on account of the prevailing low price."
Tableware :	No production.

Dr. Navel, the Glass Technologist to the Government of the United Provinces had estimated a total "pre-war" production of glass and glassware at Rs. 12 millions of which bangles alone constituted Rs. 8 millions.†

Dr. P. J. Thomas gave the production of glass and glassware at Rs. 20 millions before the war, "according to a very conservative estimate."‡

The Glass Industrial Syndicate of Firozabad had estimated in 1945 that the daily production of glass bangles was about 80 tons valued at Rs. 130,000. "Making an allowance of 25 per cent on 300 working days per annum, the total production of bangle industry alone thus amounts to at least 18,000 tons valued at Rs. 3 crores" (i.e. Rs. 30 millions).§

While, except for the last, all the above estimates had been value estimates, a few of the estimates were made to obtain the

* *Survey of the Indian Glass Industry (1936)*. Details as below :
000 Rs.

Punjab	..	149
C. P.	..	184
Bombay	..	444
U. P.	..	1,208
Bengal	..	1,500
Madras	..	72
Hyderabad	..	100

3,657

† Quoted by the *Report of the Panel on Glass Industries*, p. 9.

‡ *Report on the Development of Industries for War Supplies (1944)*.

§ *Report of the Panel on Glass Industries*, p. 9.

quantities of glassware produced, primarily on the basis of the consumption of soda ash.

The Village Industries Survey Committee of the Central Provinces (1939) gave 5½ hundredweights as the quantity of soda ash required in the indigenous process to obtain 1 ton of glass. The *Report of the Panel on Glass Industries* gave 6 hundredweights per ton of glass manufactured.

The consumption of soda ash for glass making and the quantities of glass manufactured were estimated by the different authorities as below:

	Year	000 Tons Soda Ash Consumed
Tariff Board	.. 1932	5
P. J. Thomas	.. 1944	10
Panel Report, Glass	.. 1944	21*
Panel Report, Heavy Chemicals	.. 1944	25†

Dr. Thomas' figure‡ was, therefore, an underestimate. It appeared from the above figures that production was about 17,000 tons in 1932, and had gone up to "not more than 100,000 tons" by 1945.

The increase in production could also be seen from the numbers employed in the industry in firms employing not less than 20 persons each as reported in the biennial censuses of factory employment.

Census Year	Number Employed
1931	3,450
1933	5,350
1935	6,953
1937	7,156
1939	10,151
1941	19,482

Conjectural estimates of production for each year were worked out on the basis of the above employment figures. This involved two rather unjustifiable assumptions: (i) Employment in cottage factories varied *pari passu* with those in the larger factories, i.e.,

* "It is true that some of the factories have utilised quite a large amount of cullet for making glass articles and a certain amount of soda ash may have been obtained by the glass industry from sources not covered by the release. Moreover allowance must be made for wastage and breakage. Taking all these factors into consideration, the Panel is inclined to believe that the total production of glass articles in terms of tonnage was not more than 100,000 tons. From the answers to the questionnaire issued by the Panel, the total quantity of glass melted in glass furnaces could be put at 150,000 tons. This is probably an overestimate." (p. 9). The exact figure in Statement No. 1a (p. 31) was 153,450 tons of production in 1945 on the basis of returns which were received from 96 (out of a total of 174 in the year 1944) factories in replies to questionnaires issued by the Panel. "The returns, it is believed, in many cases indicated the production capacity, rather than actual production in the year." (Footnote to the Statement.)

† *Report of Heavy Chemicals and Electrochemical Industries Panels* (1947), p. 14.

‡ *Development of Industries for War Supplies*, p. 30.

there was no change in the average unit size of factories, and (ii) the output per head for the industry as a whole was the same for any number of employees.

The composition of output as estimated by the Tariff Board and by Dixon was considered above. Of the various manufacturers, bottles, sheet and plate glass and scientific glassware as 'intermediate' goods had to be taken out, and hence a modified arbitrary index of quantity production of consumer goods was estimated and adopted.

Matches

The statistics of production of matches were available only since 1934-5, when an excise duty began to be levied. Prior to that the only source of information was the *Report* of the Tariff Board, which had estimated the production in 1926 at 12.35 million gross boxes.*

Production since 1934-5 was as follows :

				000 Gross Boxes adjusted to represent boxes of 40 matches each
1934-5	..	..	..	17,760
1935-6	..	..	..	22,510
1936-7	..	..	..	22,665
1937-8	..	..	..	23,889
1938-9	..	..	..	23,069
1939-40	..	..	..	24,199
1940-41	..	..	..	25,773

By 1935-6 the industry, helped by protection, had overcome the effects of the Depression. Production for the three years, 1931-2 to 1933-4 inclusive, was taken at 15 million gross boxes, the growth in consumption during the later years being offset by the fall caused by the depression.

Soap

In 1918, the Indian Munitions Board had estimated an annual production of soap during the year at 22,000 tons and a further production of 15,000 tons was then expected from factories started during the year.

The *Report on the Marketing of Coconuts* made "inquiries about the output of soaps... It was found that soaps are made in practically all parts of India (and Pakistan) in large or small factories or as a cottage industry, but by far the most important pro-

*				Gross Boxes
	Production of Indian Firms	..	..	.. 10,702,651
	less Production in Burma	..	..	.. 1,651,707
	add Production in Indian Factories of Swedish Match Company			3,302,350
				<u>12,353,294</u>

vinces for soap manufacture are Bengal, Bombay and the Punjab." Production was estimated as below*:

TABLE 69.
Production of Soap in India and Pakistan, 1939.
(000 Tons)

	Toilet Soap	Laundry & Industrial	Total	Notes
Bengal	7.5	24.0	31.5	According to a survey by the Director of Industries.
Bombay	4.5	15.5	20.0	
Punjab	1.5	21.0	22.5	Results of a 'survey' in 1933-4 marked up by 50 per cent.
Madras	.5	3.5	4.0	
Travancore and Cochin	.5	1.0	1.5	
Others	1.0	7.0	8.0	
	15.5	72.0	87.5	

An alternative method of estimated soap production was on the basis of caustic soda consumption. Imports of caustic soda in 1938-9 were registered at 27,209.4 tons. Of this "according to information supplied by the distributors of caustic soda" about 40 per cent—i.e., 10,884 tons—was used for soap-making. The *Marketing Report* gave the outturn of toilet soap at 5 to 6 times the weight of caustic soda consumed, and of washing soap at 7 to 10 times, and took an over-all outturn at 8 tons per ton of caustic soda used. This gave an outturn of 87,000 tons, a figure which was rounded off at 90,000 tons to allow for soap made from other materials like soda ash, *sajji* (crude form of sodium carbonate found in some parts of India), etc.

Dr Thomas, on the other hand, estimated an average 'pre-war' production of 157,000 tons in 1938-9 "from the quantity of caustic soda consumed."† It appeared from his account on Caustic Soda‡ that he took 50 per cent to be the utilisation for soap and glycerine, and probably he took a higher rate of outturn. The exact computations were not given.

The *Report of the Panel on Heavy Chemical Industry* (1947) gave a "present" (1944) consumption of caustic soda at 54,000 tons of which 43.6 per cent, i.e. 23,500 tons, was for soap manufacture.¶

* *Report on the Marketing of Coconuts and Coconut Products in India* (1944), pp. 197-8.

† *The Development of Industries for War Supplies*, p. 61.

‡ *Ibid.*, p. 28.

¶ Page 18.

The Central Provinces Village Industries Committee (1939) quoted an outturn of 1,500 tons from 216 tons of caustic soda, i.e., about 7 tons of soap per ton of caustic soda. 'Pre-War' production in the Central Provinces was estimated at 3,000 tons.

On balance it appeared that the *Marketing Report's* assumption of 40 as the percentage utilised for soap manufacture was rather low, and Dr. Thomas' figure of soap production was, therefore, adopted as more reliable, since most of his information had been drawn from and subsequently checked by War Supply officials who were intimately connected with the commodities under consideration.

Production for each year during the period was obtained from an index of imports of caustic soda. As production of toilet soap had lately increased to a greater extent than laundry and industrial soap, the production estimates in terms of gross weight, based on the data in 1939, underestimate output prior to 1939, and exaggerate it subsequently. This factor was considered in course of valuation.

'The question of estimating the quantities and types of oils and fats used for soap manufacture might now be considered. "The main oils and fats used for soap making in India (and Pakistan) are coconut oil, *mahua* oil, cotton-seed oil, castor oil, and tallow. Besides these, groundnut oil, palm oil, *gingily* oil, linseed oil, and some other oils and fats also find use in soap-making. Hardened groundnut oil has also begun to be used lately."*

The quantity of oils and fats required for producing a quantity of soap varies. "In the case of high class milled toilet soaps, the weight of oils and fats used may be as much as one and a quarter times the weight of soap produced, while in the case of laundry and industrial soaps, oils and fats used may be from half to two thirds (or even less for inferior washing soaps) of the weight of soap produced." The total quantity of oils used was taken at 120,000 tons.

It was difficult to allocate the proportions of this total to each kind of oil. Coconut oil is the most significant. Of the total requirements "enquiries made from a large number of factories making both toilet and washing soaps and by boiled or semi-boiled and cold processes, indicate that the proportion of coconut oil in the oils and fats in soap manufacture over a number of years averaged about 55 per cent in Bengal, 60 per cent in Bombay, 70 per cent in Madras and only 20 per cent in the Punjab, so that the average for the whole of India may be placed at about 50 per cent. Statistics which could be obtained from 3 factories in Bengal, 2 in Bombay, and 1 each in Madras and the Punjab show that during

* *Report on the Marketing of Coconuts*, p. 198.

the three years 1936-7 to 1938-9, the seven factories annually used on an average 2,918 tons of coconut oil and 2,907 tons of other oils. These figures corroborate the estimate that coconut oil forms about 50 per cent of the total oils and fats used for soap manufacture."* A random guess at the utilisation of other oils gave :

	000 tons
Cotton Seed Oil . .	20
Mahua and Palm Oil . .	15
Castor Oil . .	10
Groundnut Oil . .	10
Tallow and Other Oils . .	5

Of these only coconut oil, castor oil and groundnut oil enter direct consumer purchase, and hence estimation of the quantities of these oils for soap manufacture was essential in order to estimate their 'net' consumer purchase. Year to year variation in the quantities of any oil used depended on the relative prices of the different oils. The combined value of these oils for 1939 was adjusted for different years on the basis of combined oil prices and quantity total of all oils used for soap production. Quantity allocation to each of the three oils mentioned above, is, however, arbitrary.

Metal Products

"The metal business before the war did not pass through well-defined channels and consumption, except by Government Departments, was relatively small. There is, therefore, a complete absence of a statistical background on which to work."† The main sources on the production and utilisation of metals were the *Records of the Geological Survey of India*, *Reports of the Inspector of Mines*, *Reports of Panels on Iron and Steel and Non-Ferrous Metal Industries*, and Dr. Thomas' *Report on the Development of Metallurgical and Engineering Industries*.

Iron and Steel Products

While ample data were available on the production of pig iron and steel, there were no data on the relatively insignificant consumer use of iron and steel utensils, cutlery and hardware. "This industry (cutlery) has been pursued on a small scale, by the village blacksmith from time immemorial. . . . But such production continued to be small for long, and the large proportion of the penknives, table knives, scissors, razors, spoons and forks etc., used in cities and towns were imported."‡ Imports of cutlery, after allowing for a 25 per cent Customs Duty, valued between 3½ and 4

* *Report on the Marketing of Coconuts*, p. 199.

† Quoted by Dr. Thomas: *Report on Metallurgical and Engineering Industries* (1944), p. 29.

‡ P. J. Thomas: *Development of Industries for War Supplies*, p. 74.

million rupees at retail prices. An arbitrary index of Indian production ranging from 1 million rupees worth in 1931-2 to 2.5 million worth in 1940-1 was adopted. There is a considerable production of buckets, and a little of enamelled ironware and other hardware. Retail values of these were guessed at five times the marked up f.o.b. wholesale values of exports of Indian hardware, mainly to Burma. Kitchen utensils such as frying pans, saucepans, tongs, etc., were valued uniformly at 10 million rupees at retail value. Thus for the year 1937-8 the retail value of production was estimated at

000 Rs.			
Cutlery	..	..	1,700
Hardware	..	..	12,432
Kitchen Utensils	..	..	10,000
			24,132

The estimate is just a conjecture.

Copper and Copper Alloys

Copper. The smelting of copper ore was carried on at the works of the Indian Copper Corporation at Ghatsila, information in respect of the operation of which was available in the *Records of the Geological Survey of India*. Thus in the year 1937, the production of fire-refined copper was 6,830 tons of which 6,422 tons were consumed for the production of yellow metal, 270 tons were sold for home consumption, and the rest after allowing for changes in stock were exported. Thus, except for the small amount available for home consumption, all supplies of copper were imported. Some quantities of copper, however, were recovered from scrap. Such recovery was estimated at 2 million pounds. Since this study is concerned with consumer use only, imports of rods, tubes and all electrolytic copper were neglected. None was manufactured in India and Pakistan. Thus the supplies of copper available for manufacture of consumer products in India in 1937-8 worked out at :

lbs.			
Sales from Production 1937	..	..	604,800
Imports 1936-7	..	..	..
			15,248,464 Excludes rods, tubes, and all electrolytic copper.
Recovery from Scrap	..	..	..
			2,000,000
			17,853,264

Brass. Brass produced from the quantities of fire refined copper at Ghatsila in 1937 came to 10,019 tons. Recovery from scrap

was taken at 5 million pounds. The supplies available for the manufacture of products in 1937-8, therefore, were :

TABLE 70.
Supplies and Utilisation of Brass, 1937-38.

Supplies			lbs.	Utilisation			lbs.
Production	..	..	22,442,560	Exports	..	..	1,349,712
Imports*	..	..	22,204,336	Available for production of			
Recovery from scrap	..	..	5,000,000	utensils etc.	..	..	48,297,184
			49,646,896				49,646,896

Other Alloys. Other copper alloys like bronze, bell metal, etc., were not separately estimated. Their products were valued at the marks up over the value of the basic metals used.

Aluminium

"In aluminium except for the use of aluminium scrap there was no indigenous product to add to the imports." "Before the War 90 per cent of the aluminium supplies in India went to make cooking utensils."† The 10 per cent of the imports that did not go to make cooking utensils were offset against the recovery of scrap, and the gross imports were taken to denote the supplies available for manufacture of consumer products. Imports in the year 1936-7 equalled 6,345,472 pounds.

German Silver

All supplies were imported and used for making utensils, flower vases, etc.

Tin

All tin was imported. Consumer use of tin for coating copper and brass utensils on the inside was taken at 400 tons uniformly over the ten-year period under study.

* Excludes rods, tubes, wires and wood screws.

† Thomas : *Report on the Metallurgical and Engineering Industries*, p. 36.

PART TWO

CONSUMER PURCHASE: QUANTITIES

CHAPTER 7

GROSS AND NET VILLAGE RETENTION

Village Retention

Before an examination of the factors relevant to estimation of quantities of 'finished' products available for purchase by final consumers is taken up, a problem which has a bearing on valuation might be considered, viz., commodities that are not offered for sale on the market and values for which, therefore, had to be imputed. Since the most significant sector in the economies of India and Pakistan is agriculture, the problem is generally discussed with reference to crops, but in this section milk, eggs, poultry and fish are also included. The usual term to connote quantities (usually of a crop) not offered for sale on the market is 'village retention' and is intended to include producers' retention for their own consumption and for seed and/or cattlefeed requirements, wages in kind paid to agricultural labour, to artisans like the blacksmiths, carpenters, etc., for their services, and also for their professional services to priests, barbers and others. Since most of these quantities are produced in villages and retained there, the term 'village retention' is used. But the significant fact about it is not its location in the village. Thus milk retained by producers in the towns raises the same problems. Alternatively milk may be retained in the village in which it is produced, but may involve a monetary transaction, and is to be treated as having been marketed. The term 'village retention' as used in this study includes all quantities the consumption of which did not involve a purchase/sale. Alternatively, the term 'marketable surplus' usually refers to the residual quantities that were available for sale/purchase on the market.* The author is not sure about there being a real 'surplus'. The wider term 'market supplies' is preferred. This term, apart from 'marketable surplus', is intended to include imports, and thus refers to all quantities involving transactions on the market.

'Retention', 'non-monetary' or 'non-market' consumption is negligible for factory products, and for certain cash crops like jute or cotton. It may be taken to be negligible for food items like mutton and beef. But for the rest, specially for foodcrops, the proportions consumed outside the market are significant, and therefore the

* 'Marketable surplus' when marketed is referred to as 'marketed surplus'.

quantities of 'gross' and then 'net' retention had to be ascertained. While there was no dearth of publications giving annual outturn of a crop, next to nothing was available on what happened after the crop was harvested. Outside of crops, information even on production was very sketchy, and nothing better could be expected in respect of utilisation. The only sources of information were the various *Marketing Reports*, which at their best gave only the percentages (of production) to account for retention and subsequent utilisation of the supplies 'retained' or 'marketed'. These percentages were usually based on 'inquiries' of little scientific value.

A better performance could have been expected of the Department of Food which had come into being to meet wartime problems of food administration. The Department was called upon to procure all the supplies that were offered for sale on the market. It could have evolved a scientific technique of estimating actual quantities of food it could lay its hands on. But the procedure of the Department's work, so far as it could be gathered through the keyholes of (at the time) closed doors, had been random guesswork. The questionnaire sent round to fill up gaps in respect of reporting of production of cereals was already referred to on page 4. The author persistently tackled anyone who could be persuaded to talk about methods (if any) the Department had evolved to ascertain the quantities of supplies they could procure, and the allowances for seed, personal consumption, etc., that were made. It appeared that all that the Department had done was to rest content with a standard figure of 60 per cent which for the purposes of a Food Budget was assumed as not available for purchase on the market. The author was surprised at the number of officials, in other Departments as well, or in the Provinces, who hit upon 60 as the percentage accounted for by village retention. Questioned on the reasons for the adoption of this figure none had any scientific basis to offer.

The Government had by then realised the importance of scientific methods for the estimation of outturn (of crops). Equally important was an integral investigation into all other aspects of the economic life of the village, and particularly in 'village retention' and factors affecting it. This was specially so when the Government was called upon to have a positive food policy to avert famine, and a positive monetary policy to avoid post-war depression as it was then feared. In India and Pakistan the impact of a depression is transmitted to the system through a fall in agricultural incomes. And the two significant factors affecting money

TABLE 71.
Gross Village Retention (Per cent of Production)

Trade Bloc	Rice	Wheat	Barley	Gram	Potatoes	Bananas	Grapes	Citrus Fruits	Cashew Nuts	Sugar Cane	Desi Hen Eggs	Duck Eggs	Tobacco
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Assam	94.0	..	..	(100.0)	52.6	85.0	..	4.45	..	1.0	70.5	67.0	9.9
Bengal..	54.0	50.0	50.0	50.0	22.0	25.0	..	11.9	..	3.8	53.0	20.0	1.1
Bihar ..	70.0	35.0	89.0	80.0	52.0	11.9	..	..	(15.0)	10.7	78.0	55.0	6.25
Orissa ..	70.0	(100.0)	..	71.4	1.7	80.0	..	(3.9)	15.0	16.2	59.9	24.4	(6.25)
U.P.	64.0	52.5	78.0	69.5	20.0	..	..	1.3	..	13.75	20.0	20.0	3.0
Punjab <i>b</i>	40.0	60.0	43.2	53.2	5.3	..	..	.6	..	20.8	18.3	16.8	21.6
Delhi ..	..	(40.0)	60.0	27.5	..	..	..	(3.9)	..	10.0	70.0	(25.0)	..
N.W.F.P.	(25.0)	(60.0)	19.0	16.0	31.9	..	2.75	(3.9)	..	11.8	43.0	39.0	4.9
Sind	32.0	35.0	35.0	20.0	3.3	..	12.8	3.05	..	8.5	21.3	7.0	2.4
Bombay <i>d</i>	64.4	19.5	(74.0)	34.7	17.2	..	.7	2.2	2.5	10.9	47.8	65.0	10.1
C.P.	66.0	57.5	(74.0)	50.0	2.7	..	..	..	..	8.7	64.0	70.0	90.0
Madras <i>e</i>	39.3	33.3	..	75.0	32.3	6.95	2.2	6.3	3.0	8.0	20.9	6.1	10.2
Rajputana	(50.0)	25.0	20.0	24.9	..	..	..	..	..	40.5	70.0	(40.0)	(7.5)
Central India	(75.0)	38.2	70.7	25.2	15.0	..	..	(3.9)	..	20.8	70.0	(40.0)	(7.5)
Hyderabad	47.0	10.0	100.0	14.0	..	4.4	13.3	5.6	..	6.35	30.0	30.0	3.4
Mysore ..	40.0	(100.0)	..	33.3	10.2	5.0	1.4	1.0	15.0	7.3	68.0	14.0	1.0
Kashmir ..	(75.0)	33.0	66.0	(100.0)	16.8	..	1.4	(3.9)	..	15.0	35.0	50.0	5.0
Non-Reporting Units	(70.0)	(50.0)	(100.0)	..	13.7	25.0	2.0	..	..	(100.0)	..	..	(10.0)
India & Pakistan	..	..	..	..	..	..	..	..	..	..	..	..	..
Average 1937-8	58.6	49.3	70.85	54.5	27.1	20.6	7.2	3.9	3.4	12.5	40.2	23.2	6.8

(a), (b), (c), (d), (e), (f), (g), (h). For foot notes see page 122.

incomes of the agriculturists are the quantities of and the prices at which they part with their crops.*

(a)					Orissa		Bundel- khand 70.0 (30.0)		Eastern Agency 75.0 (30.0)
	Hen Eggs	..	..	40.0					
	Duck Eggs	..	..	18.6					
(b)						Punjab		Patiala	
	Barley ..	..	..	..		41.0		67.0	
	Potatoes ..	..	..	..		4.8		8.0	
	Citrus Fruits ..	..	..	..		.6		—	
	Hen Eggs ..	..	..	..		19.0		15.0	
	Duck Eggs ..	..	..	..		18.4		6.0	
	Tobacco ..	..	..	..		19.7		40.0	
(c)						Sind		Baluchis- stan	
	Grapes ..	..	..	..		2.7		13.0	
	Hen Eggs ..	..	..	..		13.0		43.0	
(d)					Bombay	Baroda		Bombay States	
	Rice ..	..	..	60.0		20.0		66.0	
	Wheat ..	..	..	(20.0)		10.0			
	Potatoes ..	..	..	17.8		2.3			
	Grapes ..	..	..	.7		1.7			
	Citrus fruits ..	..	..	2.0		24.1			
	Hen Eggs ..	..	..	48.0		32.5		70.0	Western India States
								32.5	Gujarat States
								48.0	Deccan States
	Tobacco ..	..	..	11.0		9.5			
(e)					Madras	Coorg	Travan- coro	Cochin	Other Madras States
	Rice ..	..	..	35.0		35.0	91.0	91.0	
	Bananas ..	..	..	5.0		1.1	33.3	10.0	
	Cashewnuts ..	..	..	4.5		—	1.0	1.0	
	Citrus Fruits ..	..	..	7.0		1.7	6.3	6.3	
	Hen Eggs ..	..	..	20.0		34.3	25.0	32.6	30.0
	Duck Eggs ..	..	..	5.0		5.0	10.0	5.0	10.0
(f)	Bikaner only.								
(g)	Bhopal 50, Narsingharh 66, Rajgarh 75, Gwalior 25.								
(h)	Orchha 75, Rewa 70, Bharatpur 67.								
(i)	Gwalior only.								

* While in India I got access to a belated report of the Price Stabilisation Committee (unpublished and confidential), which dealt with all sorts of hypothetical situations arising in the international markets. The upshot of it all was that nothing should be done at the present moment. What was overlooked was that it is precisely to immunise the economy from international viruses that the plea for price stabilisation drew its support. Price stabilisation can be an attempt parallel to those made in the Western countries to secure and maintain full employment. The easiest way to avoid trade cycles in a country like India would be to aim at maintaining (or rather acting in any desirable direction on) agricultural incomes of which the most important factors would be the quantities and the prices at which the bulk of the agricultural population parted with its crops. But this factor (it is my impression) has been consistently overlooked by those responsible for the economic and monetary policies of the Government of India.

For what it is worth village retention, mostly based on the *Marketing Reports* and as adopted for each Trade Bloc, is given in Table 71 as per cent of total outturn and in Table 72 in absolute quantities for the consumption year 1937-8. Figures in brackets indicate guesses in respect of units for which *Marketing Reports* provided no information. As is obvious, retention percentage varies from province to province, and how far the Food Department's 'standard' of 60 per cent gave them a correct picture of the true situation in respect of each unit (province, state, or region) is doubtful. It is not uniform even over a unit. The ratios expressed here are often median or mean between the extremes. The figures are given in per cent ratios, as 'inquiries' by the Marketing Adviser received replies in percentage terms. Where quantities were given in the *Marketing Reports*, these were generally worked out by applying these ratios to the average of three years' production, and hence there was no independent significance in these.

For some of the products India and Pakistan totals only were available, and unit break-up was not possible. These were :

	Per cent of Production	Quantities Retained in 1937-8	
Betelnuts	21.5	48.2	million lbs.
Gur	20.0	853	000 tons
Milk* : Cow Milk	29.0	7,018	million lbs.
Buffalo milk	23.0	6,206	million lbs.
Goat Milk	71.0	1,148	million lbs.
Other Milk	100.0	11	
Total ..	27.2	14,383	
Fish : Sea Fish	7.5	32	000 tons
River Fish	10.0	25	000 tons
Coffee	1.7	3.6	million lbs.

Having nothing to fall back, conjectures had to be resorted to for estimating the retention of other commodities. In cereals and pulses group the retention for rice, wheat, barley and gram was available, and it had to be guessed for *jowar* and *bajra*,† maize, *ragi*, small millets and pulses other than gram. Rice and wheat are considered 'major cereals', partly because of their quantitative significance in Indian and Pakistani diet, and partly because they are more expensive per unit of weight than are the 'inferior cereals'. Rice is not easily substitutable, but for wheat millets and maize can be substituted. Because of its higher cash value, proportion of wheat marketed is higher than that of inferior cereals. Thus barley

* Estimates of production and retention are net of quantities drawn by calves and kids.

† *Jowar* is translated as 'great millets' and *Bajra* as 'spiked millets' in Official Statistics.

TABLE 72.
Gross Village Retention (Quantities), Consumption Year 1937-8.
 (000 Tons, except eggs 000,000)

Trade Bloc (1)	Rice (2)	Wheat (3)	Barley (4)	Gram (5)	Potatoes (6)	Bananas (7)	Grapes (8)	Cashew Nuts (9)	Citrus Fruits (10)	Sugar Cane (11)	Desi Hen Eggs (12)	Duck Eggs (13)	Tobacco (14)
Assam ..	1,636	22	..	(6)	40.5	119.9	..	..	3.2	4	10.9	8.4	..6
Bengal ..	5,354	22	16	37	57.4	587.3	..	.13	2.6	257	137.2	42.9	2.0
Bihar ..	2,421	168	384	396	180.4	4.5	..	..	..	586	112.8	6.8	3.2
Orissa ..	2,283	(1)	..	2	.1	17.6	..	.06	(.1)	146	27.1	4.5	.7
U.P. ..	1,330	1,273	1,250	1,080	158.2	..	..	..	..	5,371	46.3	5.0	2.4
Punjab ..	167	2,279	120	700	3.7	..	..	..	.3	1,137	15.3	.1	6.7
Delhi ..	..	(8)	4	7	..	..	..	..	..	6	.2	(..)	..
N. W. F. P. ..	(3)	(175)	10	7	4.8	..	.02	..	.1	97	11.4	.1	.4
Sind ..	158	134	2	11	.3	..	.89	..	..	11	5.7	..	..
Bombay ..	743	(83)	(5)	36	10.3	..	.03	.09	..	297	58.0	1.6	6.1
C.P. ..	1,351	352	(2)	108	.3	.2	..	..	7.5	48	45.2	.7	3.6
Madras ..	2,090	..	..	14	15.8	88.6	.01	.97	..	242	65.0	1.9	10.3
Rajputana ..	(13)	88	30	93	..	..	..	..	..	77	8.8	(.1)	(.3)
Central India ..	(53)	257	58	71	.3	..	..	..	..	79	5.8	(.1)	.8
Hyderabad ..	203	21	2	27	..	.8	.01	..	.6	75	55.3	.3	.6
Mysore ..	88	(1)	..	(2)	2.9	1.3	..	1	..	77	37.8	.1	.1
Kashmir ..	(287)	77	28	(2)	..	..	..	..	..	12	11.0	(3.1)	.1
Non-Reporting Units	(350)	(100)	(2)	..	7.3	2.4	.01	..	.1	25	..	..	1.0
Total ..	18,530	5,040	1,913	2,599	482.3	822.6	.97	1.26	15.4	8,547	653.8	75.7	38.9

shows a retention percentage of 70 as against that of wheat which is 49. Agricultural population which is generally poorer, holds back a larger proportion of inferior cereals. *Jowar* is the most significant crop from the point of view of human diet in rural parts of India. "The pecuniary value of wheat crop is, of course, much greater than the *juar*, but wheat in India as a whole is grown far more as a source of revenue than as an article of diet to the actual cultivator."* Pulses other than gram, on the other hand, have a greater market significance than gram and fetch higher prices. Other factors taken into consideration were the amounts required for seed and stockfeeding, to be discussed presently. Taking into account all the descriptive (rather than quantitative or analytical) material available in respect of these crops, arbitrary retention percentages (of production) were adopted as follows :

Millets and Maize	80
Ragi	90
Pulses other than Gram	40

Break up for each unit was out of question, and the same percentage was adopted for all trade blocs. Retention in case of oilseeds is relatively small and estimates of gross retention were not prepared. Net consumption of linseed on the farms was taken uniformly at 21,000 tons, and 2 per cent of production for groundnuts. An equal quantity of groundnuts is decorticated and crushed into oil on the farms. 'Net retention' of all other seeds for consumption or turning out products was neglected. Of eggs besides hen eggs and duck eggs considered above, estimates of retention of the following were also prepared for each unit on the basis of data in the *Marketing Report*. Only India and Pakistan totals are given below :

		Per cent of collec- tion	Number 000
Improved Hen Eggs	..	28.7	21,462
Turkey Eggs	..	81.1	313
Guinea Fowl Eggs	..	57.4	14,926
Goose Eggs	..	83.8	1,853

Of poultry, 50 per cent was assumed to be consumed by the producers. One would very much like to know the retention and year to year changes in the 'luxury' item of milk products, particularly ghee. A constant retention of approximately 10 per cent of market value was assumed, and no quantity estimates were prepared. Retention of tea was assumed to be negligible.

A problem that has constantly hovered round the entire work and for which a solution has hardly been found is how best to

* Sir George Watt: *Dictionary of Economic Products of India*, Part III, Vol. VI, pp. 296-7.

utilise this type of general percentage information (undated or dated for one particular year) for constructing a proper time series. In this instance there could be three possibilities: (a) that retention remained the same in quantity for all the ten years, (b) that it remained the same as a proportion of production and (c) that it neither remained the same in quantity nor proportion. Obviously the last would be the true situation. But there was no information by which a relationship could be established between prices and retention, or any of the various factors relevant to the problem in hand. It was not even possible on purely *a priori* grounds to postulate that the normal laws of supply apply to agricultural output. A fall in output or a fall in prices might so impoverish the farmers that they are "induced" (to borrow a Marshallian phrase) to part with more grain in order to obtain necessities like clothes. Or a rise in prices may make them content with their sales, and may increase their own demand for food. Thus apart from the working out of quantitative results, even the direction, in which answers to the problems might be found, could not be known.

Having no wheel to steer by, the middle course was chosen. It was assumed that with the increase in outturn, part of the quantity so increased would be available for sale on the market. This was satisfied by the assumption (b), that the proportion of village retention was constant over time and varied with output.*

Quantities Retained for Seed

Not all the quantities of retention are for human consumption. Deductions had to be made in respect of the quantities used for seed and stockfeeding. These are to be treated as 'unfinished' products and have to be excluded before valuation is proceeded to. The same difficulty as in case of retention arose here as well. The seed-rates vary from place to place depending on soils and methods of cultivation. And they vary from crop to crop. The Food Department's performance in this respect was equally unhelpful. In their publication, the *Food Statistics of India*, they had adopted the omnibus figure of 12½ per cent in case of each province and each cereal to allow for seed and wastage.† This must have seriously affected their estimates of quantities available for procurement, and the error might have been very significant in the case of an individual province or state.‡

* A more complicated method would be to work out an index of agricultural incomes by supposing that all output was sold at the ruling prices, and relate village retention with this hypothetical index of incomes. One could still complicate this by assuming a constant quantity retention for the satisfaction of minimum needs, and the rest being retained or offered for sale according to the index of hypothetical incomes calculated for the rest of the disposable supply. But the data at disposal were too inadequate to justify such acrobatics.

† *Food Statistics*, pp. 118-136.

‡ Their per capita estimates of cereal consumption in each trade bloc were also erroneous on this account.

TABLE 73.
Seed Requirements (Pounds per Acre).

Trade Bloc (1)	Rice (2)	Wheat (3)	Barley (4)	Gram (5)	Linseed (6)	Groundnuts in Shell (7)	Potatoes (8)	Sugar Cane (9)	Notes (10)
Assam ..	23.7	..	..	(56.0)	14.0	..	1,042	..	
Bengal. ..	39.6	82.0	78.6	42.8	21.0	(89.0)	568	424	
Bihar ..	57.9	100.0	60.9	63.8	12.0	..	757	2,247	
Orissa ..	66.9*	100.0	..	(56.0)	12.0	89.0	362	2,736	* Orissa Eastern States (73.2)
U.P. ..	33.8	103.0	76.2	62.7	20.0	(89.0)	494	2,333	
Delhi ..	..	82.0	69.0	40.9	..	..	..	(3,539)	
Punjab ..	9.05a	50.0	53.6†	39.9	16.0	(89.0)	783	678	† Punjab Pun. St. 54.2 73.1
N. W. F. P. ..	(47.04)	50.0	61.4	39.0	(15.0)	..	1,317	1,920	
Sind ..	49.1	100.0	74.6	42.8	..	..	798	2,867	
Bombay ..	50.6	82.0†	(68.5)	34.5	13.0	100.0§	981	3,323	‡ Bombay Baroda 85.0 100.0 101.0
Madras ..	41.6	(80.0)	..	43.5	12.0	114.7	1,522	4,285	
C.P. ..	73.7	86.0	(68.5)	38.3	14.0	79.0	897	2,489	
Rajputana ..	(47.04)	82.0	69.9	69.4	20.0	(89.0)	..	(3,539)	
Central India ..	(47.04)	85.0	72.35	33.4	14.0	(89.0)	588	(3,539)	
Hyderabad ..	47.6	66.0	(68.5)	47.9	10.0	85.0	1,234	3,240	
Mysore ..	41.0	(80.0)	..	(56.0)	(15.0)	78.0	938	2,116	
Kashmir ..	23.8	(81.0)	76.8	(56.0)	21.0	(89.0)	..	(3,539)	
Non-Reporting Areas ..	(47.04)	(89.6)	(68.5)	..	(15.0)	..	..	3,539	¶ Weights propor- tionate to area sown for crop year 1938-9.
India & Pakistan¶ ..	47.25	82.3	71.4	49.1	15.1	103.8	702.1	2,036	

(a) Punjab figure for rice is extremely low and hence neglected.

TABLE 74.

Seed Requirements (Quantities).*

To be deducted from supplies available for Consumption in the year 1937-8.

(000 TONS)

Trade Bloc	Rice	Wheat	Barley	Gram	Lin-seed	Ground-nuts (in Shell)	Potatoes	Sugar Cane
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Assam ..	56.7			(.6)	.044	—	14.7	—
Bengal ..	428.1	5.9	3.3	5.8	1.284	.1	21.0	60
Bihar ..	272.9	53.9	35.4	42.9	3.146	—	30.5	412
Orissa ..	270.6	.2	—	(.2)	.043	.6	.5	72
U. P. ..	120.0	353.2	118.8	130.3	8 519	(5 2)	33 9	2,325
Delhi ..	—	2.0	.5	1.0	—	—	—	6
Punjab ..	(24.8)	260.1	26.7	89.5	.243	(1.8)	4 7	179
N. W. F. P. ..	(.9)	22.9	4.9	2.5	—	—	2.5	60
Sind ..	27.6	67.4	(1.2)	7.4	—	—	1.2	9
Bombay ..	61.8	88.2	(.7)	12.2	.791	111.1	9.8	169
C. P. ..	260.1	131.8	(.5)	21.2	8.850	7.9	1.3	44
Madras ..	197.9	(.5)	—	1.6	.011	241.3	10.5	212
Rajputana ..	(1.2)	56.7	12.4	30.9	1.590	(.8)	—	77
Central ..								
India ..	(6 4)	149.3	5.4	24.7	2.575	(2.3)	.3	79
Hyderabad ..	23.2	40.0	(.4)	27.0	2.239	56.5	.2	45
Mysore ..	13.5	(.1)	—	1 0	(.007)	6.9	2.2	47
Kashmir ..	5.4	21 1	2.2	—	.263	—	—	12
Non-Reporting Units..	(21.0)	10.0	(.1)	—	(.174)	—	6.5	2
Total ..	1,792.1	1,353.3	212.5	398.8	29.736	434.5	139.8	3,810

Marketing Reports and *Watt's Dictionary* were the only sources of estimates on seed requirements. The *Marketing Reports* took into consideration the character of soil and methods of cultivation in each region. The rate of seed per acre of area sown was worked out for each trade bloc and given in Table 73. An error in the expression of the results of their inquiries given in some of the *Marketing Reports* was that the seed requirements were given as per cent of production. The quantity required as seed in a year is not so much a function of the current harvest as of the area sown for the next year's crop. Area sown in the following crop year was,

* Of these the quantities purchased on the market are as below :

	Wheat	Barley	Gram
Bihar ..	—	—	1.1
U. P. ..	—	—	2.8
Punjab ..	—	—	1.0
Sind ..	—	.4	1.2
Bombay ..	55.2	—	1.1
Rajputana ..	—	—	4.3
Central India ..	—	—	1.2
Hyderabad ..	29.0	—	3.2
Total ..	84.2	.4	15.7

therefore, considered and the seed requirements for this area were deducted from the current year's production. A uniform seedrate was taken in the case of all the ten years. This neglected the effects of the changes in the methods of cultivation and in the quality of seeds on the quantities required per acre. On circumstantial evidence it seemed that the methods of cultivation had undergone very little change, but factors like the progress of irrigation, the provision of improved seed, the bringing into cultivation of inferior lands, etc., might have affected the position considerably. The progress in irrigation and the provision of improved seed might lead the seedrate to decline; on the other hand, the bringing into cultivation of inferior lands might bolster up the seedrate. On balance, the significance of these opposing forces was assumed to be small and was accordingly neglected. Also neglected was the land, which being first sown with one crop, and that crop having failed, which was sown again with another crop and which was entered only under the second crop in official statistics.

Not all the quantities required for seed are obtained from retention. In some parts of the country, particularly in Bombay and Hyderabad, part of the seed requirements are met through purchase, and thus the total quantities of seed requirements had to be broken down into (a) quantities obtained from retention and (b) quantities obtained through purchase on the market. Information available in the *Marketing Reports* was utilised in this context.

In the case of potatoes retained for seed about 50 per cent. are lost in storage, and in some of the observations given in the *Marketing Report* the percentage is higher. Thus, in estimating the net retention, an equal quantity (as required for seed) was deducted from gross retention for these losses. Thus retention for seed would be double the quantities actually used as seed. The figures given in Table 74, refer only to the latter.

In respect of crops for which information was not available in the *Marketing Reports*, the main source drawn upon was Watt's *Dictionary*. Watt's observations belonged to the 'nineties of the previous century, and how far these were relevant to the conditions in the thirties of the twentieth century was a problem for which no answer could be found. The information was very sketchy, and unit break up was not adequately available. Global rates were, therefore, adopted and were uniformly applied to each area. This certainly gave a wrong picture in respect of any individual unit, and should be revised when more information is available. Lack of space forbids the description of the welter of information from which each individual seedrate was adopted. Simply the results are given below.

Lbs. per acre

<i>Jowar</i>	..	..	..	10
<i>Bajra</i>	..	..	..	8
<i>Ragi</i>	..	..	..	15
Maize	..	..	..	10
Small Millets	..	..	..	10
Pulses other than gram				50
Sesamum	..			11½*
Rape and Mustard	..			10
Castor	..	..	..	14

TABLE 75.

Eggs Retained for Hatching

Trade Bloc (1)	Per cent of Collection		Number 000	
	<i>Desi</i> Hen Eggs (2)	Duck Eggs (3)	<i>Desi</i> Hen Eggs (4)	Duck Eggs (5)
Assam	28.7	28.8	4,448	3,612
Bengal	50.0	15.0	129,427	32,148
Bihar	18.8	5.0	27,178	618
Orissa	35.4†	4.3‡	16,065	790
U. P.	10.0	10.0	23,175	2,518
Punjab	7.73§	13.7¶	6,473	126
Delhi	20.0	(25.0)	51	7
N. W. F. P.	33.0	33.0	8,781	125
Sind	12.8||	5.0	3,423	6
Bombay	4.0**	60.0	4,806	1,453
C. P.	40.3††	50.0	28,387	484
Madras	16.9‡‡	3.4§§	52,473	1,044
Rajputana	30.0	(30.0)	3,792	83
Central India	30.0	(30.0)	2,480	53
Hyderabad	8.0	8.0	14,736	68
Mysore	34.0	7.0	18,889	33
Kashmir	25.0	(25.0)	7,848	1,535
All-India	21.7	13.7	352,432	44,703

No deduction was required for coconuts,¶¶ tea, coffee, citrus fruits, bananas, grapes, cashewnuts and tobacco.

*	Madras	..	..	..	9
	Mysore	..	..	..	13
	Punjab	..	..	..	7½
	Bengal	..	..	..	15
	C. P.	..	..	..	4
	U. P.	..	..	..	16

† Orissa 18, Bundelkhand 30, Eastern Agency States 50.

‡ Orissa 18.6, Orissa States (30.0).

§ Punjab 8.3, Punjab States 5.

¶ Punjab 15.3, Punjab States 3.

|| Sind 5, Baluchistan 33.

** Bombay and Deccan States 3, Baroda and Gujarat States 12.5, Western India States 30.

†† C. P. 34, C. P. States 50.

‡‡ Madras 18, Coorg 33, Cochin 8.1, Travancore and Other Madras States 10.

§§ Madras and Coorg 3, Cochin 1.5, Travancore and Other Madras States 5.

¶¶ *Report on the Marketing of Coconuts and Coconut Products*, p. 40.

"The utilisation on this account, unlike annual crops, is almost negligible."

Parallel to the seed requirements for crops deductions were made for the eggs hatched and hence not available for consumption. The percentage and quantities of *Desi* Hen and Duck eggs are given in Table 75. The global figures for other varieties :

Type of Eggs	Per cent of collection	Number 000
Improved Hen	11.8	8,820
Turkey	78.9	304
Gunea Fowl	47.9	12,453
Geese	72.5	1,604

Quantities Retained for Stockfeeding

Deductions on account of quantities fed to cattle and poultry have to be considered next. Cattle are mostly fed on fodder crops which were not taken into account, as none enters human consumption. Where non-fodder crops are given to animals, it is mostly by-products and not grains or oilseeds. Thus bran and husk obtained from manufacturing flour, or straws of maize and *jowar*, or oilcakes obtained after extraction of oil, are fed. Deduction had to be made only for the relatively small quantities of grains, pulses and seeds which are used for stockfeeding in the same form in which they are consumed by human beings, and the production and retention of which have been discussed so far. Of the cereals negligible quantities (about 2,000 tons) of *paddy* are fed to cattle. "The quantities of wheat actually used for feeding to poultry, cattle, etc., are almost negligible."* The main deductions were to be made for barley, *jowar*, *bajra* and small millets, maize, *ragi* and

TABLE 76.
Stockfeed Requirements (Per cent of Production).

(1)	Barley			Gram			Sugar cane From Retention
	From retention (2)	From Market Supplies (3)	Total (4)	From Retention (5)	From Market Supplies (6)	Total (7)	
Assam	2.0	16.67	18.67	10.0	10.0	20.0	—
Bengal	—	—	—	—	24.1	24.1	—
Bihar	3.0	.44	3.44	11.9	3.6	15.5	.2
U. P.	5.0	1.76	6.76	10.0	4.1	14.1	.4
Punjab	12.0	34.40	46.40	25.0	5.9	30.9	11.0
Delhi	10.0	—	10.00	5.0	21.4	26.4	—
N. W. F. P.	6.0	50.00	56.00	4.0	37.0	41.0	—
Sind	20.0	6.5	26.50	5.0	12.7	17.7	—
Bombay	6.0	50.00	56.00	2.3	8.8	11.1	—
C. P.	6.0	—	6.00	3.7	10.7	14.4	—
Madras	—	—	—	—	12.5	12.5	—
Rajputana	—	—	—	3.0	7.3	10.3	—
Central India	15.0	—	15.00	7.5	9.3	16.8	—
Hyderabad	—	—	—	—	9.6	9.6	.4
Mysore	—	—	—	—	33.3	33.3	.4
Kashmir	10.0	—	10.00	—	—	—	—
Other Areas	—	—	—	—	—	—	—
India and Pakistan	6.0	5.7	11.70	11.6	6.4	18.0	1.1

* Report on the Marketing of Wheat, p. 61.

gram. A large proportion of quantities used for stockfeeding are obtained from 'retention', but a not insignificant proportion is also obtained through market. The quantities of barley and gram utilised for stockfeeding and to be deducted both from quantities of village retention and market supplies were taken from the respective *Marketing Reports* as percentages of production, which were treated as constant over the entire period. Detailed information for the rest was not available. On the basis of miscellaneous data the following percentages were uniformly adopted for all units :

Jowar	..	..	10
Bajra	..	..	5
Maize	..	..	5
Ragi	..	..	50
Small Millets	..	..	10

All these quantities were deducted from village retention. Besides a flat deduction of 1,000 tons of rice was made from village retention and 500 tons of linseed from market supplies available for direct consumption as for stockfeeding. None of the remaining crops, it was understood, is fed to cattle. Of the crop products 5 per cent of *gur* is used as stockfeed, and was deducted.

Losses in Storage and Transit

A factor of some importance in a consideration of consumer purchase is the wastage and losses in storage and transit. Losses may be in respect both of quantity and value. The latter may be described as quality losses. The main factors responsible for losses are climatic conditions and insects (particularly weevil) and vermins. Some quantities are also lost in handling and transportation. There were no scientific experiments to ascertain the actual loss due to these factors. The *Marketing Reports* bristled with descriptive accounts and often gave estimates of quantity and value losses for various commodities. The Food Department could have worked out losses incurred by them in course of the supplies they handled. So far as their publication went out of the available production they uniformly deducted 12½ per cent for seed and wastage, the residual supplying the basic quantities a proportion of which possibly set the target for procurement. *Marketing Reports* referred to general trade practice, and gave estimates of losses on the basis for allowances that were made in commercial transactions.

Deductions were not made on this account for the following reasons :

The study is concerned with the values that were paid by consumers (or could be imputed to them) when they purchased (or retained) a commodity with a view to ultimate consumption. Subsequent losses incurred by them, on account of rats in their houses for

TABLE 77.

Stockfeed Requirements (Quantities), Consumption Year 1937-8.*
(000 Tons)

	Barley			Gram			Sugar Cane From Village Reten- tion
	From Village Reten- tion	From Market Sup- plies	Total	From Village Reten- tion	From Market Sup- plies	Total	
Assam	—	—	—	.6	.6	1.2	—
Bengal.. ..	.6	5.2	5.8	—	17.8	17.8	—
Bihar	13.0	1.9	14.9	58.9	17.8	76.7	11
U. P.	80.1	28.2	108.3	155.5	63.8	219.3	156
Punjab	33.4	95.6	129.0	328.8	77.6	406.4	602
Delhi	.6	—	.6	1.2	5.1	6.3	—
N. W. F. P.	3.2	26.5	29.7	1.6	15.2	16.8	—
Sind	1.2	.4	1.6	2.7	6.7	9.4	—
Bombay	.4	3.5	3.9	2.4	9.2	11.6	—
C. P.	.2	—	.2	8.0	23.1	31.1	—
Madras	—	—	—	—	2.4	2.4	—
Rajputana	4.5	—	4.5	14.2	27.3	41.5	—
C. I.	12.3	—	12.3	21.2	26.3	47.5	—
Hyderabad	—	—	—	—	18.8	18.8	—
Mysore	—	—	—	—	2.0	2.0	2
Kashmir	4.6	—	4.6	—	—	—	—
Other Areas	—	—	—	—	—	—	4
Total	164.1	161.3	315.4	595.1	313.7	908.8	775

instance, do not reduce the value of consumer purchase. Village retention 'net' after deduction on account of seed and cattle-feed falls into this category, and no allowance was made in respect of losses incurred in storage before final consumption.†

Of the marketable surplus before it reaches consumers losses may occur (a) in long storage in expectation of sale at a more favourable date or (b) in handling, transportation and short period storage incidental to all sales. The losses of the quantities stored may be a significant proportion but the quantities so stored are small. The distributive losses, on the other hand, may be incurred on a large amount of the market supplies, but the loss percentage is negligible except in the case of perishable items.

(a) The losses in storage are due mainly to climatic conditions, and these do not necessarily act adversely. Purchase is by weight, and during the monsoons, grains absorb moisture and gain in weight. Thus the *Report on the Marketing of Wheat* noted the significance of this factor "so much so that the cost of carrying wheat over the monsoons is reckoned by some merchants to be offset by the gain in weight."‡ It is, however, possible to have an

* Indicates negligible quantities.

† Proper adjustments on this account should be made before accepting the quantity balances given here for analytical studies on nutrition, etc., where the object of concern is physical consumption, rather than the economic act of purchase.

‡ *Report on the Marketing of Wheat in India and Burma* (1937), p. 214.

increase in weight with a fall in value. The calendar of the operation of this climatic factor (crediting the activity of insects also to this account) is somewhat as follows :

- “(1) Up to the beginning of rains the weight tends to decrease due to drying up of moisture in the grain.
- (2) During the rainy season the weight increases.
- (3) Towards the end of the rainy season grain tends to be attacked by insects and such an attack sets in a tendency to decrease the weight.
- (4) After the rains two tendencies work together to decrease the weight, viz. (a) gradual drying up of moisture in the grain picked up during the rainy season and (b) attack from insects.
- (5) During the winter the cold tends to resist to a certain extent the drying up of moisture in the grain, so that the rate of decrease in the weight due to drying up of moisture is retarded, but at the same time the decrease in weight due to attack from insects tends to be accelerated—this acceleration probably more than counterbalances the retardation, so that the rate of decrease on the whole tends to be accelerated.
- (6) After the end of the winter and until the grain is taken out, both the tendencies noted in (4) above work at full speed, so that the rate of decrease tends to be the greatest during this period.”*

All storage losses were, however, neglected. The marketed surplus was valued at marks up above its value at source. These marks up were obtained from the data on commodities that were directly disposed of and not held up with a view to sale in future. The choice was, therefore, to deduct the values and quantities which are lost, or as these losses are passed on to consumers, to add them in the price marks up for the residual supply. This offsetting operation was, therefore, neglected. Storage losses were, however, taken into account where the price data were obtained at the consumer end directly, i.e., on the retail basis.

(b) Transit and marketing losses, on the other hand, were included in the marks up. These were negligible except for perishable items like milk, fish, fruits and vegetables, particularly potatoes.† Percentage losses for these were adopted as below :

* J. K. Pande : *Prices of Cereals in the United Provinces* (1938), p. 112.

† Sale of potatoes is spread out over a relatively longer period, and forms a borderline case between purely storage losses and purely transit losses. In valuation, however, care was taken to avoid double deductions.

			Quantity	Retail Value
Fish	..	..	10.0	15.0
Milk	..	..	2.0	2.0
Potatoes	..	..	23.9	30.0
Citrus Fruits	..	..	1.0	5.0
Bananas	..	..	1.7	2.5
Grapes	..	..	10.0	20.0

Deductions for losses both in storage and transit had to be made where the quantities of 'unfinished' products were used in order to estimate the outturn of finished products which were valued directly, and not at marks up above the value of the unfinished products used. Oilseeds were a case in instance. Quantity losses in oilseeds, however, were negligible. The only serious deduction was for tobacco, 20 per cent of which was estimated to be lost in driage and wastage in the manufacture of products.

Stocks

Another factor influencing the quantity estimation of consumer purchase in a particular year is an increase of or draft on stocks. "As regards statistics of stocks it must be frankly confessed that there are no statistics except for some of the agricultural crops like jute and cotton which do not figure in this Manual."* With the introduction of rationing and monopoly procurement during the war years, a substantial portion of foodgrains had passed into the hands of the government and statistics for these could be available. A hope was expressed in the publication of the Food Department that "with the return of conditions to normal, steps will be taken to obtain compulsory return of stocks of all foodgrains in the hands of traders. It would, however, be more difficult to get this done in the case of producers; and it would perhaps be necessary to make some kind of a reasonable estimate of the stocks in their hands."† What is important is not so much the knowledge of gross volume of the grains held by producers but the changes in it. One fails to see how the Food Department officials with their "reasonable estimates" were going to answer the need. If for instance they found that stocks of wheat in the hands of traders were increasing were they going to assume that the producers also held large stocks or its reverse? In the meanwhile, the estimates for any particular year in this study involved an uncertain magnitude of error owing to the failure to allow for changes in annual carryovers.

* *The Food Statistics of India* (1946), p. 8.

† *Ibid.*, p. 8.

**Gross and Net Retention and Seed and Stock Feeding
Requirements, 1931-2 to 1940-1**

In this section are brought together the various items discussed above. Table 78 gives gross non-market retention for the consumption years. Tables 79 and 80 give seed and stockfeed requirements to be deducted from the supplies retained and marketed. These can now be linked up with Chapter 2 on crop utilisation, which dealt with crops the whole or a portion of which is treated as unfinished goods utilised for turning out finished products. The remaining home production available 'off' the market is assumed to be retained for direct human consumption. These quantities of 'net' retention are given in Table 81. Items for which gross retention is the same as net retention, i.e., for which all retention is assumed to be directly consumed, are excluded from this Table and are given in Table 78. Quantities available on the market, however, require a further consideration of internal and foreign trade which is taken up in the next chapter.

TABLE 78.
Gross Village Retention, Consumption Years 1931-2 to 1940-1.

Item (1)	Unit (2)	1931-2 (3)	1932-3 (4)	1933-4 (5)	1934-5 (6)	1935-6 (7)	1936-7 (8)	1937-8 (9)	1938-9 (10)	1939-40 (11)	1940-1 (12)
Rice ..	000 Tons	19,534	17,776	17,465	17,541	15,724	19,240	18,530	16,950	17,842	14,948
Wheat ..	"	4,851	4,640	4,801	4,780	4,961	4,844	5,040	5,537	5,094	5,605
Jowar ..	"	5,715	5,904	5,889	5,766	5,674	6,446	5,960	6,036	6,082	6,560
Bajra ..	"	2,844	2,787	2,640	2,549	2,671	2,385	2,578	2,512	2,382	3,036
Barley ..	"	2,002	2,007	1,978	2,026	2,108	1,938	1,913	1,729	1,555	1,623
Maize ..	"	2,508	2,394	2,218	2,422	2,415	2,241	2,369	2,206	2,496	2,495
Ragi ..	"	2,191	2,287	2,203	1,885	1,948	2,018	1,867	1,694	1,853	1,862
Gram ..	"	2,324	2,557	2,260	2,481	2,304	2,463	2,599	2,239	1,854	2,103
Other Pulses ..	"	1,537	1,539	1,507	1,478	1,490	1,428	1,406	1,469	1,475	1,352
Sm. Millets ..	"	1,273	1,365	1,248	1,110	1,207	1,140	1,084	1,180	1,147	1,272
Sugarcane ..	"	5,215	6,202	6,751	6,868	7,519	8,526	8,547	7,155	5,901	7,711
Gur ..	"	468	565	652	691	720	794	853	721	430	500
Linseed ..	"	21	21	21	21	21	21	21	21	21	21
Groundnuts	"	55.8	46.3	61.4	67.6	39.8	46.4	57.1	73.6	68.3	69.7
Direct consumption ..	"	3,288	2,731	3,620	3,983	2,346	2,734	3,866	4,339	4,028	4,108
Oil ..	000 gals.	470	470	474	491	491	482	482	487	507	(525)
Potatoes ..	000 Tons	807	822	876	879	835	805	823	840	832	833
Bananas ..	"	985	980	980	979	975	975	975	975	972	972
Grapes ..	"	699	793	887	981	1,074	1,168	1,262	1,360	1,449	1,543
Cashewnuts ..	"	6,712	7,469	8,356	9,881	11,356	13,537	15,454	17,936	19,760	22,143
Citrus Fruits ..	"	67.2	688	704	720	736	752	768	784	800	816
Eggs ..	000,000	46.4	47.5	48.6	49.7	50.8	51.9	53.0	54.4	55.2	56.3
Poultry ..	"	57	57	57	57	57	57	57	57	57	57
Fish ..	000 Tons*	13.2	13.1	13.1	13.2	13.4	13.8	14.4	14.1	14.5	14.8
Milk ..	000,000,000	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2	48.2
Betelnuts ..	000,000, lbs.*	3.4	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.5	3.6
Coffee ..	000,000, lbs.*	38.5	39.0	40.4	35.6	46.6	42.7	38.9	43.8	42.1	42.9
Tobacco ..	000 Tons*										

* Estimates for the items marked * refer to net retention for human consumption which is identical with gross retention except perhaps for linseed, groundnut and other oilseeds, part of seed requirements of which are also met from retention.

TABLE 79.
Seed Requirements.* Deductions from supplies available in Consumption Years 1931-2 to 1940-1.
(000 Tons)

Item (1)	1931-2 (2)	1932-3 (3)	1933-4 (4)	1934-5 (5)	1935-6 (6)	1936-7 (7)	1937-8 (8)	1938-9 (9)	1939-40 (10)	1940-1 (11)
Rice	1,695	1,705	1,689	1,728	1,777	1,786	1,792	1,791	1,743	1,749
Wheat	1,197	1,176	1,279	1,124	1,188	1,173	1,353	1,260	1,206	1,223
Jowar ..	169	167	168	165	186	168	174	173	173	177
Bajra	80	75	72	69	72	73	74	75	79	80
Barley	221	219	229	222	211	221	213	208	205	216
Maize ..	40	39	39	39	39	38	39	40	39	39
Ragi	49	47	47	45	45	43	43	43	44	43
Gram ..	450	394	468	394	431	446	399	337	340	370
Sm. Millets	35	34	33	33	33	33	35	33	33	36
Other Pulses	444	445	441	437	415	400	429	435	428	414
Linseed	26.2	25.3	24.7	26.1	26.3	28.1	29.7	29.4	28.7	27.8
Rape & Mustard	30.5	30.0	29.4	25.9	26.4	29.1	26.9	27.0	29.9	30.5
Sesamum	39.8	43.4	41.4	34.6	37.9	38.9	42.2	41.1	39.8	40.2
Groundnuts	263.1	327.5	358.1	244.1	249.6	329.6	434.5	413.3	411.2	414.3
Castor	11.3	11.5	11.1	10.5	10.3	10.4	9.7	10.3	9.1	9.2
Potatoes	130.3	134.2	134.3	139.3	137.6	137.8	139.8	145.4	150.0	150.0
Sugarcane	2,914	3,237	3,257	3,448	3,993	4,374	3,810	3,136	3,655	4,579
Eggs for Hatching†	368	377	385	394	403	412	420	429	438	447

* Of these the quantities obtained on the market were :

Wheat	..	..	90.4	67.8	71.2	72.0	71.6	72.9	84.2	77.3
Barley	..	..	..	..	..	..	..	..	..	..
Gram	..	..	20.6	18.4	21.4	17.8	20.5	20.7	15.7	16.6
Potatoes	..	..	3.7	6.1	4.2	5.0	4.0	3.6	3.5	5.5

A large part of the seed requirements of oilseeds are met also by purchase on the market.

† millions.

TABLE 81.
Net Village Retention Available for Human Consumption, 1931-2 to 1940-1.
(000 TONS)

Item (1)	1931-2 (2)	1932-3 (3)	1933-4 (4)	1934-5 (5)	1935-6 (6)	1936-7 (7)	1937-8 (8)	1938-9 (9)	1939-40 (10)	1940-1 (11)
Rice ..	17,838	16,070	15,775	15,812	13,946	17,453	16,737	15,159	16,098	13,198
Wheat ..	3,744	3,532	3,593	3,628	3,845	3,744	3,861	4,346	3,940	4,459
Jowar ..	4,832	4,899	4,985	4,871	4,779	5,472	5,041	5,109	5,149	5,563
Bajra ..	2,587	2,538	2,403	2,317	2,435	2,163	2,343	2,280	2,154	2,766
Barley ..	1,629	1,637	1,601	1,652	1,741	1,565	1,547	1,380	1,226	1,267
Maize ..	2,312	2,205	2,041	2,231	2,225	2,062	2,181	2,028	2,301	2,300
Ragi ..	925	969	933	793	821	854	787	710	780	829
Gram ..	1,619	1,874	1,643	1,975	1,641	1,851	1,838	1,576	1,240	1,443
Pulses, ex-Gram ..	1,093	1,094	1,066	1,041	1,076	1,028	977	1,035	1,047	967
Sm. Millets ..	1,079	1,160	1,059	939	1,024	965	914	999	971	1,077
Sugarcane : Cane ..	1,286	1,655	1,946	1,990	2,088	2,465	2,747	2,323	1,319	1,828
Juice ..	281	370	433	423	442	532	608	519	276	389
Gur ..	349	421	486	515	536	592	636	637	320	373
Potatoes* ..	217	214	214	207	224	214	210	205	207	205
Eggs ..	304	311	319	326	333	340	348	355	362	369

*Net of losses incurred in storage for seed.

CHAPTER 8

INTERREGIONAL AND EXTERNAL TRADE

The preparation of complete balance sheets for each province or state involved a consideration of market supplies exported to and imported from (i) territories within the sub-continent, i.e. 'internal' or 'interregional' trade and (ii) territories outside the sub-continent, i.e. 'external' or 'foreign' trade. Quantity estimation alone is considered here. Value problems are tackled later in Chapter 11. A very important section of trade, trade within the regions or 'intraregional' trade is not discussed here, as only quantity balances on a regional basis are aimed at. Value problems created by intraregional trade are discussed later in Chapter 11.

Interregional Trade by Roads

The significance of road traffic is mainly intraregional, for distances up to a hundred miles. For interregional distribution its significance is small and was neglected.

Interregional Trade by Railways and Rivers

Transportation by rail and river before 1922, was given in a monthly publication called *Accounts relating to Inland (rail and river-borne) Trade of India*.^{*} But it had stopped publication in 1922 and was restarted from April 1933. This time the coverage did not include traffic moved by country boats. "It was found that the interprovincial trade borne by country boats was not so large as to justify the elaborate arrangements necessary for its registration."[†] While trade carried by country boats and barges was not registered, that carried by steamships on the major rivers of India was registered by the Agents of shipping companies or by Railways in cases where they operated these services.

The *Inland Trade Accounts* gave the interregional trade for about 30 items[‡] and between 17 regions. These 'Trade Blocs', as they were commonly known, differed from the administrative units of the same names. No distinction was made in the *Inland Trade Accounts* between British India and States as such. The area enclosed by the external boundaries of a province or a major state was taken as a geographically homogeneous region and rail and river-borne trade as between these regions was separately recorded. The

* The publication is referred to hereafter as *the Inland Trade Accounts*.

† *Guide to Current Official Statistics*, Volume 2, p. 9.

‡ "It has been estimated that the commodities so selected would cover the major portion of the total traffic carried by rail and river from one province to another." (Introductory Note to the *Inland Trade Accounts*.)

estimates of production and retention of crops discussed above, were also based on these (homogeneous by assumption) trade blocs.

The detailed list of civil Districts and States comprising each Trade Bloc is given in Appendix I (a) of Volume 2 of the *Guide to Current Official Statistics* (pp. 98-9).*

Separate statistics for each of the four major Ports (Bombay, Madras, Karachi and Calcutta) and the combined total of other Madras Ports were also given. To obtain the total trade of any Trade Bloc the trade of the Port (or Ports) situated in it had also to be included.

The statistics of interregional trade are particularly important for working out a food budget for each region. But the items separately classified were too few and were not available over the entire period. Thus *jowar* and *bajra* were lumped together. 'Other Sorts' of Grains, Pulse and Flour included maize, *ragi*, small millets and pulses other than gram, each differing from the other in nutritive content. The omnibus group of 'vegetable oils' precluded an individual estimation of each oil. During the period of the enquiry statistics were recorded only since 1933, and individual items such as *jowar* and *bajra* or gram were not available separately before April 1937. A small degree of error has crept into the estimates in an assumption made necessary by the lack of data that fish, milk, beef and mutton, fresh vegetables and fresh fruits, being perishable, did not involve an interregional trade by rail and river.

Interregional Trade by Sea

The statistics on the sea-borne internal trade (commonly known as 'Coasting Trade') of India and Pakistan were not available

* For political frontiers as in 1941, the populations of each Trade Bloc were as below :

	1931	1941
Assam	9,248,397	10,930,388
Bengal	51,198,692	61,581,897
Bihar	32,367,909	36,340,151
Orissa	12,165,670	13,375,472
U. P.	49,632,222	56,366,580
Punjab	28,490,869	34,309,861
Delhi	636,246	917,939
N. W. F. P. ..	4,684,364	5,415,666
Sind and Br. Baluchistan ..	4,982,870	5,698,630
C. P.	17,821,788	19,647,781
Bombay	28,675,523	33,200,101
Madras	51,123,054	57,502,183
Rajputana ..	11,786,004	13,906,936
Central India ..	10,636,390	12,081,312
Hyderabad ..	14,436,148	16,338,534
Mysore	6,557,302	7,329,140
Kashmir	3,646,243	4,021,616

Total 338,089,691 388,964,187

to which if the population of Andaman and Nicobar Islands (29,463 in 1931 and 33,768 in 1941) was included gave India and Pakistan totals of 338,119,154 in 1931 and 388,997,955 in 1941.

in terms of regions but only for British India Provinces. The publication, *Accounts relating to the Coasting Trade and Navigation of British India** gave the trade of the five maritime provinces of Bengal, Orissa, Bombay, Sind and Madras with each other and with non-British Ports, i.e., Ports in the maritime States of Kathiawar Peninsula and the State of Travancore and the French and Portuguese Possessions on the Indian sea-board. The publication (available since April 1932) also recorded the total of intra-provincial movements of commodities by sea, but these fell out of the home-produced and imported goods.

Since all Coasting Trade was internal to the country, there should have been no difference between the total quantities leaving 'surplus' ports as exports and entering 'deficit' or 'consuming' ports as imports over a period, except for, negligible quantities lost through transit or variations in the quantities on sea, which could be neglected. Except for the mutual trade of the maritime States and the non-British Possessions, all other trade must be recorded either as imports into or as exports from British Provinces. If the total of imports recorded in the *Coasting Trade Accounts* is higher than the total of exports therefrom, it only meant that on a net balance the maritime states and the 'Foreign Possessions' exported the quantities to British India, and vice versa. Thus while it was possible to get both import and export figures in respect of British Provinces, the maritime trade of the States (trade 'internal' to the country) and of the French and Portuguese Possessions (trade 'external' to the country) could only be indirectly obtained as a 'net' balance—excess of exports over imports or vice versa. An example might be taken. The Coasting Trade figures for home-produced unmanufactured tobacco for the year ending March 31, 1937, were as below :

(lbs.)			
		Imports	Exports
Bengal	.. ..	4,194,952	12,531,493
Orissa	.. ..	122,920	7,084
Bombay	.. ..	295,275	952,459
Sind	.. ..	1,063,595	68,732
Madras	.. ..	100,231	1,848,967
Burma	.. ..	13,131,681	3,311,026
		18,908,654	18,719,761

The balance of 188,893 lbs. would be the 'net' exports of the Maritime States and/or the French and the Portuguese Possessions to British India.

It was also not possible to allocate these net exports separately to Kathiawar, Travancore and the French and Portuguese Posses-

* Referred to hereafter as the *Coasting Trade Accounts*.

sions. The latter were considered as 'foreign' countries and were not included in the list of Trade Blocs considered in this study. Kathiawar came under the Bombay Trade Bloc and Travancore under Madras. Since the mutual trade between these would not be taken into account nor could the total of net balance be allocated to each of these, the commodity balance sheets of these two Trade Blocs involved errors in their estimation. The quantities, however, were small and it was often possible to infer to which Trade Bloc the entire amount was likely to belong.

Previous to April 1937, Burma was a part of India and the trade between Burma and other Provinces was reported in the *Coasting Trade Accounts*. The next problem was, therefore, of adjusting both Coasting and Foreign trade statistics so as to exclude Burma from the first and to include it in the second. 'Exports' from Burma registered in the *Coasting Trade Accounts* could only be to India and Pakistan, including the French and the Portuguese Possessions. These were, therefore, taken as the 'Imports' into India and Pakistan during the period.* Correspondingly 'imports' into Burma represented exports of Indian and Pakistani goods (and re-exports of foreign goods) from India and Pakistan and the French and Portuguese Possessions. In the above instance of the unmanufactured tobacco, except for the strong probability that Burmese imports came from Bengal to a major extent and probably all exports went to Bengal, anything more could not be said. There were no means to allocate the share of imports from and exports to Burma to each of the Provinces. This, however, did not affect the estimation of provincial net balances. The quantities which were deducted from the column on interregional trade had to be added up in the column on external trade. Since the *Coasting Trade Accounts* were available since 1932-3 only, complete consideration of Burma trade involved some amount of guesswork for 1931-2 (and also 1930-1 where required), in the case of items for which there were no alternative sources to draw upon.

External Trade across the Land Frontiers

External trade of the Indo-Pakistan sub-continent over land was known as the Land Frontier Trade, statistics of which were available in a monthly publication called *The Rail-borne Trade at Stations adjacent to Land Frontier Routes of India*. An Introductory Note explained its scope :

"Under the existing system of registration of the land frontier trade of India, only the traffic in selected articles, at certain railway stations adjacent to the more important trade routes across

* The differences due to the small time lag between the 'exports' leaving ports in Burma and arriving as 'imports' at ports in India, were neglected.

the frontier, is registered. Stations have been selected at which it is estimated that the bulk of the inward traffic is intended to be transported beyond the frontier and the bulk of outward traffic consists of goods which have come from beyond the frontier. It is ordinarily impracticable to specify how much of the traffic of a railway station adjacent to frontier is frontier trade. But we can be sure that the figures given are accurate records of trade to and from stations at which a high percentage of the traffic consists of frontier trade."

The statistics of the Land Frontier Trade were given in three groups :

"Group (a) comprises the route which bifurcates into the Nushki-Duzdap extension and the trade towards Kandahar. This group includes Iran and Western and Southern Afghanistan.

"Group (b) comprises the trade through the North-West Frontier Province and the Punjab with Northern and Eastern Afghanistan, with Kashmir,* and through them with Central Asia and Turkestan.

"Group (c) comprises the trade through the United Provinces, Bihar, Bengal and Assam with Tibet, Nepal, Sikkim and Bhutan."†

While the statement above that a high percentage of the traffic was registered might be true taking broadly the total traffic, it might involve a significant error for any particular commodity. Thus a check on the recorded figures in Groups (a) and (b) was provided by the statistics of trade with Afghanistan available in the same publication since April, 1937. Exports of *gur*, for instance, to countries in Groups (a) and (b) amounted to 4,432 tons in 1937-8 and 513 tons respectively. "More than three-fourths of the quantity exported consist of the local produce of Peshawar and Mardan Districts and have no relation with the rail traffic. The traffic in *gur* to Iran and Central Asia is rather negligible and may not come to the level of 150 tons."‡ Recorded exports to Group (c), on the other hand, have averaged only about 500 tons. "The information collected in the course of the survey from some of the chief exporting centres revealed that the amount of *gur* exported would not be anything short of 3000 to 4000 tons. Most of the stations from which *gur* is exported on this frontier are situated in *gur* producing tracts and as such do not have any inward traffic by rail in this commodity."‡ It was noted in the case of raw wool (page 100) that imports through routes which did not end in rail-heads escaped reporting. The Tariff Board on Silk also mentioned

* Was trade with Kashmir to be treated as trade with foreign territory ? Probably it was registered on the India side of the Kashmir border, but the destination of the goods was assumed to be Central Asia, etc.

† Introductory Note.

‡ Report on the Marketing of Sugar, p. 80.

some imports from Burma which escaped registration (and duty) for the same reason. It was possible to exaggerate the incidence of these isolated examples on the limitations in the reporting of land frontier foreign trade. Where any publication drew attention to the existence and extent of unreported trade, the adjustments were incorporated into the estimates. But for the most part of the reported Land Frontier Trade statistics were assumed to represent the total overland foreign trade.

External Trade by Sea

The statistics of the Sea-borne Foreign Trade of British India were available in the *Annual Statement of the Sea-borne Trade of British India with the British Empire and Foreign Countries*. The publication was available over the entire period. Some small adjustments in classification, however, were necessary to make the publication more useful for studies of this sort. Thus, for instance, separate classification for *gur* was not available. Sugar was well covered enough to merit classification of various 'standards'. *Gur*, however, was shunted into 'Molasses (including cane and palmyra jaggery)'. But this and a few others were rather isolated examples in an otherwise exhaustive classification.

The Trade Statistics relating to the Maritime States in Kathiawar and the State of Travancore was a separate publication giving the trade of Kathiawar from April 1931 and of Travancore from April 1935. The gaps in Travancore statistics were filled up by guesses from inspection, or where larger quantities were concerned by regression on British Indian data.

No publications were available in respect of the trade with or via the French and Portuguese Possessions on the Indian sea board. Local production being insignificant, the major items were 'imports' from foreign countries landed into these ports for transmission to India, or goods from India arriving into these territories by sea or rail and subsequently shipped to foreign countries. So far as these involved sea traffic they got registered in the Coasting Trade Statistics. 'Imports' by rail into British India of the commodities first landed in the Portuguese Possession of Div passed through Kathiawar and across the Viramgam-Dhandhuka Customs Line into British India. These got registered on the Customs Line (rather inadequately), but the registration did not specify the first port of landing. There was, therefore, no way of ascertaining what part of the imports across the Customs Line was previously recorded, as would be the case with imports landed into one of the Maritime States of Kathiawar, and what part had escaped previous registration. So far as imports landed into Div were consumed in the Kathiawar Peninsula these would escape registration altogether. Similarly

imports by rail into Madras via the French Possessions would also escape registration. And so also exports by rail from Madras to these Ports (for subsequent re-export). The quantity balance of consumption in the two Trade Blocs of Bombay and Madras, therefore, are subject to errors on account of two factors :

1. Lack of data on the Coasting Trade of Kathiawar (Bombay Trade Bloc) and Travancore (Madras Trade Bloc).
2. Lack of data on the trade via and with the Portuguese Possessions (Bombay Trade Bloc) and the French Possessions (Madras Trade Bloc).

The first did not affect the global India and Pakistan figures, the latter did.

But the errors were small and were neglected.

An Illustration : Interregional and External Trade in Unmanufactured Tobacco

To illustrate the operations in connection with the quantitative estimation of internal and foreign trade a balance sheet of internal and external Trade of Unmanufactured Tobacco is worked out below. Table 82 gives the regional distribution of supplies available for manufacture in the year 1937-8. The produce is harvested in winter and most of the crop is marketed before the end of March. Thus the production and the trade movements for 1936-7 were taken into account. Table 83 gives for the ten year period global estimates of imports and exports. Tobacco is one of those unfortunate commodities in the trade of which Travancore, Burma and the Land Frontier stood out prominently. In the case of the first two there were gaps in the available information, and the last was subject to an uncertain degree of error. Notes on the two Tables indicate the considerations taken into account in respect of the figures appearing in each column.

TABLE 82.
Regional Distribution of Unmanufactured Tobacco in India and Pakistan, 1936-7.
(000 lbs.)

Trade Bloc	Production	Retention 'off' Market	Market- able Surplus	Imports			Exports			Re- Exports By Sea	Total Exports	Net Supplies avail- able for Manu- facture			
				Internal		Total Imports	Trade		Foreign				Trade By Land		
				By Rail	By Sea		By Rail	By Sea	By Sea					By Land	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Assam	13,440	1,344	12,096	16,098	4,195	2,038	250	16,348	526	12,531	248	5,000	4	526	27,918
Bengal	331,680	4,480	347,200	63,497	4,195	2,038	250	71,980	43,251	12,531	248	5,000	4	61,034	358,146
Bihar	124,240	1,568	122,672	123	123	...	...	13,890	89,347	7	...	...	...	89,347	54,687
Orissa	24,640	1,568	23,072	13,767	...	...	...	13,890	89,347	...	...	...	...	...	...
Punjab	69,440	15,008	54,432	10,930	...	...	...	15,930	2,864	...	...	3,000	...	5,864	81,522
Delhi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
N. W. F. P.	17,920	896	17,024	46,870	...	...	...	49,035	13,461	...	...	446	...	13,907	208,932
U. P.	179,200	5,376	173,824	2,005	1,064	...	2,005	3,717	1,779	69	31	677	...	2,556	5,641
Sind	4,480	...	4,480	2,005	1,064	...	648	12,201	43,154	952	8,316	...	...	52,422	71,355
Bombay	123,440	13,664	111,776	11,875	295	...	...	20,064	682	...	...	...	...	682	20,278
M. P.	28,240	2,032	26,208	20,064	...	...	...	43,062	67,995	2,038	19,408	...	...	89,441	136,761
Madras	28,240	23,072	203,868	40,963	100	2,599	...	13,461	188	...	...	...	...	188	23,463
Rajputana	8,960	672	8,288	13,461	...	...	...	13,857	2,160	...	...	...	...	2,160	23,463
C. India	42,560	1,792	40,768	13,857	...	...	...	8,454	249	...	...	...	...	2,000	29,281
Hyderabad	22,400	1,344	21,056	8,454	...	...	...	7,392	5,556	...	...	...	...	5,556	17,292
Mysore	15,680	224	15,456	7,392	...	...	...	475	2	...	...	...	...	2	4,729
Kashmir	4,480	224	4,256	475	...	...	...	...	...	...	...	...	...	...	20,180
N. R. Units	22,400	2,240	20,160	...	...	...	...	...	...	...	...	...	...	...	...
Adjustments for Burma for rounding errors	...	...	...	...	-3,311	+3,311	...	...	...	-13,132	+13,132	...	...	...	...
Total	1,252,160	87,136	1,165,024	271,208	2,466	7,979	8,213	289,866	271,208	2,466	41,135	9,123	5	323,937	1,180,953

TABLE 82.

Regional Distribution of Unmanufactured Tobacco in India and Pakistan.

(Notes)

- Column 3. Village Retention in tons to the nearest hundred converted to pounds to the nearest thousand.
- Columns 5 & 10. From 1937-8 figures were available separately for Bihar and Orissa and for the Punjab, Delhi and the North-West Frontier Province. Since the trade is internal to the sub-continent column totals are equal.
- Column 6. Figures for each Trade Bloc in this column include imports from Burma, which could not be separately allocated to each of the five maritime Trade Blocs and deducted. The total of imports 3,311,026 lbs. was, however, deducted from the global India and Pakistan figures. This was registered as Exports from Burma in the *Coasting Trade Accounts*.
- Column 7. Excludes corresponding quantities included in Column 6. Adjustments could be made on a global basis only. There were no recorded imports in Kathiawar. Imports into Travancore totalled 1,384,653 lbs., all of a particular variety, Jaffna Tobacco, from Ceylon. Imports into Madras Presidency were 1,214,254 lbs. A total of 2,598,907 lbs. for the Trade Bloc is thus obtained.
- Columns 8 & 13. The distribution of the Land Frontier Trade as between the 3 Groups (page 145) was as below: (Maunds converted to Lbs: 1 Md.—82 2/7 Lbs.)
- | | | (Lbs.) | |
|-----|-------|-----------|-----------|
| | | Imports | Exports |
| (a) | .. .. | 447,470 | 323,547 |
| (b) | .. .. | 5,200,375 | 3,353,883 |
| (c) | .. .. | 2,565,093 | 5,445,586 |
| | | — 1 | + 1 |
| | | 8,212,937 | 9,123,017 |
- The allocation of these quantities between the different Trade Blocs could only be arbitrary.
- Column 9. Equals the total of Columns 5, 6, 7 and 8. Market Supplies equal marketed surplus plus gross imports, i.e., Columns 4 plus 9.
- Column 11. The excess of exports over imports in the Coasting Trade of British India, 188,893 lbs. was credited to Travancore. Coastal exports from Madras Presidency in the year were 1,848,967 lbs. Thus a total of 2,037,860 lbs. was obtained as coastal exports of the Trade Bloc. Adjustments for Burma figures were made in the global figures. Imports into Burma equalled 13,131,681 lbs. (66.2), and this quantity was deducted. Since all Coastal Trade was internal to the sub-continent, the totals of Columns 6 and 11 are equal. There was no trade in imported tobacco between the Trade Blocs.
- Column 12. Exports to Burma being unallocable were not included in the figures of each Trade Bloc. Adjustments were made only to global figures. There were no exports from Kathiawar or Travancore.
- Column 14. Re-exports of imported tobacco. There was no re-export to Burma. Re-exports from Bombay less than 500 lbs.
- Column 15. Equals the total of Columns 10, 11, 12, 13 and 14.
- Column 16. Equals Columns 4 plus 9 minus 15.

TABLE 83.
Foreign Trade in Unmanufactured Tobacco.
(Lbs.)

Year	FOREIGN MERCHANDISE								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Imports into British India	Share of Burma in Col. 2	Imports into Kathiawar	Imports into Travancore	Imports from Burma	Imports across the Land Frontiers	Re-Exports from British India	Total Net Imports of Foreign Merchandise
1930-1	..	1,608,381	....	....	(1,600,000)	(3,500,000)	9,819,648	2,069	16,525,960
1931-2	..	2,844,919	....	....	(1,600,000)	(5,000,000)	9,237,888	2,489	18,680,318
1932-3	..	5,115,672	....	....	(1,200,000)	3,720,620	11,088,082	17,645	21,106,729
1933-4	..	4,187,024	....	....	(1,600,000)	6,334,533	7,628,379	18,612	19,731,324
1934-5	..	2,677,050	326	56	(2,000,000)	2,089,024	5,792,997	4,815	12,853,986
1935-6	..	1,920,692	1,088	....	1,631,556	1,644,441	9,624,466	51,196	14,768,871
1936-7	..	3,282,945	....	....	1,384,653	3,311,026	8,212,937	4,730	16,186,831
1937-8	..	6,597,566	....	....	2,167,869	....	9,419,410	47,501	18,137,344
1938-9	..	6,370,556	....	....	1,671,318	....	9,521,033	41,115	17,521,792
1939-40	..	5,782,824	....	....	1,235,030	....	7,317,422	20,995	14,314,281

TABLE 83.
Foreign Trade in Unmanufactured Tobacco.
(Lbs.)

Year	INDIAN MERCHANDISE						
	(1)	(10) Exports from British India	(11) Share of Burma in Col. 10	(12) Exports of Kathawar	(13) Exports to Burma	(14) Exports across the Land Frontiers	(15) Total Exports of Indian Merchandise
1930-1	..	27,970,510	2,589,219	2,164	(11,500,000)	10,329,902	47,213,357
1931-2	..	25,426,632	3,725,727	532	(11,000,000)	11,009,006	43,710,443
1932-3	..	20,892,804	1,142,316	2,280	13,399,477	9,231,058	42,383,303
1933-4	..	29,206,470	1,235,268	480	11,114,795	8,771,822	47,858,299
1934-5	..	26,349,287	4,782,503	160	11,465,854	9,102,117	45,134,915
1935-6	..	28,742,628	993,004	....	11,440,601	9,701,403	48,891,628
1936-7	..	28,525,804	523,121	....	13,131,681	9,123,017	50,257,381
1937-8	..	42,459,809	....	....	....	8,649,216	51,109,025
1938-9	..	60,142,773	....	....	....	9,961,591	70,104,364
1939-40	..	57,626,597	....	....	....	8,764,745	66,391,342

TABLE 83.

Foreign Trade in Unmanufactured Tobacco.

(Notes)

- Column 2. Imports of 'Foreign' Merchandise into 'British India'. Before 1937-8 the terms 'Foreign' excluded, and 'British India' included, Burma. Since 1937-8, Imports from Burma were included and imports into Burma were excluded.
- Column 5. Imports into Travancore prior to 1935-6 were not available. Imports into Travancore are mainly of Jaffna Tobacco from Ceylon. Ceylon figures of exports of unmanufactured tobacco were available only since 1932 and up to 1938 in the Blue Books. These exports were referred to as exports to British India. British India figures in Column 2 above did not show any corresponding imports. It appeared, therefore, that imports into Travancore were misrecorded as to Br. India in the Ceylon Blue Books. The relevant figures were as below : (Lbs.):

Calendar Year					Exports to Br. India Ceylon Blue Books	Year ending March 31	Imports into 'Br. India' 'Annual Statement'*	Imports into Travancore 'Trade Sta- tistics'
1932	..	..	..	..	1,621,929	1933	2,565	....
1933	..	..	..	..	2,165,540	1934	703	....
1934	..	..	..	..	2,719,424	1935	4,439	....
1935	..	..	..	..	1,972,383	1936	2,726	1,631,556
1936	..	..	..	..	2,665,740	1937	3	1,384,653
1937	..	..	..	..	2,413,793	1938	72	2,167,869
1938	..	..	..	..	2,099,824	1939	3	1,235,030

Imports into Travancore prior to 1935-6 were based on these figures. Figures for 1930-31 and 1931-2 are conjectures without any basis. Since all these figures are largely conjectural they are given in brackets.

- Column 6. Estimate for the years 1930-1 and 1931-2 are conjectural. Regression of imports from Burma from 1932-3 to 1939-40 on the non-Burma imports gave an explained variance of less than .15. The relevant factors probably were the outturn of crop in Burma, in Bengal, prices in Bengal and in Burma and so on, which were not considered.
- Columns 7 & 14. The figures might contain inaccuracies on account of the omission of traffic by routes not terminating into railroads. The *Marketing Report*, however, made no mention of any such traffic.
- Column 8. There were no re-exports of foreign tobacco.
 (a) from Burma to foreign countries prior to 1937-8,
 (b) from Burma to India prior to 1937-8,
 (c) from India to Burma prior to 1937-8,
 (d) from Kathiawar,
 and (e) from Travancore.
- "Imports through the ports of Foreign Possessions (French and Portuguese in India are small and almost negligible." (*Report on the Marketing of Tobacco in India and Burma* (1939), p. 54. And exactly the same words a little later: "Exports through the Ports of French and Portuguese Possessions in India are small and negligible." (*ibid.* p. 66).
- Column 9. Equals Columns 2, —3, +4, +5, +6, +7, —8.
- Column 10. Exports from 'British India' to 'Foreign' countries. 'British India' prior to 1937-8 included Burma, and Burma therefore was not a 'foreign' country.
- Column 13. Regression of exports to Burma for the eight years 1932-3 to 1939-40 on exports to all other countries gave an explained variance of less than .10. Figures for 1930-1 and 1931-2 are therefore arbitrary conjectures.
- Column 15. There are no exports from Travancore.
 Equals Columns 10, —11, +12, +13, +14.

(*) Imports from all British Possessions other than the United Kingdom, British Borneo, and Canada. Presumably all quantities were from Ceylon only.

CHAPTER 9

DIRECT ESTIMATES OF CONSUMER PURCHASE

In this Chapter are considered the commodities the consumption of which was obtained straightaway and not as a residual after allowances and adjustments were made to the estimates of production. Also considered is fuelwood the consumption of which is examined as a supplement to the estimates of production discussed in Chapter 6.

Salt

Since Salt Excise in the years under study was an important item of revenue and its production was controlled by the Government, plenty of sources were available and provided checks on each other.* Unfortunately the multiplicity of official statistics, as usual, created more problems than it solved, the main being reconciliation of two contradicting figures appearing in columns with the same titles and sub-titles. The official figures set out the total issues of salt by the Salt Revenue Departments in each Circle, and it was picked up at this stage, and taking into account trade movements, net quantities consumed in each Trade Bloc were worked out. The only point to note was the isolation of pre-issue traffic from post-issue traffic. This was done with the aid of details given in the *Indian Trade Journal*. The details of (a) adjustments between discrepancies in the *Indian Trade Journal* and the *Statistical Abstract* statistics of the total issues of salt, and (b) the ascertaining of pre-issue traffic by rail and sea were too complicated to be adequately described within the scope of a section. As an illustration, a statement on the Distribution of Excise salt for the Year 1938-9 is given in Table 84 and the various adjustments are explained in the Notes to the Table.

* The main sources used in building up estimates of consumer purchase of salt are

(a) Tables on 'Salt Statistics' in the *Statistical Abstract of British India*,

(b) Similar Tables in *The Indian Trade Journal* giving more details,

(c) *Annual Administration Reports of the Northern India Salt Revenue Departments* and (d) Aggarwal : *The Salt Industry in India* (1935).

The last while not a purely official publication was issued by the Manager of Publications, Delhi, and contained a Foreword by the Commissioner of Northern India Salt Revenue. The book had been prepared under the authority and general approval of the Government of India and provided a useful source of reference.

TABLE 84.
Statement on the Distribution of Excise Salt in India and Pakistan, 1938-9.
(000 Maunds).

Trade Bloc	Total Issues (Duty paid or Duty free)			Net Balances : Pre-Issue		Internal Trade* Post-Issue		Net Balance of salt in each Trade Bloc
	Locally manufactur- ed Salt and Indian Salt imported by sea or land	Foreign Salt	Total Issues	Traffic		Traffic		
				By Rail	By Sea	By Rail	By Sea	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Assam	....	10,353	15,273	....	....	+1,385	....	1,385
Bengal	4,920	....	....	....	+4,433	-6,109	+5,199	9,930
Bihar	....	....	....	....	....	+5,599	....	5,599
Orissa	....	....	....	....	....	-989	+151	1,140
U. P.	....	....	....	....	....	-6,228	....	6,228
Punjab	4,602	....	4,602	....	....	-1,494	....	3,108
Delhi	....	....	....	....	....	+143	....	143
N. W. F. P.	563	....	563	....	....	+395	....	958
Sind	489	48	537	....	-1,920	+61	-1,925	593
Bombay	10,888	215	11,103	-272	-3,757	-5,407	-4,657	5,068
C. P.	12,666	....	....	+272	+1,244	+2,333	+1,232	2,333
Madras	8,119	5	12,671	....	....	-1,071	....	11,316
Rajputana	....	....	8,119	....	....	-6,627	....	1,492
Central India	....	....	....	....	....	+1,102	....	1,102
Hyderabad	....	....	....	....	....	+1,640	....	1,640
Mysore	....	....	....	....	....	+666	....	666
Kashmir	....	....	....	....	....	+167	....	167
India and Pakistan	42,247	10,621	52,868	....	....	....	....	52,868

* The sign + indicates a net excess of imports over exports, and - indicates net excess of exports over imports.

TABLE 84.

Statement on the Distribution of Excise Salt.

(Notes)

(a) Total Issues included 1,791,000 maunds given free of duty or on payment of nominal duty to Indian States, French and Portuguese Possessions, and to Ammiviva Islands and for industrial, and fish curing purposes etc.

(b) The statistics on issues in the *Statistical Abstract* were available in three groups : Locally manufactured Salt, Imports of 'Foreign' Salt and Imports of Indian Salt by rail and sea from other parts of India and Aden. Aden was treated as outside India and the corresponding adjustments were made. The *Statistical Abstract* Figures of Issues were as below :

	Locally Manufac- tured Salt	Foreign Salt	Indian and Aden Salt	Total
Bengal.	7	4,014	11,252	15,273
Punjab Mines.	4,399	..	..	4,399
Mandi Quarries	110	..	..	110
Salt Range Preventive Circle	13	..	..	13
Other Internal Branches	80	..	..	80
Kohat Mines	563	..	..	563
Sind	489	1	47	537
Bombay	10,888	5	210	11,103
Madras	11,150	5	1,516	12,671
Rajputana	8,119	..	..	8,119
Total	35,818	4,025	13,025	52,868

The total of issues from Punjab Mines, Mandi Quarries, Salt Range Preventive Circle and from Other Internal Branches gave the total of issues for Punjab Trade Bloc. Konat Mines were situated in the North-West Frontier Province and gave the issues for the North-West Frontier Province Trade Bloc.

The composition of Bengal Issues of Aden and other Indian Salt was as below : Details from the *Indian Trade Journal* dated 7th September, 1939.

(000 mds.)

From Aden	5,223
Bombay	504
Okha	1,277
Navalakhī	177
Nadir	1,116
Jamnagar	489
Cutch	189
	+1 Rounding Adjustment
Total	11,252

Okha, Navalakhī and Jamnagar are Kathiawar Ports; Cutch is a State north of the Kathiawar Peninsula below Sind. But the location of Nadir was completely mysterious. No gazetteer or list of place names for India gave Nadir. Finally a Nadir was found in Egypt. It is more or less half-way between Cairo and Rosetta on the distributary of the Nile known as Fara el Gharbi. Egypt did export salt to India and salt is produced in the Nile Delta according to the *Encyclopaedia Britannica*, but a rough check up of the total imports of salt from Egypt and the imports of salt into Bengal from Nadir did not make a happy comparison. Probably Nadir salt was first imported into Aden and thence sent to India and got registered as imports from Aden and not from Egypt. Anyway

Nadir salt was taken to be 'foreign' salt within the definition of this study. The total imports of foreign salt in Bengal, therefore, added up to

(000 mds.)				
From	Aden	..	..	5,223
From	Nadir	..	..	1,116
From	Other Countries	..	..	4,014
Total				10,353

The rest went to the Column 2, which total led

(000 mds.)				
Locally manufactured Salt	..	..	..	7
From Bombay	..	..	..	504
From Kathiawar and Cutch Ports	..	..	..	2,132
From Sind	..	..	..	2,276
				+1
Total				4,920
				Rounding Adjustment

In the case of Sind all issues of not locally manufactured salt referred to Aden salt only, and the total of issues of 'foreign' salt added up to 48,000 maunds.

Bombay imports of 210,000 maunds referred to imports from Goa, a Portuguese Possession and hence this quantity was transferred to Column on 'foreign' salt to give a total of 215,000 maunds.

Madras registered no issues of Aden salt.

(c) The issues of Indian salt in Bombay included 483,000 maunds ex-bond to Calcutta. This quantity was taken as issued in Bombay, and its transport to Bengal was considered as post-issue traffic.

(d) There was next the problem of determining pre-issue traffic in salt. While Note (b) gave actual distribution of issues in Bengal, the distribution of imports during the period was as follows:—

From	Aden	..	..	4,533
From	Bombay	..	..	482
From	Okha	..	..	1,230
From	Karachi	..	..	1,920
From	Navalakhli	..	..	116
From	Nadir	..	..	1,087
From	Jamnagar	..	..	497
From	Cutch	..	..	190
Total				10,555

Exports were only to Madras and totalled only 2,000 mds. Traffic from Aden and Nadir would be registered in the *Coasting Trade Accounts* as traffic in 'foreign' merchandise, pre-issue net balance of traffic was, therefore, a net import in Bengal of 4,433,000 Mds.

The imports of Indian salt into Madras was given at 1,516,000 Maunds. The *Indian Trade Journal* gave details for 1,406,000 maunds as below:

000 mds.				
From Bombay by Sea	..	..	1-4-38 to 31-3-39	1,242
From Bengal by Sea	..	..	" "	2
From Bombay by Rail	..	..	" 31-12-38	162
				1,406

The balance of 110,000 mds. therefore gave the pre-issue rail traffic from Bombay during the three months 1-1-39 to 31-3-39.

Bombay and Sind balance could now be obtained from the above figures. Sind exported 1,920,000 maunds to Bengal by sea, and Bombay exports were as below :

By Rail to Madras	..	..	272	
By Sea to Madras	..	..	1,242	
„ Bengal	..	..	2,515	from Bombay and Kathiawar and Cutch, all belonging to Bombay Trade Bloc.
Total	..		4,029	

(e) Internal balances of railborne traffic were taken from the *Inland Trade Statistics* described in the previous chapter. Internal balances of seaborne traffic were taken from the *Coasting Trade Accounts* described in the same chapter. Post-issue Traffic could be obtained by deducting pre-issue traffic from the total of traffic during the year. The figures indicate the net excess of exports over imports or vice versa.

(f) Column 9 equals Columns 4 — 5 — 6 + 7 + 8.

Apart from the issues by the Salt Revenue Departments of the Government of India the consumption of locally produced non-excise salt should also be taken into consideration. Most of the native states had parted with the right to export production to British India, except to Bengal which was taken into consideration before issues were ascertained. The position with respect to the production and consumption of non-excise salt was as below :

Jaisalmir, Udaipur, Gwalior and Datia: Production was of the order of 1,000 maunds.

Kathiawar States: A few states were allowed manufacture, and Aggarwal reported about 5 factories producing salt by solar evaporation. Their combined production was less than 500,000 maunds in 1930-1 and totalled 2,800,000 maunds in 1934-5. Of this was taken into account 2,400,000 maunds as being exports to Bengal. Since some inferior quality of salt was produced in small states it would not be far out if the consumption of locally produced salt was put at about 500,000 maunds in Kathiawar. Local supply was not enough for consumption of all Kathiawar and supplies were imported in some of the states from the Salt Departments in the adjoining British territories, under treaty or through purchase on the market.

Travancore: Consumption was estimated by Aggarwal at 890,000 maunds. Deduction of imports from Bombay and Madras left about 200-250 thousand maunds as quantity supplied "by a few factories".

Mysore and Hyderabad: Some earth salt was produced, but the quantity was described as "negligible".

The consumption of locally produced non-excise salt was, therefore, taken at 500,000 maunds before 1933-4. From that year onward an annual **increase** of 100,000 maunds was adopted leading to a million maunds in 1937-8, which appeared to be the outside limit of such consumption.

From these quantities had to be deducted the (i) exports of duty-paid salt across the Land Frontiers, (ii) salt used for industrial purposes such as tanning, bleaching, refrigeration and fish curing and (iii) losses in storage and transit.

Exports across the Land Frontiers totalled 1,628,150 maunds and were distributed between the three groups mentioned on page 145 as below :

- (a) 1,863,
- (b) 783,021,
- and (c) 843,266.

The industrial use of salt could be indirectly estimated on the basis of refunds of duty given for salt not used in human diet. Such refunds, however, were given only when claimed, and then only if accompanied by bills of purchase, etc. The illiterate mass of tanners, fishermen or washermen rarely succeeded in satisfying the revenue clerks in their claims for refunds, and thus refunds were generally claimed and collected only by bigger merchants. The quantities for which refunds were made in 1934-5 were computed from Aggarwal as below :

(000 Maunds)

Punjab & United Province	..	118	Refund of Rs. 159,000 at Rs. 1/9 per md.
Bombay	.. ..	178	For Tanning 93,000 mds.
			For manure : denatured salt 6,000 ..
			For Fish curing .. 79,000 ..
Sind	.. ..	7	
Bengal	.. ..	81	
Madras	.. ..	312	For Fish curing .. 213,000 ..
Mysore	.. ..	22	
Total ..		718	

The Report on the Marketing of Fish estimated a consumption of about 850,000 maunds for salted fish alone on the basis of a weight ratio of 25 per cent of the quantity of fish salted. A uniform deduction of 1.5 million maunds was, therefore, taken to allow for the industrial use of salt.

Salt has been valued at the retail stage and, therefore, losses in storage and transit intervening between issue and consumer purchase should be deducted. Storage losses were mainly incurred by the Issue Departments, and distributive losses subsequent to issue were small. These were taken at 1 per cent.

The balance of consumer purchase in the year 1938-9, therefore, was :

(000 Maunds)	
Salt Deptt. Issue	52,868
Consumption of non-excise salt	+ 1,000
Land Frontier Exports ..	— 1,628
Industrial Salt	— 1,500
Losses in Distribution	— 529
Total ..	50,211

The statistics of Rail-borne Inland Trade were not available for the two years prior to 1933-4. Figures for each Trade Bloc were obtained by regression of the 8 year net balance of each, on the total of rail-borne traffic. Demand for salt was assumed to be fairly uniform over the period and the errors were expected to be small.

Intoxicating Drinks and Drugs

The items considered in this section are :

1. Intoxicating Liquors
 - (i) Country Spirits
 - (ii) Country Fermented Liquors
 - (iii) Foreign Liquors
 - (a) Spirits, imported and Indian made
 - (b) Wines
 - (c) Beer, imported and Indian made
2. Drugs
 - (iv) Opium
 - (v) *Ganja*
 - (vi) *Bhang*
 - (vii) *Charas*
 - (viii) Morphia
 - (ix) Cocaine

Being articles subject to excise ample information was available for British India, but unfortunately none for the princely States. The basic sources of information were the Provincial *Excise Administration Reports*, made uniform in the information they supply to the Centre in five 'Imperial Returns', No. 4 of which dealt with consumption, rates of duties and retail prices. The Central Board of Revenue also published *Memoranda* on Intoxicating Liquors, Hemp Drugs, Cocaine, etc., the last available issue being that for the year 1936-7.

Country Spirits. The annual consumption of country spirits in British India was directly available in London Proof Gallons. No attempt was made to estimate quantity consumption for Indian

States, consumption in which was valued on the basis of per capita expenditure in British India.

Country Fermented Liquors. No data were available on the consumption of country fermented liquor. This was primarily due to the fact that unlike country spirits, these liquors—toddy, arrack etc.—are tapped from trees and licences are issued for tapping the trees. Thus only the number of trees for which licences were issued was available. There was no further duty and the Excise Departments except in one or two cases had not bothered to collect information on the consumption of these liquors (or their prices). The exceptions were Bombay and Madras, but the figures obtained were considered unreliable.* Estimates of quantity purchase were therefore not made and values were directly estimated on the basis of the total amount of tax levied.

Foreign Liquors. The term 'foreign liquors' was understood by the Excise Departments to cover all western type of drinks such as gin and whisky, wine and beer. These had, therefore, to be divided into home produce and imports. No wine was produced in India and Pakistan and the classification was required only for spirits and beer.

It should have been easy to get India and Pakistan consumption of 'imported' foreign liquors from statistics on foreign trade, and since the British India consumption figures were available the residual quantities were considered as consumed in the States. The imports and British India consumption were :

TABLE 85.
Imports and consumption of imported Foreign Liquors.

Year (1)	Imports			British India Consumption		
	Spirits Gals. (2)	Wines Gals. (3)	Beer 000 Gals. (4)	Spirits Gals. (5)	Wines Gals. (6)	Beer 000 Gals. (7)
1930-1	905,005	219,076	3,952			
1931-2	504,311	146,424	3,141	558,703	148,251	2,933
1932-3	478,153	149,396	3,310	482,305	139,491	2,825
1933-4	497,714	162,278	3,058	463,806	126,509	2,701
1934-5	518,214	162,560	3,259	438,985	116,034	2,718
1935-6	529,126	171,300	3,446	445,280	116,281	2,887
1936-7	499,547	143,848	3,476	435,217	124,853	2,921
1937-8	522,940	155,208	3,713	434,196	112,997	2,961
1938-9	462,718	120,218	3,817	426,256	100,165	3,045
1939-40	535,065	107,289	3,101	397,342	77,250	2,527
1940-1	..	..	..	430,468	79,560	2,501

* Thus for Bombay, for instance, in 1936-7, "there was a decrease of 207,000 gallons in the reported sales of toddy. This fall in consumption cannot be reconciled with the increase of 21,000 trees licensed for tapping and merely emphasises the unreliability of the licensees' toddy consumption figures, which it is impossible for the Excise Department to check." (*Excise Administration Report*, p. 10). Conversely, in 1938-9, "the increase in consumption cannot be reconciled with the decrease in the number of toddy trees tapped, but merely emphasises the unreliability of the figures of consumption reported by the licensees." (*Excise Administration Report*, p. 10). This at least proved that there was no unilateral bias, and could it not be due to changes in the yield?

If one year's time lag is allowed for, consumption in native States calculated as a residual would show large fluctuations. This was due to the neglect to consider stocks, and was a reminder of an error which affected all the estimates of consumer purchase in this study.

The statistics of the production of Distilleries and Breweries were available from 1936-7 onwards in the *Monthly Statistics of the Production of Certain Selected Industries of India*. These statistics of production "are compiled from returns obtained from local authorities." The reported production covered the whole of India and Pakistan and still fell short of the estimated consumption in British India alone !

TABLE 86.
Consumption of Indian Made 'Foreign' Liquor.

Year (1)	Consumption in British India		Reported Production	
	Indian made Foreign Liquor Gals. (2)	Indian made Beer 000 Gals. (3)	Foreign Liquor Gals. (4)	Beer 000 Gals. (5)
1936-7	141,411	1,182	109,810	1,165
1937-8	145,920	1,319	116,660	1,257
1938-9	143,019	1,127	117,472	1,147
1939-40	129,376	1,287	130,630	1,311
1940-1	155,021	1,440	226,994	1,889

The reported production probably referred to firms employing not less than 20 persons each, and the deficiency might be due to the neglect to consider production in distilleries and breweries employing less than 20 persons each. The jump in production in 1940-1 was due to the increase in the Government demand for servicing troops and exports. The estimates of consumer purchase given in this section refer to the purchases of private individuals at full excise rates. The consumption of Indian made 'foreign' spirits and beer in the States was taken at 10 per cent of that in British India.

Opium. "Opium is produced under Government supervision in the United Provinces and under special arrangements in the Central India, Rajputana and Gwalior States. After being bought from the cultivators in crude form it is made up in the Government factory at Ghazipur and is issued into 3 different forms: (1) for sale to foreign governments as provision opium, (2) for consumption in India known as excise opium and (3) for medicinal use known as

medical opium.”* The India and Pakistan (and Burma) issue of excise opium was available in the *Statistical Abstract*. After adjusting for issues in Burma and British India consumption of princely states could be obtained as a residual. Figures for 1940-1, however, were approximate as the *Statistical Abstract* for the year was not available.

Other Drugs. The consumption of *ganja*, *bhung*, *charas*, morphia and cocaine in British India was taken directly from the *Excise Administration Reports*, and the Central Board of Revenue *Memo-randa* on Hemp Drugs and Cocaine. The excise issues of cocaine, however, appeared to fall far below consumption†, as quite large quantities were involved in illicit traffic. This was obvious from the quantities of illicit cocaine confiscated as compared with the quantities issued by the Excise Departments.

(Lb. Oz.)

			Excise Issue of Cocaine		Cocaine Seized	
1931-2	..	..	70	0	103	15
1932-3	..	..	61	0	102	1
1933-4	..	..	76	10	84	3
1934-5	..	..	71	6	120	4
1935-6	..	..	63	9	130	0
1936-7	..	..	67	12	86	7

Consumption of these drugs in the princely states was valued on the basis of per capita expenditure in British India, and no estimates of quantity purchase were prepared.

Fuelwood and Charcoal. The production of Fuelwood was estimated in Chapter 6. During his visit to India, following up the inquiries about the information collected in course of the Firewood and Charcoal Control the author got hold of a file of replies to a Circular issued by the Assistant Under Secretary of the Commerce Department to all Provinces and States in November, 1944. The Circular had sought information on the production, requirements, imports and exports of Firewood and Charcoal from each unit. The replies illustrated the chaotic situation which one comes across in replies received to this type of “inquiries”. In this instance, a certain amount of bias was also involved. Every unit seemed to be interested in understating its supplies and overstating its requirements. Some of the units misunderstood the scope of the inquiry. Since controls generally affected larger cities and towns, these provided information in respect of urban population only, and forgot to mention it in their replies. Many sent back the true but hardly

* Explanatory note to opium account in the *Combined Financial Accounts of Revenue and Expenditure of Central and Provincial Governments* issued by the Central Board of Revenue in the Finance Department.

† The same was true in the case of all narcotic drugs to a degree small or great.

satisfactory reply that they did not know. Others gave vague replies as 'deficient', 'surplus' or 'self-sufficient' without giving any quantitative estimates. Ad hoc surveys were out of question and the estimates that were sent were largely guesses. Thus the United Provinces got the per capita figure of requirements from the data on working class families in the Cawnpore Inquiry in 1937. This worked out at 7 maunds of firewood per head per annum. Some Provinces gave fantastic figures. Thus Orissa expressed its requirements at the figure of 2 tons per head of its population.

After weeding out what seemed to be grossly unreliable estimates* the requirements of firewood and charcoal stood out as shown in Table 87.

The data mainly related to urban population and only the urban requirements were considered. The ordinary charcoal kilns yield about 30 to 35 per cent of charcoal for the quantity of fuelwood used. Thus the total consumption calculated in terms of fuelwood at the rate of 7.5 maunds per annum for a total urban population of 50 millions in 1941 came to 375 million maunds.

The rural consumption of firewood was rather small. Most of the replies to the questionnaire stated that the villagers generally being poorer prefer to burn dung cakes except in the vicinity of the forests. In the latter case they collected their fuel free of charge or at reduced rates.

It was noted in Chapter 6 that the outturn itself ought not to exceed 300 million maunds (600 million cu. ft) at the most. And thus either the production or consumption estimate had to be discarded. While they involved large guesses, production statistics were considered to be more reliable of the two.

Kerosene

Kerosene is by far the most important item of fuel for lighting in India and Pakistan. Statistics of consumption were directly available in the *Statistical Abstract* and were taken from there.

Electricity

The rapidly growing consumption of electricity during the 'thirties was arrested by the outbreak of the war. The growth of consumption of electricity to an extent depended on the growth of housing; whenever a new house was built in a town served by electricity supply it invariably obtained a connection.

In 1946, the Electrical Commissioner to the Government of India published the *All-India Statistics, 1939-43* and this publication gave domestic consumption of electricity separately classified for (i) Light and Fan and (ii) Heat and Power.

* All quotations involving less than 1 maund and more than 10 maunds per head per annum were excluded.

TABLE 87.
Domestic Requirements of Fuelwood and Charcoal.

Province or State	Firewood			Charcoal		
	Population Covered by Replies 000	Requirements stated in Replies 000 mds.	Per Capita Requirement mds.	Population Covered by Replies 000	Requirements stated in Replies 000 mds.	Per Capita Requirement mds.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Madras	7,865	65,731	8.35	7,865	6,825	.87
Bombay	5,412	36,007	6.65	5,412	14,349	1.82
Bengal	60,306	302,052	5.00	5,939	2,021	.34
U. P.	6,855	47,000	6.86	....	....	....
Punjab	4,359	12,100	2.77	4,359	5,000	1.14
Sind	4,535	30,486	6.72	....	....	....
N. W. F. P.	3,038	22,664	7.46	3,038	1,286	.43
Delhi	918	1,800	1.96	918	2,160	2.35
Ajmer Merwara	584	800	1.37	584	50	.09
Br. Baluchistan	502	600	1.20	502	75	.15
Br India	94,474	519,240	5.50	28,617	31,776	1.11
Punjab States	3,872	6,448	1.67	856	36	.04
W. I. States	1,868	8,619	4.61	1,464	1,091	.75
C. I. States	5,453	6,206	1.14	5,180	562	.11
Deccan States	2,076	9,015	4.34	706	127	.18
Gujarat States	995	1,577	1.58	1,244	225	.18
Bengal States	1,504	8,078	4.71	....	....	....
Baroda	2,855	7,294	2.55	2,855	610	.21
States ..	18,623	46,237	2.48	12,305	2,651	.215
Total ..	113,097	565,477	5.00	40,922	34,427	.84

TABLE 88.
Coverage of the Statistics of Domestic Consumption of Electricity.

Province or State	Total Urban Population (1941) 000	Population Coverage (1941) 000	Col. 3 per cent of Col. 2	Domestic Consumption (000 k-Watts)					
				Heat & Power			Light & Fans		
				1939	1940	1941	1939	1940	1941
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Madras	7,865	4,166	52.9	1,883	1,824	2,090	9,288	11,007	13,095
Bombay	5,412	4,477	82.7	8,017	9,887	11,086	26,142	26,861	28,611
Bengal	5,939	4,071	68.5	4,141	5,276	6,475	60,736	63,590	62,158
U. P.	6,855	3,767	54.9	707	846	919	11,185	12,625	14,646
Punjab	4,359	2,809	64.4	2,668	2,563	2,705	8,886	9,617	10,393
Bihar	1,956	873	44.6	150	183	200	1,780	2,032	2,354
C. P.	2,094	1,189	56.8	141	141	163	1,767	2,098	2,448
Assam	281	134	47.7	279	271	291	310	362	382
N. W. F. P.	552	253	45.8	112	135	159	659	699	801
Orissa	321	178	55.45	20	20	20	362	374	420
Sind	892	847	94.95	869	935	1,071	3,201	3,435	3,854
Ajmer-Merwara	214	184	86.0	42	66	65	291	472	394
Br. Baluchistan	100	36	36.0	72	99	132	498	555	647
Coorg	11	7	63.6	....	....	....	....	....	3
Delhi	696	696	100.0	161	346	568	4,021	4,698	5,472
Br. India	37,547	23,687	63.1	19,062	22,592	25,944	129,126	138,425	145,676
Baroda	719	486	60.6	139	211	190	1,533	1,533	1,552
Hyderabad	2,194	935	42.6	302	554	585	4,556	4,940	5,328
Kashmir	414	258	62.3	9	10	16	5,893	5,729	6,282
Mysore	1,346	691	51.3	1,180	1,373	1,451	3,550	4,124	4,354
Travancore	691	236	34.15	48	57	55	754	854	1,140
U. P. States	144	32	22.2	3	5	8	298	473	761
Other States	6,641	3,169	47.7	2,155	2,298	3,044	11,707	12,290	12,684
States	12,149	5,757	47.4	4,036	4,508	5,349	27,991	29,943	32,101
India	49,696	29,444	59.2	23,098	27,100	31,293	157,117	168,368	177,777

A list of towns served by electricity was prepared with the assistance of this publication and other information on the extent of urban population covered by electricity supply undertakings. The distribution of urban population by Provinces and states and their consumption for the three years 1939, 1940 and 1941 are given in the Table 88. The population figures refer to the year 1941, and were taken from the Census Report for the Year. Census figures excluded suburbs which were generally served by electricity. In cases where an electrical undertaking served two adjoining towns and where it had not been possible to ascertain this fact, population only of the major town was included. Thus the population coverage is understated. Even as it is, average per capita consumption of population to whom electricity was available was extremely low* as a result of two factors: (i) very few people availed themselves of the opportunity of having an electrical connection, partly due to the heavy initial cost of installation, and (ii) even those that had electrical connection consumed it to a very small extent.† The latter was partly due to poverty and general congestion which involved very small living space per family and hence the smaller per capita expenditure on light.

The Foreword to the above Publication mentioned:

"In recognition of the difficulties imposed by the War on electric utilities, it has not yet been deemed justifiable to request them to supply monthly data prior to 1939. In the near future, however, the utilities will again be asked for their co-operation in an effort to compile data for some years previous to 1939."

In a mood of optimism the author addressed a Circular to all the electrical undertakings (524), requesting information on annual domestic consumption of electricity for (i) light and fans and (ii) heat and power for the years 1931 to 1945. He also inquired about the rates charged per unit and meter charges. These were followed by personal interviews. Difficulties of staff prevented most of them from complying with the request. The results are tabulated in Table 89. The population in the 23 cities and towns‡ covered by

* 6.04 units light and fans, 1.06 units heat and power in 1941.

† An instance is given below: (1941)

		No. of Consumers		No. of persons per electrical Connection	Numbers served		Per cent of Total	
		Light and Fans	Heat and Power		Light and Fans	Heat and Power	Light and Fans	Heat and Power
Ahmedabad	..	19,300	3,100	8	154,400	24,800	25.94	4.16
Surat	..	11,622	382	5	56,310	1,910	32.84	1.11
Bombay Suburban	..	8,356	1,260	10	83,560	12,600	42.54	6.41

‡ The term 'city' is used for towns with a population not less than 100,000.

replies totalled 5,342,648, i.e. 10.75 per cent. of total urban population in India in 1941. Of these 9 with a population of 4,574,668 gave information for all the ten years of our inquiry. 3 with a population of 286,152 did not give consumption for all years for reasons unspecified. Electricity undertakings in the rest of the 11 towns with a population total 481,828 commenced operation somewhere during the period. The sample thus gave plausible figure of growth in the progressive conquest of territory by electricity. Year to year allocation was likely to be arbitrary. A uniform unit increase per annum was adopted with an index starting with 92 in 1931 and running upto 100 in 1939. It was then kept constant at 100 for 1940 and 1941.

The next task was to ascertain the growth of consumption in towns already served by electricity throughout the period. Growth in consumption of light and fans and heat and power had to be separately considered. This was tried out on the basis of the data in the above sample. In case of Madras and Delhi there was no separate charge for domestic use in heating and in lighting, and thus separate figures were not maintained. Heating and power figures in the case of Panvel and Rawalpindi referred to all (domestic as well as non-domestic) use of electricity and were excluded. No adjustments could be made for Madras and Delhi, and these affected the operations to an extent. The total consumption thus of (i) 9 cities for light and fans (including heat and power for Madras and Delhi) and (ii) 5 cities for heat and power totalled as below :

Year	000 kilo-Watts	
	Light and Fans	Heat and Power
1931	.. 24,962	3,216
1932	.. 24,459	3,584
1933	.. 25,675	4,161
1934	.. 26,996	4,759
1935	.. 29,222	5,327
1936	.. 30,992	5,647
1937	.. 35,968	6,070
1938	.. 39,818	6,936
1939	.. 42,983	7,388
1940	.. 45,380	8,714
1941	.. 48,644	9,892
1942	.. 44,355	10,720
1943	.. 48,797	11,683

Regression of the last five year figures on the India and Pakistan totals given in the Electricity Commissioner's official figures gave an explained variance of .9085 for light and fans and .9792 for heat and power. The sample above contained roughly 1/3rd of total consumption, and in view of this the India and Pakistan consumption was obtained by regression values deflated for increase in the territorial coverage of electricity undertakings adopted above. The

TABLE 89.
Domestic Consumption of Electricity in Certain Towns and Cities.
(000 k Watts).

Province	Town	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
					Consumption for Light and Fans (LF) Heat and Power (HP)													
Bengal	Barisal	..	..	61,316	LF	supply commenced in 1933	11	25	47	57	73	100	114	113	119			
U. P.	Cawnpore	..	..	487,324	LF*	1961 1224 1267 1511 1700 1842 2237 2354 2760 3257 3427 3904	35	91	94	102	109	116	129	103	68			
	Aligarh	..	..	112,655	HP	1456 170 329 436 462 477	462	452	477	556	559	641	780	819	846			
	Jhansi	..	..	103,254	HP	no t a v a i l a b l e	a	b	c	178	193	199	224	233	258			
	Azamgarh	..	..	24,307	HP*	no t a v a i l a b l e	a	b	c	170	191	189	184	196	169			
Punjab	Rawalpindi	..	..	185,042	LF*	supply commenced in 1933	11	25	47	57	73	100	114	113	119			
Delhi	Delhi	..	..	659,857	LF*	2156 2219 2469 2623 3803 3397	3397	4421	4627	5054	5691	7479	6865	7282				
Bombay	Bombay	..	..	1,489,883	LF	2252 2342 2465 2665 3001 3374	3374	4051	4205	4731	5538	6260	6833	7315				
	Bombay Suburbs	..	..	196,444	HP	12108 11496 11866 12184 12894 12833	15996	17413	18980	19505	20800	18975	22530					
	Ahmedabad	..	..	595,210	HP	2947 3267 3643 4107 4603 4870	5174	5815	6125	7207	8075	8761	9539					
	Surat	..	..	171,443	HP	483 581 629 723 820 981	1174	1145	1608	1732	1879	1793	885					
	Panvel	..	..	11,984	HP*	102 117 139 141 170 201	256	372	432	492	590	701	885					
	Madras	..	..	777,481	HP*	1170 1320 1470 1650 1770 1870	2230	2730	2930	3120	3260	2970	3080					
	Trichinopoly	..	..	159,566	LF	434 531 573 588 750 884	1009	1152	1170	1240	1280	900	270					
	Srirangam	..	..	26,678	HP	7 10 15 32 54 73	123	142	184	167	157	143	133					
	Pudukkottai	..	..	34,188	HP	21 21 45 59 56 51	51	68	78	75	139	175	146					
	Mayavaram	..	..	32,670	LF	6630 6985 6873 7311 7792	8541	9131	9938	10173	10166	10404	7365	7286				
	Manngarudi	..	..	23,288	HP	Records not available	supply commenced in 1933	1159	1275	1400	1342	1495	144					
	Truvatur	..	..	22,275	HP	Records not available	supply commenced in 1933	550	626	715	691	679	47					
	East Ramnad	..	..	34,559	LF	Supply commenced in August 1937	26	87	114	135	142	163	169					
	Ambar	..	..	31,700	HP	no t a v a i l a b l e	a	b	c	14	87	105	142	218	309	270		
	Vaniambadi	..	..	31,281	LF	no t a v a i l a b l e	a	b	c	231	261	279	190	220				
	Vizagapatnam	..	..	70,243	HP	no t a v a i l a b l e	a	b	c	11	11	13	13	13	15			

* Includes non-domestic consumption as well.

estimated domestic consumption of electricity for the years 1931 and 1938, is given below :

Year		Light and Fans	Heat and Power
1931	..	85,392	11,448
1932	..	84,610	12,482
1933	..	89,697	14,058
1934	..	94,287	15,717
1935	..	99,248	17,331
1936	..	111,405	18,336
1937	..	130,371	19,626
1938	..	145,629	22,118

RAW COTTON

Apart from its consumption by factories for the production of yarn, cotton is used in India and Pakistan "for such domestic purposes as hand-spinning and the making of quilts, mattresses, padded apparel, etc."* The traditional figure of 750,000 bales was replaced by a survey carried out by the Indian Central Cotton Committee. "The investigators selected were generally either agricultural graduates or graduates in economics or statistics. Representative villages were selected, in the first instance, in consultation with local Revenue officers and subordinates and a door-to-door inquiry was made by the investigator."† This conscious selection was in the traditions of the Indian official statistics.

Consumption of cotton lint for the investigated families was as below:‡

TABLE 90.

Domestic Consumption of Cotton Lint in the ICCI Inquiry.

	Number of Persons in the Families Investigated	Total Lint Consumed Lbs.	Per Capita Consumption of Lint Lbs.
Punjab	227,318	868,090	3.832
Bombay	120,298	39,516	.328
Baroda	98,572	51,618	.524
C. P.	142,939	23,162	.162
U. P.	10,732	18,076	1.666
Madras§	447,575	188,176	.424
Sind	25,269	7,220	.286
Hyderabad	182,673	47,331	.259
Bihar	16,654	3,151	.189
Total	1,272,030	1,246,339	.9798

* *General Report on Nine Enquiries into the Village or Extra-Factory Consumption of Cotton in India, 1933-6, (1938).*

† *Ibid.*, p. 1.

‡ *Ibid.*, p. 3.

§ "Excludes Coimbatore District where consumption was exceptionally high."

With this inquiry as the basis, and the population as in 1931 the consumption outside factories was worked out as below.*

	Per Capita Consumption	Gross Total Consumption
	Lbs.	Bales of 400 Lbs.
Punjab and States ..	3.272	233,057
Bombay and States ..	.434	28,713
Baroda ..	.453	2,769
C. P. & States ..	.186	8,201
U. P. and States ..	.792	98,203
Madras and States ..	.078	10,027
Sind and Khairpur ..	.320	3,110
Hyderabad ..	.381	13,770
Bihar ..	.119	9,655
Orissa and States ..	.104	3,140
Delhi ..	.792	1,260
Bengal and States ..	.111	14,246
Assam and States ..	.119	2,774
N. W. F. P. and States	.033	387
Kashmir ..	.033	300
Mysore ..	.228	374
Central India ..	.215	5,459
Rajputana ..	.215	6,335
Total ..	.524	441,780

With minor adjustments, the extra-factory consumption was rounded off at 4,50,000 bales. The inquiry was carried out during 1933-6. Population between 1931 and 1941 rose by 15 per cent. The population weightage had, therefore, to be increased by about 6 per cent. This gave a total of 4,77,000 bales (190.8 million lbs.) as the extra-factory consumption of cotton lint.

Production of hand-spun yarn was estimated in Chapter 4 at 65 million pounds (page 77). The consumption of cotton for this might be estimated at about 75 million lbs. This left a residual balance of 115.8 million lbs. for purposes other than handspinning. There was no evidence on the annual variations in extra-factory demand for cotton and the factors affecting it. Constant quantities were adopted over the period.

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* *General Report on Nine Enquiries into the Village or Extra-Factory Consumption of Cotton in India, 1933-6, (1938), Appendix A, p. 37.*

PART THREE

CONSUMER EXPENDITURE : PRICES AND VALUES

CHAPTER 10

HARVEST PRICES AND THE VALUATION OF FOODGRAINS

The Pattern of Distribution

A whole monograph could be written on the pattern of distribution of foodgrains in India and Pakistan. Only a very simplified picture could be given here. Thus, first a large part of the outturn did not pass through the market at all, and values for these had to be imputed, and as no price data for non-market transactions could be recorded, whatever figures were adopted were arbitrary. The part that did not enter the market included producers' retention for own consumption, and payments in kind for agricultural and non-agricultural services. Producers' retention was valued at the 'net' prices these received for the crops already marketed. This involved an assumption that quantities retained by producers themselves would have been bought by them if they had not retained these, and hence should be treated as the purchase by the producers in their capacity as consumers of their own produce at the ruling prices in the market, which it was further assumed was the price they would have realised if they had chosen to sell all the outturn instead. 'Net' of selling costs an optimum distribution of supplies was thus assumed, with the ruling prices equating 'utilities' at the margin. Then there was the problem of valuing that part of village retention which was obtained by the consumers as wages. The choice was to value this at the 'cost' to the farmer, or the 'income' to the wage earner, measured in terms of what he would have had to pay if he bought the supply on the market instead of receiving it as a wage. The difference between the two was the distributive spread between the prices at two ends, the prices at which the producer sold (or it was assumed that he could sell) his produce, and the prices at which the retailer was presumed to sell it in the same village. It was valued at the (supposed) cost to the producer, primarily because wage payments in kind were predominant in surplus producing villages, where there was hardly anything like a retail market. Thus all village retention was valued at the prices the producers received for crops already marketed.*

* 'Village retention', even in the cases like crops, where all production is in the villages, is not the same as 'village consumption'. The latter is larger by that quantity which some of the villages have to procure through the market. 'Market supplies' are larger than 'marketable surplus' as they include imports. 'Urban consumption' is smaller than market supplies by the quantities exported, and consumed in the villages through purchase on the market. What was valued was not village and urban consumption but consumption 'off' the market, and through the market.

Queer situations arose sometimes; sugarcane, for instance. Whatever quantities the sugar factories required were sold to them at a price controlled by the Government. Of the rest of the supplies a part was directly consumed by the producers and a part converted to *gur*, again by the producers themselves. The only available price data related to sugarcane purchased by the factories. It was found, however, that the price of *gur* was lower than the value of equivalent quantities of sugarcane if these had been purchased by the sugar factories. Even if the price at which sugar could be sold for *gur* production was known (and it was not known) what was the value per unit of producers' own consumption? Was it to be between or below the price paid by factories and the price paid by *gur* manufacturers? It might be below both, if it was assumed that these quantities could neither be sold to the factories nor to *gur* producers. It might be in between if it was assumed that the producers consumed all they could, and sold the rest at 'scrap' prices to *gur* producers, or produced *gur* themselves. The same might happen to perishable commodities. Thus fluid milk fetched a higher price per pound than a pound converted to the manufacture of *ghee*. Where was the personal consumption of the milk producer to be placed? These are logical issues, and there were no satisfactory answers. Personal acquaintance with and judgment on an individual instance was responsible for whatever adjustments were made to the available data on the prices of actual sales, and to this extent these estimates should be considered arbitrary and involving a bias.

Next was the problem of valuing 'market supplies', and here the complicated patterns of distributive trade presented themselves for unfolding. First, a start was made with the British Province, which was divided into a number of districts. A district was the basic unit of information, and a breakdown could not be carried any further. In respect of each district were available a quotation of its outturn, and a quotation of what was known as the 'harvest price', which was the price ruling in the district at the time of harvest and was indicative of the price received by cultivators for the produce. The character of the 'harvest price' is described in the next section. The districts varied both in the size of their populations and the volume of their production. Exactly what quantities each district offered on the market was not known. The Marketing Reports gave only estimates of what the province as a whole retained in its villages 'off' the market, and what it put on the market. The provinces were fairly large units and the published quotations of district prices in a province (about 10,000 of these prices were examined) showed a 'standard' deviation as large as ± 25 per cent from their means. The difference was due (a) to quality differences and (b) to the costs of transport and distribution between the 'surplus' dis-

tricts and the 'deficit' districts. The producers in the deficit districts, for whatever (if at all) supplies they put on the market, got the higher prices.

The provinces also showed the same characteristics as in the case of districts within them. Thus there were the 'surplus' provinces, the Punjab and Sind for wheat, and there were the 'deficit' provinces, Bombay and Madras. The latter obtained part of their supplies from the 'surplus' provinces, and showed higher price levels. The market supplies showed a double movement—intra-regional and inter-regional, and the value contribution of transport and distributive agencies on the value of market supplies at producers' and import prices had to be estimated on both these accounts.

Estimation in the terms of trade blocs introduced the princely states into the picture. All available price information related to British Provinces, and there were no data on the prices in the states. Introduction of the states, therefore, involved two assumptions :—

(a) Supplies in the states which were interior to the external frontiers of a British Province and formed part of the Trade Bloc of the same name, were valued at the average of the province of which they formed part.

(b) States which formed separate trade blocs of their own, namely, Rajputana, Central India, Hyderabad, Mysore and Kashmir were divided into 'surplus' states or 'deficit' states, according to whether on balance they had a net export or import of foodgrains. The consumer purchase in the 'surplus' states was valued at the average of the prices of 'surplus' provinces, and in the 'deficit' states it was valued at the average of the prices in the 'deficit' provinces.

Harvest Prices in the Season and Crop Reports

The ascertaining and publishing of 'harvest prices' had been intended to obtain an indication of what the producers of agricultural crops actually received for parting with their produce.* In India and Pakistan where the trade cycle finds its genesis in the fall of agricultural incomes, accurate information on prices received by farmers for their crops could not be exaggerated. The unit of price quotations in official publications was the district, and district prices per maund to the nearest anna were published in the *Season and Crop Reports* of the Provinces. The information for British India was collected from provincial *Season and Crop Reports* and was given with the provincial averages in Volume I of the *Ag. Stats.*

All these prices appearing as 'harvest prices' in the *Ag. Stats.* meant different things in different Provinces. This was obvious

* Historically, for revenue purposes.

from the captions under which these prices appeared in the provincial *Season and Crop Reports*, from which they were reproduced in the *Ag. Stats.* The Punjab described them simply as 'prices', Bengal Bihar, Orissa, the United Provinces, the North-West Frontier Province and the Central Provinces described them as 'harvest prices' or 'prices at harvest time'. The Central Provinces, under the general caption, gave a sub-classification of wholesale and retail prices for each specific crop. The prices reproduced for the Central Provinces in the *Ag. Stats.* were definitely stated to be wholesale harvest prices. Assam gave these as 'harvest prices in the four *wholesale* marts of Assam'. Sind and Bombay described their quotations as '*retail* prices (prevailing at harvest time) at the headquarters station of each district'. Madras in its reference to rice, jowar, bajra and ragi prices described these as 'harvest prices based on the average of the *retail* prices reported by collectors as prevailing in two or three of the principal markets in each district.' Thus these prices were far from uniform, and had to be brought to a uniform basis before proceeding to valuation.

The number of centres for which quotations were obtained was also not uniform. Since every district had one Headquarters station, Bombay had one centre in each district; Madras had two or three. Assam had only four centres for the whole Province. In all cases these were presumably urban prices.

The prices were collected and averaged for the period—usually of 8 to 12 weeks during which the harvested produce was sold. These were thus 'prices during the harvesting period' or 'harvest prices'. They were not the prices at the place of harvest, but at the time of the marketing of harvest.

Valuation of Foodgrains at Harvest Prices

A start was made with the harvest prices; there was first the problem of working back to obtain values for retention at the source of consumption/production, and then of working forward to obtain the values of consumer purchase of the market supplies. In this chapter the problem of valuation both of retention and of marketed surplus at harvest prices is tackled. In the next chapter the operations to obtain 'net' values of village retention and the values of final consumer purchase are considered. These two chapters deal with the valuation of foodgrains only. Few other commodities supplied opportunities for a provincial breakdown of valuation, and none offered the opportunity of getting down to the output and prices in each district.

The provincial averages of 'harvest prices' as available in the *Ag. Stats.* were median averages of district prices. The median had the advantage of not being seriously affected by the outlying

values. "This property of the median assumes great importance in cases where such extreme quotations arise out of faulty recording on the part of the collecting agency."* *The Marketing Reports* also bristled with individual instances of misquotations which were explained as due to the failure of *taluk*† officials entrusted with the work of collecting prices to bestow sufficient attention to the matter. This view might not be accepted. Outlying quotations had very rarely been due to faulty reporting or printing, and this could be easily corrected by comparing these with prices for other years. There were, of course, a few instances, where prices from year to year remained the same. For example, barley in the district of Monghyr in Bihar sold uniformly at a 'harvest price' of Rs. 2/8 per maund over the entire period. But such consistent misreporting did not necessarily occur in the case of the outlying values. Experience with the district prices of foodgrains for the ten years in course of this study showed two reasons for disparity. First, there were differences in quality. Surat in Bombay always showed high prices of rice, because a special quality called *Kalama* rice was being produced there, and in a proper valuation these quality differences should be taken into account. Secondly, as noted above, the price differences within a province were the reflection of intra-provincial disparity in the conditions of market supply. The valuation of total provincial output at the median average price, therefore, involved over-estimation, as districts with large production had lower prices, and districts with small production had higher prices. The weight relative to the prices below the median was higher than that relative to the prices above it. Quality distribution might tend to aggravate or offset the error. The basis of valuation, therefore, had to be the district, and the production of each province, had to be valued at the weighted arithmetic means, and not the medians, of district prices.*

An attempt, therefore, was made to obtain the weighted means for each province and for each of the eight crops, rice, wheat, jowar, barley, *bajra*, maize, *ragi* and gram, for the crop year 1931-2 in the first instance, and for 1937-8 in the second. The adventure proved rather an expensive one with respect to time and effort. For Assam, Bihar and Orissa, the Punjab, the North-West Frontier Province and Madras outturn of each district was available, and it was a

* *Guide to Current Official Statistics*, (Third Edition), pp. 37-8.

† Sub-division of a district.

* This involved an assumption that the marketable surplus of each district was marketed in the same district. This sounds plausible, but is not quite true. In fact, in a Province there were 'Principal Markets' and 'Secondary Markets'. The latter collected the produce from the villages and passed it on to the principal markets. Villages situated near the 'principal markets' sent supplies directly to it. And the price in the 'principal market' governed the prices of 'secondary markets' and the prices paid by produce collectors in the villages. There was no reason to presume that every district head-quarters was a 'principal' or even a 'secondary' market.

smooth sailing. For Bombay prices given in seers per rupee had to be converted to Rupees per maund. Bengal, the Central Provinces, and the United Provinces, however, did not give district outturn figures. Outturn, therefore, had to be calculated according to the standard formula, area x standard yield x seasonal factor. Area had to be obtained as per cent of the normal in Bengal. In the Central Provinces area under the Temporary Settlement and under *Jagirs* had to be added up. 'Standard Yield' varied for autumn, winter and summer rice in Bengal, for early and late rice in the United Provinces and for transplanted and broadcast rice in the Central Provinces. In the United Provinces and the Central Provinces it also varied for irrigated and unirrigated land. And thus all this cross-classification of qualities and values had to be worked out before a provincial mean could be calculated.

Since the data related to British India only, the difference in the valuation of the outturn of these crops for British India is given in Table 91.

TABLE 91.

Valuation of Outturn of British India at Median and Weighted Mean Averages of District Harvest Prices in each Province.

Crop	Production 000 tons	Value at median 000 Rs.	Value at weighted mean 000 Rs.	Difference Cols. 3-4 000 Rs.	Col. 5 per cent of Col. 3
(1)	(2)	(3)	(4)	(5)	(6)
1931-2					
Rice ..	27,887	2,655,858	2,573,672	-82,186	-3.09
Wheat ..	7,258	490,674	480,881	+ 9,793	+2.00
Jowar ..	1,433	262,642	254,063	+ 8,579	+3.27
Bajra ..	780	132,843	127,831	+ 5,012	+3.77
Barley ..	2,388	122,501	124,014	- 1,513	-1.24
Maize ..	2,229	107,270	105,545	+ 1,725	+1.63
Ragi ..	1,238	73,160	75,663	- 2,503	-3.42
Gram ..	3,694	218,596	205,121	+13,475	+6.16
Total ..	51,362	4,063,544	3,946,790	+116,754	+2.87
1937-8					
Rice ..	25,974	2,383,763	2,348,383	+35,380	+1.48
Wheat ..	8,607	624,217	616,217	+ 7,482	+3.19
Jowar ..	4,039	276,148	276,658	- 510	-0.18
Bajra ..	1,904	147,620	151,404	- 3,784	-2.56
Barley ..	2,085	113,481	120,300	- 6,819	-6.01
Maize ..	2,009	118,281	115,411	+ 2,870	+2.43
Ragi ..	974	61,687	65,316	- 3,629	-5.88
Gram ..	3,238	217,822	207,361	+10,461	+4.80
Total	48,830	3,943,019	3,901,568	+41,451	+1.05

On further examination it was observed that part of the over-estimation involved in the valuation at the median could be corrected if the outturn of rice in Madras and the Central Provinces was

valued at the weighted mean of the district prices. The position of these two provinces in respect of rice was as follows :

TABLE 92.

Valuation of Rice in the Central Provinces and Madras at the Medians and Weighted Means of the District Prices, 1931-2 and 1937-8.

Year	Outturn 000 tons	Harvest Price per md.		Value at median 000 Rs.	Value at Weighted mean 000 Rs.	Difference Col. 5 —Col. 6 000 Rs.
		Median Rs.	Weighted mean Rs.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
C. P.						
1931-2 ..	1,772	3.25	2.3701	156,774	114,329	+42,445
1937-8 ..	1,569	3.25	2.5952	138,814	110,846	+27,968
Madras						
1931-2 ..	5,385	4.1875	4.0053	613,854	587,145	+26,709
1937-8 ..	4,850	3.875	3.8222	511,609	504,637	+ 6,972
Total of C. P. and Madras						
1931-2 ..	7,157	..	..	770,628	701,474	+69,154
1937-8 ..	6,419			650,423	615,483	+34,940

Thus of the total overestimation of 177 and 41 million rupees for the years 1931-32 and 1937-8, the discrepancy between the valuation at median and weighted mean in the case of rice in Madras and the Central Provinces alone accounted for 69 and 35 million rupees. If the weighted mean in these instances was obtained, the valuation of the rest of it at the median would involve a total error of about Rs. 48 million in 1931-2 and Rs. 6 million in 1937-38, which worked out + 1.17 and + 0.16 per cent of the total value of all food-grains and pulses at the median. The idea of obtaining weighted means for each crop for all the provinces was given up, as the effort and time involved would be out of proportion to the results obtained. Instead weighted means were obtained only in the case of the out-turn of rice in the Central Provinces and Madras and the rest of the valuation was based on the median average prices.

The results of valuing the outturn of rice in the Central Provinces and Madras at the weighted means of the district prices are stated in Table 93.

An Illustration : Valuation of Rice at Harvest Prices

An illustration of the procedures is given in the following account of the valuation of rice for 1937-38. The valuation of rice involved quite a few adjustments. The median average harvest available in the *Ag. Stats.* were :

TABLE 93.
Valuation of Rice in the Central Provinces and Madras at Medians and Weighted Means
of the District Prices, 1931-2 to 1940-1.

Crop Year	Central Provinces					Madras			
	Outturn	Value at median	Value at weighted mean	Difference Cols. 3—4	Outturn	Value at median	Value at weighted mean	Difference Cols. 7—8	
	000 Tons	000 Rs.	000 Rs.	000 Rs.	000 Tons	000 Rs.	000 Rs.	000 Rs.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1931-2	..	1,772	156,774	114,329	42,445	5,385	613,854	587,145	26,709
1932-3	..	1,660	138,391	101,847	36,544	5,406	533,466	520,928	12,536
1933-4	..	1,657	126,863	98,509	28,354	5,314	452,059	434,787	17,272
1934-5	..	1,757	152,455	124,939	27,516	4,981	500,003	498,891	1,112
1935-6	..	1,468	127,379	105,993	21,416	4,741	492,041	484,736	7,305
1936-7	..	1,781	160,600	125,001	25,599	4,794	481,230	470,555	10,675
1937-8	..	1,569	138,814	110,846	27,968	4,850	511,609	504,637	6,972
1938-9	..	1,725	149,679	121,870	27,809	4,100	439,468	436,756	2,712
1939-40	..	1,453	145,855	132,751	13,104	4,467	524,409	513,355	11,054
1940-1	..	1,099	143,977	130,897	13,080	5,150	665,921	652,323	13,598

Harvest Prices of Rice per maund in the Crop Year 1937-8 (Rs.)

Assam	3.0
Bengal	3.25
Bihar	3.25
Orissa	2.5
U.P.	4.3125
Punjab	2.0
N.W.F.P.	1.8125
Sind	4.875
Bombay	4.75
C.P.	3.25
Madras	3.875

(a) The prices in Assam, Bengal, Bihar and Orissa referred to winter rice only. Mean prices of all rice were obtained for these provinces on the basis of production and prices of autumn, winter and spring or summer rice. (b) The Punjab and the North-West Frontier Province prices referred to *paddy* and not rice. The ratio of the price of *paddy* to rice was ascertained at 60 per cent from the *Marketing Report*, and the prices of *paddy* were marked up by 166.6 p.c. (c) Bombay, Sind and Madras prices were retail prices, but these were left as they were. The adjustments are considered later in the chapter. (d) For the Central Provinces and Madras the median averages were replaced by the weighted means. (e) Trade balances of each trade bloc were calculated after taking into account movements into and out of a trade bloc by sea and by rail, and a list of deficit and surplus trade bloc was drawn up. Trade in *paddy* was converted to rice out of husk at the ratio of 70 per cent. The surplus Trade Blocs were: Assam, Bengal (exceptional that year), Orissa, Sind, the Central Provinces and Kashmir. The remaining Trade Blocs were 'deficit'. These were Bihar, the United Provinces, the Punjab (also exceptional that year), Bombay, Madras, Rajputana, Central India, Hyderabad and Mysore. (f) States included within the external frontiers of the British Provinces were valued at the prices of these British Provinces. (g) Of the State Blocs, Rajputana, Central India, Hyderabad and Mysore, being 'deficit', were valued at the average of the prices in the 'deficit' provinces and Kashmir was valued at the average of the prices in the 'surplus' provinces. Table 94 sets out the valuation of the net village retention and marketed surplus at these adjusted harvest prices.

Values of Foodgrains at Harvest Prices

Harvest prices were available for rice, wheat, *jowar*, *bajra*, barley, maize, *ragi* and gram only. 'Other pulses' sold generally

TABLE 94.

Valuation at Harvest Prices : Rice, 1937-8.

Trade Bloc	Production 000 Tons	Gross Village Retention 000 Tons	Deduction for Seed & Stockfeed 000 Tons	Net Village Retention 000 Tons	Marketed Surplus 000 Tons	Net Village Retention 000 Mds.	Marketed Su plus 000 Mds.	Harvest Price Rs. per Md.	Value of Village Retention (000 Rs.)	Value of Marketed Surplus (000 Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Assam	1,740	1,636	56.7	1,579.3	104	42,292	2,831	3.0111	129,453	8,524
Bengal	9,915	5,354	428.1	4,925.9	4,561	134,094	124,161	3.1963	428,605	396,856
Bihar	3,459	2,421	272.9	2,148.1	1,038	58,476	28,257	3.2496	190,024	91,824
Orissa	3,262	2,283	270.6	2,012.4	979	54,782	26,651	2.4900	136,407	66,361
U. P.	2,078	1,330	120.0	1,210.0	748	32,939	20,362	4.3125	142,049	87,811
Punjab	417	167	24.8	142.2	250	3,871	6,806	3.3333	12,903	22,486
N. W. F. P.	13	3	9	2.1	10	57	272	3.0208	173	822
Sind	495	158	27.6	130.4	337	3,550	9,174	4.875	17,306	44,723
Bombay	1,153	743	61.8	681.2	410	18,544	11,161	4.75	88,084	53,015
C. P.	2,047	1,351	260.1	1,090.9	696	29,697	18,947	2.5952	77,070	49,171
Madras	5,315	2,090	197.9	1,892.1	3,225	51,507	87,792	3.8222	196,870	335,559
Kashmir	382	287	5.4	281.6	95	7,666	2,586	3.2335	24,788	8,362
Rajputana	26	13	1.2	11.8	13	321	354	}		
Central India	71	53	6.4	46.6	18	1,269	490			
Hyderabad	431	203	23.2	179.8	228	4,895	6,207		66,816	56,519
Mysore	221	88	13.5	74.5	133	2,028	3,621			
Non-Reporting Units	500	350	21.0	329.0	150	8,929	4,083			
Stockfeeding	....	....	1.0	-1.0	....	..	..			
Rounding Adjustments	....	....	..	..	....	-1	..			
Total	31,525	18,530	1,793.1	16,736.9	12,995	455,616	353,753		1,510,547	1,222,233

at higher prices. The ratio of the average price of all pulses in the coastal and foreign trade to the price of gram each year was obtained and gram prices were marked up by that ratio to obtain the prices of 'other pulses'. Thus for the year 1937-8, the total sea-borne trade gave an average price of all pulses (112.9767 Rs. per ton), which was 121.3 per cent of the average price of gram (Rs. 93.1434). The average harvest price for the total of village retention and marketable surplus of gram was Rs. 69.1070 per ton. This gave a harvest price of Rs. 82.9284 per ton of that mixed bag of all pulses. Small millets were valued at the same price as *jowar* (Rs. 68.9962 per ton in 1937-8). The production of area under 'Other foodgrains and pulses' (unclassified) was not estimated. These were valued at the average return per acre on small millets and other pulses. On an assumption of 60 per cent village retention, to include 10 per cent for seed and 5 per cent for stock feeding, 45 per cent are obtained as net for village retention and 40 per cent for marketed surplus. Thus the returns per acre for small Millets and Other Pulses were calculated at Rs. 12.8209 and 13.1234 respectively for the year. This gave a simple average of Rs. 12.97215 per acre. Gross value of all acreage under unclassified foodgrains and pulses at this rate came to Rs. 1,28,411,000, 45 per cent of which (Rs. 57,785,000) was taken as the value of net village retention and 40 per cent (Rs. 51,364,000) as the value of marketed surplus. There was a small acreage under "Miscellaneous Foodcrops". These included *amranth*, arrow root, *mahua*, etc. No deduction for seed or stock feeding was made, and all outturn was assumed to be retained. These were valued on the basis of the average return per acre of all cereals and pulses except rice and wheat.

	Rs.
Barley	19.5881
Jowar	13.6356
Bajra	12.7803
Maize	20.0096
Ragi	20.2657
Gram	15.5886
Small Millet	12.8209
Pulses	13.1234

This gave an unweighted average of Rs. 15.9765 per acre for the year, according to which the value of the product of 2,638,000 acres of the 'adjusted' area under the crop came to Rs. 42,146,000.

The values at harvest prices of village retention and marketable surplus are given in Tables 95 and 96.

Bias in the Valuation of Foodgrains at Harvest Prices

The valuation of village retention and marketed surplus of a province at an average price near to the mean weighted on the

TABLE 95.
Values of Village Retention at Harvest Prices in Assembling Markets.

(Million Rs.)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Rice	1,623	1,323	1,275	1,409	1,286	1,564	1,511	1,415	1,778	1,671
Wheat	211	223	282	238	260	269	342	303	283	382
Jowar	279	308	281	338	309	395	348	347	412	413
Bajra	160	184	155	166	172	169	190	173	199	220
Barley	77	86	93	84	94	79	100	76	78	95
Maize	113	131	102	116	140	124	128	119	163	168
Ragi	58	56	47	51	57	53	49	43	58	62
Sm. Millets	62	72	60	65	66	69	63	68	77	80
Gram	90	97	91	93	90	88	114	97	102	124
Pulses	94	79	84	85	79	97	81	89	115	106
Foodgrains and Pulses (Un- classified)	64	64	63	65	62	69	58	60	75	75
Miscellaneous Crops	49	44	46	49	43	51	42	33	39	44
Total	2,880	2,667	2,579	2,759	2,658	3,027	3,026	2,823	3,379	3,440

basis of production in each district did not solve the problem. Weights should be based on actual quantities retained or marketed. But only the provincial over-all proportion (of its production) that was retained or marketed was known. If that proportion was the same for each district as well, then no adjustments were necessary. But this could not be assumed. Thus if it was granted (a) that the entire rural population of a province consisted of producers and workers receiving wages in kind, (b) that this rural population first kept all the supplies it wanted for its own consumption and (c) that there was a homogeneous consumption *per capita* of rural population all over the province, the proportion marketed in any district would be a function of outturn/rural population of the district. And as outturn even after deflating for rural population was far from uniform for each district, the *proportion* marketed would vary. Below a certain level none would be offered for sale on market; above a certain limit practically all would be offered for sale. The proportion of supplies retained in the villages would vary inversely as the ratio outturn/rural population of the district. Since marketed surplus was a residual, it would vary directly with outturn/rural population of the district. It would not, therefore, be assumed that the proportions of village retention and marketed balances in each district were the same as the over-all proportions for the province. A decreasing proportion of retention (or alternately increasing proportion of the marketed balance) had to be correlated with increasing output and lower prices, and an increasing proportion (or vice versa for marketed balance) with lower output and higher prices. The valuation at the means weighted on the basis of production underestimated the value of village retention due to higher proportions being retained in the villages in higher price districts. Alternately the value of marketed balances was overestimated.

Harvest Prices in the Indian Trade Journal

In order to obtain "a better indication of the prices which the cultivator actually receives for his crop than is obtainable from the records of prices that are now available" a new series of harvest prices was started in the *Indian Trade Journal* from 6th August 1936. These figures were based on the information collected through non-official agencies (branches of the Imperial Bank and Messrs. Ralli Brothers), and represented the averages of the weekly quotations during the harvesting periods at the important market centres adjoining the major producing areas of each crop. These prices were claimed to "represent the nearest approximation that (it) is at present practicable to obtain." But the representativeness suffered a little, as "the choice of centres has been restricted by

TABLE 96.
Values of Marketed Surplus at Harvest Prices in Assembling Markets.

(Million Rs.)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Rice	1,329	1,107	1,049	1,139	1,074	1,245	1,222	1,119	1,388	1,385
Wheat	321	337	425	353	377	383	489	442	407	505
Jowar	83	91	83	100	92	116	103	103	122	122
Bajra	44	50	43	46	47	47	52	48	59	60
Barley	30	33	36	32	33	31	39	31	32	39
Maize	31	35	28	31	35	34	35	32	44	46
Ragi	14	15	12	14	15	14	13	11	16	16
Sm. Millets	18	21	18	19	20	20	19	20	23	24
Gram	102	111	111	115	101	113	131	111	109	135
Pulses	199	166	177	181	165	202	175	189	243	228
Foodgrains and Pulses (Unclassified)	57	57	56	58	55	61	51	53	67	67
Total	2,228	2,023	2,038	2,088	2,014	2,266	2,329	2,159	2,510	2,627

the difficulty of securing reliable agencies for reporting prices.”*
The number of centres and crops were as follows:—

Crops	Centres	Crops	Centres
Rice in Husk and rice clean	28	Maize	10
Wheat	29	Gram	19
Jowar	24	Rape and mustard	9
Bajra	20	Toria	2
Barley	10	Sesamum	16
		Groundnut	15

The snag about this price series was that it was scattered over the issues of the *Indian Trade Journal* and gave prices in terms of local units, which varied from province to province, from place to place in a province like Madras, and even from year to year for the same centre. Reducing them to a common unit was a labour which the publishers of the *Indian Trade Journal* (DGCIS) could easily have saved and thus improved the usefulness of the publication for the purposes of comparison of prices as between centres or as between different publications.

The new series was available from late 1935-6 (crop year) only. And of the foodgrains and pulses 512 quotations were available over a period of 5 crop years from 35-6 onwards. The annual distribution of these was as follows:

	1935-6	1936-7	1937-8	1938-9	1939-40	Total
Winter rice ..	17	23	25	26	25	116
Wheat ..	23	22	24	23	24	116
Jowar ..	11	18	16	16	18	79
Bajra ..	3	15	13	13	14	58
Barley ..	8	8	8	9	9	42
Maize ..	..	8	8	8	8	32
Gram ..	13	13	14	14	15	69
Total ..	75	107	108	109	113	512

The provincial distribution of each crop was as below:

		Assam	Bengal	Bihar	Orissa	U. P.	N.W.F.P.		C. P.	Sind	Bombay	Madras	Total
Rice	..	7	15	13	5	12	..	..	8	10	10	38	116
Wheat	..	..	..	10	..	25	28	15	8	10	20	..	116
Jowar	..	..	..	..	..	9	..	5	10	5	25	25	79
Bajra	..	..	..	..	..	8	8	1	..	5	10	26	58
Barley	..	..	..	5	..	15	15	7	..	..	..	..	42
Maize	..	..	..	4	..	4	20	4	..	..	..	..	32
Gram	..	..	..	5	..	20	13	8	8	5	10	..	69
Total	..	7	15	37	5	93	84	40	34	35	75	87	512

* Quotations from the Introductory note to the series in the *Indian Trade Journal* dated 6th August, 1936.

Corresponding to these 512 quotations in the *Indian Trade Journal* series, quotations from the *Season and Crop reports* of the Provinces were obtained to give a series of 512 pairs of harvest price quotations. To secure comparability of the quotations associated in each pair, the *Indian Trade Journal* quotations were reduced to (a) a common unit of weight, (b) a common unit of price quotation and (c) common centres. Thus there were 512 pairs of associated prices grouped to the nearest anna per maund of weight, and referring to the same centres or in a few cases to centres in the same district.

Through this medley of crops, provinces and price levels it was not possible to test the distribution of the two sets of prices, and thus it was not possible to decide whether the two series belonged to the same population or not. Assuming they did, since each pair was closely associated only the differences were taken and the means of these differences and their standard errors were obtained. Table 97 gives crop distribution of these differences separately for (i) All provinces except Bombay, Sind and Madras and (ii) for Bombay, Sind and Madras. The latter gave retail prices in the *Season and Crop Reports*, and should show a higher mean difference than the former which gave only the differences between two sets of wholesale price.

TABLE 97.

Mean of the Differences between the Harvest Prices in the Season and Crop Reports and in the Indian Trade Journal Crop Distribution.

(Annas)*

(i) Assam, Bengal, Bihar, Orissa, U.P., Punjab, N.W.F.P. and C.P.

	Rice	Wheat	Jowar	Bajra	Barley	Maize	Gram	Total
n	60	86	24	17	42	32	54	315
$\sum X$	.. -71	53	69	29	52	36	24	192
$\bar{x}$	.. -1.1833	.6163	2.875	1.7059	1.2381	1.125	.4444	.609524
$\sum X^2$	.. 7,014	2,949	793	451	936	630	515	13,288
N	.. 59	85	23	10	41	31	53	314
V_x	.. 117.4573	34.30985	25.8533	25.0956	21.259	19.1613	9.5157	41.9458
S.A.†	.. .1667	.1667	.1667	.1667	.1667	.1667	.1667	.1667
$V_{\bar{x}}$	.. 1.9548	.397	1.0704	1.4664	.5022	.5936	.1731	.132632
σ	.. 1.398	.6301	1.035	1.211	.7087	.7705	.4161	.3642
t	.. .85	.98	2.78	1.41	1.75	1.46	1.07	1.67
P	.4—.3	.3—.2	.01—.001	.2—.1	.1—.05	.2—.1	.2—.1	.1—.05

* Represents excess of the *Indian Trade Journal* prices over the *Season and Crop Report* prices.

† Sheppard's Adjustment for Grouping Errors.

(ii) Bombay, Sind and Madras.

	Rice	Wheat	Jowar	Bajra	Gram	Total
n	56	30	55	41	15	197
$\sum X$	133	13	59	131	82	418
$\bar{X}$	2.375	.4333	1.0727	3.1951	5.4666	2.1218
$\sum X^2$	9,901	1,601	1,609	1,789	1,376	16,276
N	55	29	54	40	14	196
V_x	174.275	55.0126	28.6242	34.261	66.2667	78.5157
S. A.†	.1667	.1667	.1667	.1667	.1667	.1667
$V_{\bar{x}}$	3.1091	1.8282	.5174	.8316	4.4067	.3977
σ	1.763	1.352	.7193	.9119	2.099	.6306
t	1.35	.32	1.49	3.50	2.60	3.36
P	.2—.1	.8—.7	.2—.1	.001	.02—.01	.001

As can be seen from the Table this was broadly true. Thus for the 315 wholesale price comparisons the over-estimation in the *Season and Crop Reports* was $.61 \pm .36$ anna, while for the 197 pairs in Bombay, Sind and Madras the difference was $2.12 \pm .63$ annas per maund of this mixed bag. At five per cent level of significance, the former is not significant, while the latter is. Taking the crops individually there were some very large standard errors, and the difference was insignificant except in the case of *jowar* in (i) and *bajra* and *gram* in (ii). The results for wheat in (ii) are curious. The retail prices in the *Season and Crop Reports* were almost identical with wholesale prices in the *Indian Trade Journal*.

Since the collecting agencies were not segregated in terms of crops but in terms of Provinces, Table 98 was prepared to examine if a provincial breakdown showed up better. Since price levels

TABLE 98

Mean of the Differences between the Harvest Prices in Season and Crop Reports and in the Indian Trade Journal. Provincial Distribution.

(Annas)*

	Assam	Bengal	Bihar	Orissa	U. P.	N.W.F.P.	Punjab	C. P.
n	7	15	37	5	93	84	40	34
$\sum X$	—5	7	79	31	146	—39	19	—46
$\bar{X}$	—7143	.4667	2.1351	6.2	1.5699	—4643	.475	—1.3529
$\sum X^2$	329	1,759	2,371	235	5,029	1,205	595	1,765
N	..	14	36	..	92	83	39	33
V_x	..	125.4095	61.1757	..	52.1717	14.2999	12.9423	51.5989
S. A.†	..	.1667	.1667	..	.1667	.1667	.1667	.1667
$V_{\bar{x}}$	..	8.3495	1.6489	..	.5592	.16825	.3194	1.5127
σ	..	2.89	1.284	..	.7448	.4102	.5652	1.23
t	..	.16	1.66	..	2.11	—1.13	.84	—1.10
P	..	.1—.9	.1—.05	..	.05—.02	.2—.1	.4—.3	.3—.2

*—indicates excess of the *Indian Trade Journal* prices over the *Season and Crop Report* prices.

					Sind	Bombay	Madras
X	..	..	..	..	35	75	87
ΣX	..	..	..	..	83	140	195
$\bar{x}$	..	..	..	..	2.3714	1.8666	2.2414
ΣX^2	..	..	..	..	3,289	8,230	4,757
N	..	..	..	..	34	74	86
V_x	..	..	..	..	90.9462	107.6847	50.2318
S.A.†	..	..	..	..	.1667	.1667	.1667
V_x	..	..	..	..	2.5937	1.4336	.5755
σ	..	..	..	..	1.6105	1.197	.7586
t	..	..	..	..	1.47	1.56	2.95
P	..	..	..	..	.2—.1	.2—.1	.01—.001

† Sheppard's Adjustment for Grouping Errors.

of different crops varied it was assumed that whatever the bias it was uniform per maund and did not vary proportionately with the level of prices. This was broadly true. The prices were more likely to differ by an anna or two and not so much by 5 per cent or 10 per cent in the case of the same agency reporting all the crops. All the three retail price provinces showed a mean difference of about 2 annas (1.87 ± 1.20 in Bombay, 2.37 ± 1.61 in Sind and $2.24 \pm .76$ in Madras). Of the wholesale price Provinces the North-West Frontier Province, the Central Provinces (and possibly Assam) had their harvest prices in the *Season and Crop Reports** underestimated; the rest overestimated their harvest prices in relation to those reported by the branches of the Imperial Bank. The overestimation in the case of Bihar and the United Provinces (and possibly Orissa, the quotations were too few) did not compare unfavourably with Bombay, Sind and Madras, and one really wondered whether this was due to overestimation of wholesale prices or whether these were in fact retail prices, the same as in Bombay, Sind and Madras.

The rather large standard errors were also indicative of the unreliability of the price reporting agencies. There were no statistical tests which would provide an answer as to which of the two was reliable, or otherwise. The DGCIS was taken at his word that the *Indian Trade Journal* prices "give a better indication of the prices which the cultivator actually receives for his crops than is obtainable from the records of prices that are now available." The values as obtained on basis of the prices in the *Season and Crop Reports* were, therefore, adjusted. Since the provincial distribution of the associated quotations in the sample above was not symmetrical with the quantity distribution of crop outturns, adding up of all these quotations was not advisable. Weightage was, therefore, given to these provincial means of differences on the basis of the quantity of crops ('net' retained and marketed) in the year 1937-8. Assam and Orissa were excluded, and only those

* Assam had no *Season and Crop Report* but it gave relevant statistics in the provincial *Agricultural Statistics*.

crops for which price comparisons were ascertained in the sample were taken into account. The total values for the quantities reported in Columns 2 and 3 were Rs. 2,433,594 and 1,687,039,000 respectively. Thus valuation at the *Season and Crop Reports*, therefore, involved an upward bias of 2.05 per cent with a sampling error of ± 1.1 per cent for the village retention, and 2.2 ± 1.4 per cent for the marketed surplus.

TABLE 99.

Magnitude of the Value Adjustments on the basis of the Discrepancy between the Season and Crop Report and the Indian Trade Journal Harvest Prices.

(1)	Quantities Retained (2)	(000 Mds) Marketed (3)	Mean Excess (+) or Deficiency (-) in S & CR prices over ITJ prices in annas per Md.† (4)	Value Adjustments (000 Rs.)	
				Village Retention (5)	Marketed Surplus (6)
Bengal ..	134,094	124,161	.4667 $\pm$ 2.8914	3,911 $\pm$ 24,232	3,622 $\pm$ 22,437
Bihar ..	87,657	42,581	2.1351 $\pm$ 1.2858	11,697 $\pm$ 7,044	5,682 $\pm$ 3,422
U. P. ..	137,936	79,888	1.5699 $\pm$.7490	13,534 $\pm$ 6,457	7,839 $\pm$ 3,740
N. W. F. P. ..	9,060	5,415	— .4643 $\pm$.4126	— 263 $\pm$ 234	— 157 $\pm$ 140
Punjab ..	83,507	65,154	.475 $\pm$.5688	2,479 $\pm$ 2,969	1,934 $\pm$ 2,316
C. P. ..	57,529	34,113	-1.3529 $\pm$ 1.2139	— 4,864 $\pm$ 4,365	— 2,884 $\pm$ 2,588
Sind ..	10,211	18,230	2.3714 $\pm$ 1.6120	1,513 $\pm$ 1,029	2,702 $\pm$ 1,837
Bombay ..	86,075	39,404	1.8667 $\pm$ 1.1982	10,042 $\pm$ 6,446	4,597 $\pm$ 2,951
Madras ..	84,848	97,320	2.2414 $\pm$.75985	11,886 $\pm$ 4,030	13,633 $\pm$ 4,622
Total ..	690,917	506,266		49,935 $\pm$ 27,644 $\ddagger$	36,968 $\pm$ 23,972 $\ddagger$

Adjustments to the Values of Foodgrains at Harvest Prices

There was, therefore, the choice of readjusting the values obtained in Tables 95 and 96 by a 2 per cent mark down to correct the upward bias in the *Season and Crop Report* harvest prices. It was noted, however, that the valuation in these Tables had underestimated the value of the village retention and overestimated the value of the marketed surplus. Since it was more or less arbitrary to gauge the net incidence of the working of these opposite forces on the values of village retention, these were conveniently assumed to be equal and hence offsetting. In the case of the value of the marketed surplus, however, the errors were additive, and an arbitrary mark down of 5 per cent was adopted to correct the overestimation on both these accounts.

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† The standard errors in this Table include grouping errors, allowances for which were made in Tables 97 and 98 and hence the difference in the two.

‡ Assumes independence of errors.

CHAPTER 11

NET VALUATION OF VILLAGE RETENTION AND THE VALUATION OF CONSUMER PURCHASE OF FOODGRAINS

Sellers' Expenses in the Assembling Markets

The valuation of supplies at the prices ruling in urban wholesale markets at the time when the harvest was assembled has been so far considered. The prices received by the producer in these markets were not his 'net' realised price at the place of production. Estimation of the latter involved a deduction for (a) market charges and municipal taxes payable by the seller of the produce and (b) his costs of transport to the urban market. Since the producer was 'saved'* both these costs in respect of retention these were deducted from its valuation at harvest prices.

Ample information was available on the charges borne by the seller and the buyer in the produce markets of India and Pakistan, in the series of *Marketing Reports* and the various monographs on the conditions in the Punjab and the United Provinces.† Since published accounts are available the various items‡ constituting the total expense incurred both by the sellers and buyers of produce in the assembling markets are not described here. Most of these

* One is not sure about the 'saving' of costs in the second instance. The bullocks had to be fed anyway, and his cart would otherwise have been idle, and the man himself would be suffering an inevitable unemployment. On non-economic considerations it would be better for him to be on the road than in his dingy hut in the village. All evidence seemed to point out that when a cultivator owned a cart and a pair of bullocks, he almost invariably took his produce to the market himself.

† The latter included J. K. Pande: *Prices of Cereals in the United Provinces* (1938); Punjab Board of Economic Inquiry: publications No. 49, *Some Factors affecting the Price of Wheat in the Punjab* (1937), and No. 38, *Finance and Marketing of Cultivators' Wheat in the Punjab* (1934). The last was the result of a survey of 3 districts, viz., Lyallpur, Ferozepur and Attock, in the 1930-1 season.

‡ The items of expenditure incurred by the seller are :

Commission	(<i>arhat</i>)
Brokerage	(<i>Dalah</i>)
Weight allowances	(<i>Karda</i>)
Handling	
Weighment charges	(<i>Tula</i>)
Charities	(<i>Dharmada</i>)
Miscellaneous items	

The last include payments in kind to the sweeper, the waterman, the commission agent's (*arhatiya*'s) cook and other market employees "all to be provided for usually by the seller".

Those incurred by the buyer are :—

Handling
Commission
Brokerage
Charities

His gains include weight allowances and thus in the case of gram in the Central Provinces the gains more than offset the cost.

TABLE 100.
Market Charges in the Principal Assembling Markets of India and Pakistan.
(Per Cent of the Value of Transactions)

	Rice				Wheat				Barley				Gram			
	Number of Markets	Sellers' Ex-penses	Buyers' Ex-penses	Number of Markets	Sellers' Ex-penses	Buyers' Ex-penses	Number of Markets	Sellers' Ex-penses	Number of Markets	Sellers' Ex-penses	Buyers' Ex-penses	Number of Markets	Sellers' Ex-penses	Buyers' Ex-penses	Number of Markets	Sellers' Ex-penses
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Bengal	6	2.5156	1.1328	..	..	....	..	..	..	..	..	..	..	..	..	..
Bihar	9	3.1094	..	11	1.9844	1.5521	3	2.4115	2.2969	4	1.7386	.8344				
Orissa	2	1.2422	.3828													
U. P.	7	8.2526	2.9427	16	2.1763	1.3815	7	2.9531	1.7760	5	3.53125	1.1042				
Punjab	4	4.2396	1.3281	24	1.75	1.2630	3	.7292	3.0833	1	1.0052	2.8333				
N. W. F. P.	..	..	..	..	..	..	..	..	..	1	4.5468	2.0417				
Sind	..	..	..	2	3.0625	1.09375	..	..	..	1	2.1979	1.5625				
Bombay	1	1.6927	2.2708	6	1.7448	2.4427	..	..	..	6	1.8021	1.3906				
C. P.	4	2.1667	1.78125	11	3.7604	.3542	..	..	..	6	4.6146	— .6198				
Madras	6	2.4219	2.46875	..	..	..	..	..	..	..	..	..				
Hyderabad	8	3.3543	.5508	6	2.55035	..	..	..	..	..	..	..				
Rajputana	..	..	..	1	2.1042	.625	..	..	..	..	..	..				
Central India	..	..	..	1	3.5625	.375	..	..	..	..	..	..				
India and Pakistan	47	3.0404	1.6086	78	2.1283	1.2358	13	2.8356	1.9908	24	2.6875	1.4103				

are customary and payments are made in cash or kind. The gross incidence of these payments expressed as per cent of the value of the produce averaged as in Table 100. The India and Pakistan average was obtained by giving weights to each quotation equal to the values of the village retention and market surplus in the year 1937-38 and this global average was used to obtain the market charges for the crops for all years. For all other crops market charges incurred by the sellers were taken at 3 per cent, and by the buyers at $1\frac{1}{2}$ per cent.

Municipal taxes did not operate in all instances, and where they did they lacked uniformity. In some provinces an octroi was levied on produce when it entered the municipal limits. In others market fees were charged, specially where Municipalities or Local Councils provided buildings or space allotments for the purpose. Rents for markets charged by private landlords also came under this category. The octroi was based on weight in the Punjab and some parts of the United Provinces. In the Western Districts of the United Provinces there was a vehicle tax on each cart and a toll on each pack animal. The Central Provinces had both an octroi list and a vehicle tax. Bombay levied a tax per bag of grains. From this medley of descriptions and instances that were available the incidence of tax and/or market rent worked out at about $\frac{1}{2}$ anna per maund on an average. Apart from the scheduled rates, tips were customary and usually paid. But these perhaps primarily served the useful function of dodging proper weighment and were not included.

As for the costs of transportation, carts were the usual means of transporting produce to the town markets. The saving in the cases where cultivators owned their carts was only 'nominal'. But a large majority of producers did not own these. The potter's donkey was also a useful animal for this purpose. The cost of transport by a cart varied with the quality of the road and the distance to be travelled. The average cost for metalled road in the United Provinces in 1937 worked out at 1.5 pies per maund per mile, and about 2.5 pies for unmetalled road. Costs in the Punjab in 1931 were higher. In the 3 districts* they totalled 2.25 pies for metalled roads and 3.31 pies for unmetalled roads. Since the Depression costs had come down, but no evidence on the extent of the fall was available. The unmetalled roads varied in their conditions and in some cases where the produce came from far interior, as in Central India, the costs were still higher. It was also difficult to ascertain the average distance covered by the produce before it reached the market. In case of the 3 districts in the Punjab, the 55,246 maunds marketed covered an average distance of 11.5 miles.

* Attock, Lyallpur and Ferozepur.

TABLE 101.
Adjusted Values of Village Retention.

(Million Rs.)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Rice	1,467	1,187	1,142	1,272	1,164	1,412	1,365	1,282	1,628	1,542
Wheat	184	197	255	211	232	241	312	270	253	348
Jowar	242	269	243	299	271	351	307	307	369	368
Bajra	140	163	136	147	152	151	170	155	181	197
Barley	65	73	81	71	81	68	88	66	69	85
Maize	96	114	87	99	122	108	111	104	145	149
Ragi	50	48	40	45	50	47	43	37	52	55
Sm. Millets	54	62	52	58	58	61	56	61	69	71
Gram	79	85	80	81	79	77	101	86	92	113
Pulses	85	70	75	76	71	88	73	80	105	97
Foodgrains and Pulses* (Un-classified)	57	57	55	58	55	62	51	54	68	68
Miscellaneous Foodcropst	43	38	40	43	37	45	37	29	35	40
Total	2,562	2,363	2,286	2,460	2,372	2,711	2,714	2,531	3,066	3,133

* Deduction at the average percentage mark down for Small Millets and Pulses other than Gram.

† Deduction at the average percentage mark down for *jowar*, *bajra*, *barley*, *maize*, *ragi*, *gram*, *small millets*, and *pulses* other than *gram*.

If 12 miles were taken as the average distance and 3 pies per maund per mile as the average rate of transport cost a deduction of 3 annas would have to be made per maund of produce on which no transport costs were incurred.

Net Values of Village Retention

To recapitulate, deductions of 3 per cent on account of the market charges, $\frac{1}{4}$ anna per maund on account of the municipal taxes and 3 annas per maund on account of the transport costs had to be made from the values of village retention obtained in Table 95. The net values of village retention are given in Table 101.*

Data on Retail Prices

The valuation of supplies on the market was next proceeded with, and the data on retail prices were considered. The main sources of retail prices of foodgrains were (a) *The Statistical Abstract of British India*, (b) the *Labour Gazettes* and Cost of Living Publications for Bombay and the Punjab and (c) the *Season and Crop Reports* for Madras and the Central Provinces.

Urban retail prices were available in the *Statistical Abstracts* for calendar years to the nearest decimal of a rupee. The crop and provincial distribution of the centres for which quotations were available is as below :

Crop Province	Rice (com-mon)	Wheat	Barley	Gram	Jowar	Bajra	Ragi	Total
Assam ..	4	..	..	..	..	..	..	4
Bengal ..	8	..	..	..	..	..	..	8
Bihar ..	5	6	3	..	..	..	2	16
Orissa ..	2	1	..	..	..	..	1	4
U. P. ..	10	11	10	3	11	10	..	55
Punjab ..	4	6	4	1	3	4	..	22
Delhi ..	1	1	1	1	1	1	..	6
N. W. F. P. ..	1	2	1	1	1	1	..	7
Sind ..	1	1	..	1	1	1	..	5
Bombay ..	4	8	..	..	6	6	1	25
C. P. ..	3	3	..	3	3	..	..	12
Madras ..	6	..	..	..	4	4	3	17
Total ..	49	39	19	10	30	27	7	181

* Dr. Rao in his estimate of the National Income of British India for 1931-2 had set out to value agricultural output with a note "It is particularly important that we should use the figures of value at the place of production, as a considerable proportion of the foodcrops is consumed by the cultivator himself and his family, while in many places the wages of agricultural labour are paid in kind." (*Op. cit.*, p. 86). He valued output, however, at provincial median averages of district harvest prices as reported in the *Ag. Stats.*, his only complaint being that these were not available for all crops or all provinces in the case of each crop. The values so obtained included overestimation on various counts.

- (1) Harvest prices as reported were not prices at the place of production but in the assembling markets and the cost of transport, therefore, had to be deducted.

The reported prices were the annual averages of the fortnightly quotations supplied by the Provincial Authorities. The primary data were collected in *taluk* centres from enquiries in *bazar* areas.

In the *Bombay Labour Gazette* retail prices, averaged for official years (ending on March 31st), from each district Headquarters Town were available. Also available were the monthly retail prices for the three industrial cities of Bombay, Ahmedabad and Sholapur. Retail prices for Sind were included in this *Gazette* prior to 1935, as Sind was then part of Bombay. Another Province in which retail prices were collected in connection with the compilation of the Cost of Living index and subsequently published was the Punjab. The Board of Economic Inquiry in its series of publications had issued Cost of Living Indices for calendar years for the five cities of Rohtak, Ludhiana, Multan, Lahore and Sialkot, and monthly retail prices in these cities were available from January 1936.

The Cost of Living Indices are a fertile source of data on the retail prices. But no other province gave retail prices, though Cost of Living Index numbers were prepared for centres in the United Provinces, the Central Provinces, Bihar and Orissa. In consultation with the Statistician to the Economic Adviser of the Government of India, therefore, it was decided to approach these Provincial Governments and obtain from them the mass of retail price quotations they had obtained in that connection. Subsequently, it was found that the Central Pay Commission then appointed to inquire into the wages and salaries of the Central Government employees all over India and Pakistan* had made a similar attempt to get pre-War retail prices; but nothing had come of it, and hence the proposal was dropped. While this did not seriously affect the valuation of foodgrains as one could fall back on other sources, it did have a considerably adverse effect on the valuation of a few other aspects of consumer expenditure.

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- (2) Harvest prices were not 'net' prices received by the cultivators, who incurred various marketing charges which also had to be deducted.
 - (3) Valuation at the median averages of district prices, instead of their weighted means led to an overestimation of about 3 per cent in the case of foodgrains. Other crops were not tested.
 - (4) Harvest prices were not even wholesale prices, and thus the valuation for Bombay, Sind and Madras gave retail values and not values received by producers.
 - (5) Specific items such as the breakdown of output of rice into autumn and winter rice would have given again a lower value for output, as autumn rice sold at a lower price than winter rice.

It was fairly well-known in India that harvest prices were very unreliable, and it is, therefore, surprising that, while estimating the error of the total estimate of the national income of British India, no error was assigned to the net value of agricultural output!

* Originating from the demand of the postal workers for an increase in the dearness allowance.

Madras, from the crop year 1932-3, gave a whole series of retail prices of principal foodgrains and sundry food items in its *Season and Crop Report* every year. These were annual averages of the prices prevailing in the last weeks of each month, published in a shorter form from 1937 in supplements to the *Fort St. George Gazette*. These prices are to be distinguished from the retail prices "prevailing in two or three of the principal markets in each district" at the harvest time. In the case of the former there were 308 price quotations for the 24 districts and 5 for the city of Madras.

Retail prices in the *Season and Crop Report* of the Central Provinces on the other hand appeared together with the 'harvest' prices in the same table with the only difference that the former were wholesale harvest prices and these were retail harvest prices. They presumably were collected at the same time as the wholesale prices and were thus directly comparable with the former. These were quoted in seers per rupee, and were, therefore, converted to the nearest anna per maund.

Comparison of Retail and Harvest Prices

Having described the sources on retail prices next was set the task of studying the usefulness of these in the estimation of the prices paid by final consumers. These prices were first compared with the corresponding harvest prices with which the value estimation of quantities offered on the market had started. Data on rice are used for illustrative purposes.

The comparison involved the task of adjusting for time lags. Rice is a winter crop and the harvest prices generally referred to the first eight weeks of the calendar year. Available retail prices were a medley. Bombay and Madras (and Sind so far as it went) referred to official years ending 31st March. For the Central Provinces the prices were not annual averages but referred only to the harvesting period. Prices in the *Statistical Abstract* and the Punjab Board of Economic Inquiry Publications referred to calendar years. In the case of each Province a series of pairs of comparable quotations belonging to the same centres was constructed. The arrays in this series showed variations of the two prices over time at the same centre, and the columns showed variations from centre to centre in the same year. Since crops differed in qualities, and since each quotation had an unascertainable distribution of weights attached to it in each column, a precise value of the ratio of covariance to total (R^2)* for the whole series could not be obtained. Thus the absolute value of R^2 as an indication of the tightness of fit

* If X and Y are the two prices constituting each pair and x stands for $X - \bar{X}$, y for $Y - \bar{Y}$ and xy for $XY - \bar{X}\bar{Y}$, $R^2_{xy} = \frac{S^2_{xy}}{S^2_x \cdot S^2_y}$

between the harvest price and its corresponding retail price was of doubtful significance, but in the case of alternative sets of retail prices differing only in respect of time lags one giving the highest value of R^2 was considered as giving the closest fit.

Judged on this basis, 1937-38 harvest prices of rice*, gave the closest fit as below. The value of R^2 is given, but is subject to severe limitations.

					Number of pairs in the series	Retail price giving the closest fit	R^2
Bombay	..	..	..	..	180	1937-8	.8492
Madras	..	..	..	..	207	1937-8	.7511
C. P.	..	..	..	..	148	1937-8	.8220
Punjab	..	..	..	..	71	1938	.6916
Bengal	..	..	..	..	72	1938	.5150
U. P.	..	..	..	..	90	Average of 1937 and 1938	.6472
Bihar	..	..	..	..	45	1938	.2999

From the comparison between the pairs of harvest and retail prices given in Table 102 (pp. 198-9) it was observed that the available data on retail prices were inadequate to obtain price marks up for various reasons :

(a) Bombay, Madras and Sind only provided a check on retail prices described as the 'harvest prices', and there really were no wholesale prices. The correction of about 2 annas a maund as obtained from comparison with prices in the *Indian Trade Journal* was only an over-all average and sufficient data were not available to make it possible to obtain a breakdown for each crop for each of the ten years. As comparison of two sets of retail prices, the difference was significant only in three years out of ten in Bombay, one out of ten in Madras and none in Sind (so far as it went). All these were years with a sudden rise or fall in prices. In case of a fall the annual average would be higher than the harvest price which referred to a period towards the end of the year, and the difference would be negative in case of a rise in prices. This could be corrected for by adopting fractional time lags. The mean difference evened out over the entire ten year series gave an average difference of $.1778 \pm .3428$ for Bombay, and $.0531 \pm .3391$ for Madras, which went to suggest that there was no positive evidence of a discrepancy between the two, a result consistent with the expectations.

(b) In the Central Provinces annual retail prices were not available, and the retail prices prevailing during the harvest period when supply was plentiful might involve a downward bias. While

* In case of the Punjab, the *Season and Crop Report* prices for rice referred to rice with husk and were not strictly comparable. Data for wheat were taken instead. Thus 1937-38 harvest prices of wheat were fitted with 1938 retail prices. The period of harvest in the case of wheat is May, and thus the harvest prices referred to the middle portion of 1938.

TABLE 102.

**Mean of the Differences between Retail Prices and Corresponding
Harvest Prices.**

NOTE :—1. Rice for all provinces except the Punjab, where the figures relate to wheat

2. + indicates excess of retail price over corresponding harvest price, the latter as in the *Season and Crop Report*; — indicates deficiency.

Province	Crop Year	Mean of Differences (annas)	Standard Error of the Mean (annas)	Column 3 & Col. 4	Degrees of Freedom	Probability less than
		M	σ	t	N	P
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Bombay	1931-2	4.6111	1.1522	4.00	17	.01
	1932-3	.6111	.729	.84	17	.5
	1933-4	1.7222	.75	2.29	17	.05
	1934-5	— .4444	.6627	—1.65	17	.6
	1935-6	—1.4444	.87	—1.65	17	.2
	1936-7	2.0555	1.464	1.40	17	.2
	1937-8	.0555	1.113	.05	17	1.0
	1938-9	..	1.91	..	17	1.0
	1939-40	—4.3333	1.17	—3.70	17	.01
	1940-1	— .5	.5717	.87	17	.5
Madras	1931-2		not available			
	1932-3	1.1304	1.115	1.01	22	.4
	1933-4	2.3913	.6734	3.55	22	.01
	1934-5	— .7826	.7028	—1.11	22	.3
	1935-6	.8696	.7682	1.13	22	.3
	1936-7	.5217	.8663	.60	22	.6
	1937-8	— .8696	.8741	— .99	22	.4
	1938-9	—1.7391	.9642	—1.80	22	.1
	1939-40	—1.913	1.335	—1.43	22	.2
	1940-1	.8696	1.385	.63	22	.6
Sind	1931-2	— 2.2857	1.443	1.58	6	.2
	1932-3	.2857	2.157	.13	6	.9
	1933-4	.2857	1.040	.27	6	.8
	1934-5	—2.2857	2.378	.96	6	.4
C. P.	1931-2	4.7333	1.318	3.59	14	.01
	1932-3	5.0666	.9927	5.10	14	.001
	1933-4	1.6	1.659	.96	14	.4
	1934-5	3.4666	.696	4.97	14	.001
	1935-6	2.2143	1.187	1.865	13	.1
	1936-7	1.5714	1.892	.83	13	.5
	1937-8	3.1333	.9303	3.37	14	.01
	1938-9	1.9333	1.485	1.30	14	.25
	1939-40	2.4	.9943	2.41	14	.05
	1940-1	3.2666	2.053	1.59	14	.15
Bengal	1931-2	—2.625	1.636	—1.60	7	.2
	1932-3	5.125	1.797	2.85	7	.05
	1933-4	9.0	2.104	4.28	7	.01
	1934-5	4.625	2.834	1.63	7	.1
	1935-6	6.75	2.313	2.92	7	.025
	1936-7	6.125	2.15	2.85	7	.025
	1937-8	6.5	2.299	2.83	7	.025
	1938-9	6.875	3.243	2.12	7	.1
	1939-40	8.0	4.848	1.65	7	.2

Province	Crop Year	Mean of Differences (annas)	Standard Error of the Mean (annas)	Column 3 & Col. 4	Degrees of Freedom	Probability less than
		M	σ	t	N	P
(1)	(2)	(3)	(4)	(5)	(6)	(7)
U. P.	1931-2	1.9	1.1303	1.68	9	.2
	1932-3	-2.9	.8876	-3.26	9	.01
	1933-4	.7	1.606	.44	9	.7
	1934-5	2.8	2.107	1.33	9	.25
	1935-6	.1	.9481	.105	9	1.0
	1936-7	-.3	1.564	-.19	9	.9
	1937-8	-.7	.9667	-.72	9	.5
	1938-9	.5	1.392	.36	9	.75
	1939-40	3.8	1.497	2.54	9	.05
Bihar	1931-2	2.4	3.641	.66	4	.7
	1932-3	5.0	4.45	1.12	4	.4
	1933-4	8.6	4.226	2.035	4	.15
	1934-5	10.2	3.023	3.37	4	.05
	1935-6	12.6	3.655	3.45	4	.05
	1936-7	9.8	3.292	2.98	4	.05
	1937-8	3.8	2.059	1.495	4	.25
	1938-9	9.8	3.625	2.70	4	.1
	1939-40	9.8	2.417	4.05	4	.02
Punjab	1930-1	5.8333	1.276	4.57	5	.01
	1931-2	8.8333	1.2225	7.225	5	.001
	1932-3	2.1666	1.47	1.47	5	.25
	1933-4	4.6	.51	9.02	4	.001
	1934-5	4.8	.595	8.07	4	.01
	1935-6	9.875	1.652	5.98	7	.001
	1936-7	9.2222	1.2447	7.41	8	.001
	1937-8	5.875	1.875	3.13	7	.02
	1938-9	8.666	1.871	4.63	8	.01
	1939-40	9.4444	.6894	13.69	8	.001

the discrepancy in the Table tended to be positive in all instances, it was significant only in case of five years out of ten. Again observational errors pointed out the general unreliability of these prices. Belonging to the same place and time, out of 727 prices examined for the ten years in the Central Provinces, no less than 120 retail prices fell below corresponding wholesale prices. There was no indication as to which of the two sets was unreliable, but if the wholesale prices were accepted the retail prices had to be discarded.

(c) For the rest of the provinces the only significant source of retail prices was the *Statistical Abstract*. Except for rice and wheat quotations of retail prices available in the *Statistical Abstract* were too few to provide adequate estimates of price discrepancy except in the United Provinces. In the case of the United Provinces, all the crops studied showed a very small discrepancy (in all instances, on an average of less than 1 anna a maund for the nine years) and the standard errors were large enough to suggest this difference as not

unlikely due to sampling errors. In case of rice alone, only 2 out of 9 years gave a significant difference, and of these two one was negative and the other positive. It was not possible to say, whether the 'harvest prices' in the United Provinces followed the same path as in Bombay, Madras and Sind in being retail prices, or that the retail prices had a downward bias. In the case of Bihar the value of R^2 was very low, and alternative assumptions gave still lower values. Even taking into consideration that variance might be due to the differences in the level of prices in the five different centres, the value of R^2 was so low as to indicate a difference in the population, and the two sets were really not comparable. An alternative comparison on wheat gave a satisfactory fit, but the discrepancy was significant in the case of four years only. Assam, Orissa and the North-West Frontier Province were excluded because only one quotation in each referred to a centre common both to the *Season and Crop Report (Agricultural Statistics)* in the case of Assam) and the *Statistical Abstract*. The Punjab was a mixed bag, as publications of the Board of Economic Inquiry had prices for 5 centres, two of which were common with the *Statistical Abstract*. The number of centres jumped therefore from 5 in 1934-5 to 8 in 1935-6. The results, however, were generally satisfactory. Bengal gave a discrepancy significant only for 5 years, though on the whole except for some sharp points (1931-2, 1933-4) the results were fairly even. Bengal, however, was significant only for the rice crop.

It was chosen to discard the available data on retail prices. In any case these could have served a limited purpose. Comparison with harvest prices even if satisfactory, could have given marks up only in the case of quantities which were disposed of locally. It could only give the discrepancy between the wholesale price at which the produce was bought by the wholesaler in the assembling town market and the price at which the retailer sold it in the same market. In a sense, of these two, only one was significant. If a large quantity of produce was assembled in the market concerned, the retail market did not really exist and the quantities sold at retail prices were negligible in these towns. If, on the other hand, the town was significant for retail distribution, it was usually a deficit market, where the wholesale price was not the price at which the wholesalers bought from the producers, but at which the retailers bought from the wholesalers the supplies imported from outside. Supplies of local producers were negligible in such instances.

Valuation of Market Supplies

Marketed surpluses have been valued at the prices at which these were sold by producers to wholesalers in the produce assem-

bling markets of each district. This may now be followed up by a consideration of the agencies of handling, transport and distribution till they reached final consumers. The quantities handled, the costs incurred and the margins earned by each of these might also be studied. The only source of information on the distributive margins was provided by the *Marketing Reports*. These did not give continuous data over a number of years and for a large number of centres. Only a few specific instances of movements of 'typical' consignments at or about the time of publication of the *Report* were available. Where the data were used from that source, these are likely to involve errors arising from the neglect to consider (a) sufficiently large number of observations, and (b) the effects of the changes in distribution patterns, cost schedules and profit margins. Except for the rail and sea-borne traffic all the rest of the observations below should, therefore, belong to the category of conjectures.

Parallel to, but to a smaller extent than the producers, wholesalers who bought the produce also paid market charges. These were considered along with the charges borne by sellers of produce. The charges were added up to the adjusted value of the marketed surplus as indicated in the last paragraph of Chapter 10.

The next step was to consider the quantity and the value of the produce which reached wholesalers in the final consuming markets. The quantity alterations to be considered were on account of the incidence of foreign trade which stepped in at this stage. The tributaries to and outflows from the stream of consumers goods presented quite a complicated pattern and only a highly simplified picture is attempted below. The best way of consideration was perhaps on the basis of the various vehicles of transportation—Railways, Internal Waterways, Roads and the Sea. The following general description is illustrated in the last section of this chapter with a detailed account of the steps leading to the value of final consumer purchase of rice. The problems encountered were more or less specific to each commodity. It is not possible to discuss all of them.

Traffic on Railways

The statistics of principal traffic carried and gross revenue earned by Railways were available in the *Annual Administration Reports* of the Railway Board. Commodity breakdown* was available only in the case of traffic carried on Class I Railways. Class I Railways were defined as those with gross earnings of not

* Separate statistics were available for Rice in husk, Rice not in husk, Gram and Pulse, Wheat, *Jowar* and *Bajra*, and other grains.

less than Rs. 5 millions a year, Class II were those with gross earnings of less than Rs. 5 millions but not less than Rs. 1 million a year, and Class III Railways had a total gross revenue of less than Rs. 1 million a year. The traffic on Class II and Class III Railways was relatively small, as was evident from the gross revenue earned by these as compared with Class I Railways :*

TABLE 103.

Gross Earnings from Goods Traffic.

(000 Rs.)

	Class I Rlys.	Class II Rlys.	Class III Rlys.	Columns 3 +4 per cent of Column 2
(1)	(2)	(3)	(4)	(5)
1931-2 ..	545,122	15,143	1,843	3.12
1932-3 ..	531,302	14,121	1,728	2.98
1933-4 ..	573,053	15,866	1,730	3.07
1934-5 ..	598,946	16,057	1,916	3.00
1935-6 ..	604,385	15,698	1,853	2.90
1936-7 ..	655,396	15,997	1,921	2.73
1937-8 ..	667,057	17,673	1,874	2.93
1938-9 ..	666,867	16,810	2,019	2.82
1939-40 ..	705,984	17,555	2,077	2.78
1940-1 ..	794,877	17,850	2,102	2.51

All quantities carried by railways incurred handling charges and various incidentals at the stations. The total charges from the time the produce arrived at the station of the assembling market to the godowns of the wholesaler in the consuming market (or the rice mill in the case of *paddy*) net of those included in gross railway earnings came to

	Rs. per Ton
Rice	7.8155
Wheat	7.7502
Barley	6.6640
Gram	5.1042

in the instances given in the *Marketing Reports*. These estimates were applied to the valuation of the produce handled by the railway systems. Handling charges for *jowar* and *bajra* were taken at Rs. 5.9549 per ton.† The charges for pulses were taken the same as gram, and 'other grains' the same as barley.

Intraprovincial Coasting Trade

Coasting Trade statistics were available since 1932-3, referred to intra-Provincial trade and inter-Provincial Trade, and gave

* The Burma traffic, all of which came under Class I Railways, was excluded.

† At the rate of 3½ annas per maund.

separate statistics of imports and exports both in terms of quantity and value. The values of exports were f.o.b. values and those of imports were c.i.f. values. It would thus be simple if we could deduct the total value of exports and add the total value of imports. We did not need to bother in that case about the freight and insurance charges on the traffic in the coasting trade.

But the data did not lend themselves to this simple treatment. The quantities in intra-Provincial trade showed a difference between registered imports and exports; there was a continuous excess of exports over imports in case of rice (out of husk) for instance :

TABLE 104.

Excess of Intra-Provincial Exports over Imports of Rice.

					(Tons)
1932-3	..	..	..	..	31,742
1933-4	..	..	..	..	53,050
1934-5	..	..	..	..	30,677
1935-6	..	..	..	..	37,193
1936-7	..	..	..	..	10,906
1937-8	..	..	..	..	10,209
1938-9	..	..	..	..	19,867
1939-40	..	..	..	..	2,031
1940-1	..	..	..	..	7,689

This, therefore, could not be due to the time lag between the dispatch of exports and their arrival as imports. This discrepancy had to be taken as due to the trade with non-Customs ports in the same province. Registration took place only at what were officially described as 'Customs' ports, ports at which the Customs collected revenues from commodities on which duties were leviable. Thus the trade between two non-Customs ports would entirely escape registration. Trade between a Customs port and a non-Customs port would have registration only on one side. If the former was neglected, the total quantity of exports or imports, whichever was higher, gave the total intra-Provincial Trade by ships loading or unloading at Customs ports.

The choice, therefore, was to deduct the f.o.b. values registered for exports and c.i.f. values registered for imports at Customs ports, and make adjustments for freight rates in the case of the balance which failed to get registered on one side. But this was ruled out by the quality differences of the quantities imported or exported. This was clear from the average f.o.b. price of exports and corresponding c.i.f. price of imports of rice in Intra-Provincial Coasting Trade.

Intra-Provincial Coasting Trade**TABLE 105.****Price per Ton of Rice (out of husk).**

		(Rs.)	
		Exports	Imports
		f.o.b.	c.i.f.
1932-3	..	94.13	94.04
1933-4	..	75.49	76.67
1934-5	..	76.50	79.40
1935-6	..	87.60	86.69
1936-7	..	87.28	88.47
1937-8	..	95.95	100.47
1938-9	..	93.80	97.87
1939-40	..	100.75	103.70
1940-1	..	125.42	122.58

Thus in 1932-3, 1935-6 and 1940-1 the qualities of rice exported (on a net balance) to non-Customs ports were so high as to exceed the total freight and insurance on all intra-Provincial traffic included in the import values. Thus if registered f.o.b. values of exports were deducted and c.i.f. values of imports plus freight and insurance on the excess traffic to non-Customs ports were added deductions would be made on account of superior qualities of exports which would not be offset on the other side by corresponding gains in the value of imports in non-Customs ports.

The total quantity of traffic, and a rough average freight and insurance rate on this total quantity were, therefore, considered. This did not give a complete picture but was better than its alternative. An average of Rs. 3 per ton as costs of freight and insurance in intra-Provincial coastal traffic in foodgrains was adopted.

There were further difficulties. (a) Intra-Provincial coastal trade was not separately available for different provinces, and thus included intra-Provincial trade of Burma prior to 1937-8. A small check was available for 1936-7 for which figures both inclusive of and excluding Burma were available. The difference between the two stood as follows:

TABLE 106.**Quantities in Intra-Provincial Coasting Trade, 1936-7.**

(Tons)

	Including Burma		Excluding Burma	
	Imports	Exports	Imports	Exports
Gram ..	5,501	5,611	5,390	5,440
Jowar and Bajra ..	1,501	928	1,501	928
Pulse ..	15,050	14,330	14,300	13,403
Rice in Husk ..	40,191	29,889	30,291	29,147
Rice not in Husk ..	111,200	122,106	102,523	116,478
Rice Flour ..	2	36	1	35
Wheat ..	2,674	2,947	2,674	2,910
Wheat Flour ..	5,807	5,336	4,583	3,996
Other Sorts ..	3,964	4,271	3,145	3,141

The figures of total volume of intra-Provincial traffic (even neglecting trade between two non-Customs ports) were correct only for 5 year from 1936-7 to 1940-1. (b) Intra-Provincial trade referring as it did to British India only did not include trade in the two Maritime States of Kathiawar and Travancore. Figures for these were also arbitrary, and were obtained as rounding off guesses.

Inter-Provincial Coasting Trade

Parallel to the intra-Provincial trade discussed above there was an excess of f.o.b. values over c.i.f. values for corresponding quantities, and this time it was due to the quality differences in respect of imports from or exports to the States of Kathiawar and Travancore and the French and the Portuguese Possessions. Values could not, therefore, be used; the total quantities in trade and the average freight on them had to be estimated.

Of the total quantities traded Burma trade prior to 1936-7 had to be deducted. The trade of Burma equalled 'exports' from or 'imports' into Burma whichever was higher. The balance gave inter-Provincial trade of British India. Arbitrary figures were adopted here as well, for the inter-State trade of the two maritime groups of States, which escaped registration altogether.

The average freight and insurance rates were more difficult to calculate in the case of inter-Provincial trade, and were likely to be subject to a greater degree of error. There was nothing corresponding to Railway Board Reports giving gross earnings from traffic in various commodities carried by steamships and other vessels along the coastline of the sub-continent. No statistics of total ton-miles accounted for by coastal traffic were available. Any average that was adopted was, therefore, very arbitrary.

Values in Foreign Trade by Sea

Since every aspect of foreign trade by sea got registered, values in this case could be taken straightaway. Imports from Burma prior to 1937-8 were obtained from the *Coasting Trade Accounts* where they were registered as "exports from Burma". These gave f.o.b. values which had to be marked up to obtain corresponding c.i.f. values, when these entered Indian and Pakistani ports as imports. The breakdown of Burma imports entering each Province was not available and, therefore, an over-all average of freight had to be taken. Correspondingly Indian and Pakistani exports to Burma for these years were also taken from the *Coasting Trade Accounts*, where they were registered as "imports into Burma", and here there was the reverse problem of deducting freight and insurance charges to obtain corresponding f.o.b. values of Indian and Pakistani exports.

Next were considered the handling and wharfage expenses at the ports. The average worked out at Rs. 2 per ton in respect both of imports and exports. The export values were f.o.b. values and these included port charges. So when the value of exports were deducted from the value of marketed surplus, port charges on exports should be included before the deduction was made. Wharfage and unloading charges should be added to the c.i.f. values of imports as they were necessary costs borne by the importing wholesalers in the consuming markets.

Another item of expenditure on imports was Customs Duties. The revenue from Customs duties on some major items was available in the *Combined Financial Accounts of the Revenue and Expenditure of Central and Provincial Governments* issued by the Central Board of Revenue. But the list was rather small and in some cases unhelpful. Thus the total amount of Duty levied on yarn and textiles was available. This study was only interested in consumer goods—textiles—and not yarn, duties on which were reflected in the values of home-woven textiles. In such cases the matter was referred back to the Customs Manual which gave rates of Duty on imported goods. As was to be expected it gave a veritable maze of classification. The rates varied considerably over the period. Thus extension of Protection included additional items in the List. The Imperial Preference gave different rates for products of the United Kingdom, Empire Countries and of 'Foreign' countries. To this must be added the type, bulk and quality classifications, which could not always be traced to the minutest detail. In some cases where duties were of the type '20 per cent *ad valorem* or 4 anna a unit of weight or measure, whichever is higher (or lower)' out of a total volume or value of imports it was difficult to ascertain what proportion paid duty at the former rate and what proportion paid at the latter rate. Finally, only the total of revenues levied in British India was available. No statistics were available in respect of the duties levied in the maritime states of Kathiawar and Travancore. Except where there was information to the contrary the rates on these were assumed to be the same as in British India.

Values in Foreign Trade by Land

The statistics of trade across the land frontier were available in quantities only, and thus considerations of quality (and therefore price) differences were ruled out. It was assumed that the average price of exports were the same as that of imports and, therefore, only the net balances were considered. The three Groups in which Land Frontier Trade is classified were described on p. 145. The value of exports at the Frontiers would include the harvest price in the province of origin plus railway freight and wholesalers' costs

and margins. From the data as available the province of origin could not be identified. Instead the difference between harvest price in the province at the Frontier and the province of origin would roughly equal freight and incidental costs. Frontier traffic was, therefore, valued at the harvest prices of the Frontier provinces plus costs incurred by the wholesalers in the assembling markets. Net balances of Group (a) were valued at the prices in Sind, less than 2 annas per maund since Sind harvest prices were retail prices. Net balance of Group (b) were valued at the price in the North-West Frontier Province. It was not easy to decide which was the Frontier Province in case of Group (c) which included the United Provinces, Bengal and Assam on the frontiers. These were, however, valued at the harvest prices in the United Provinces. The prices which were adopted were the averages of the Provinces concerned. Sind and the North-West Frontier Province were small Provinces, and prices in the Frontier Districts would not be significantly different from the average of the Province. But the average price in the case of the United Provinces sprawling across the whole of the Gangetic Plains could be a very poor indication of the prices in the Frontier Districts. The over-all Land-Frontier Trade was rather small, and these errors were, therefore, neglected.

Traffic Carried on Roads and Rivers

We have so far considered the traffic carried (a) on rail and (b) on sea, (i) within the maritime provinces and states, (ii) between the maritime provinces and states and (iii) to and from foreign countries. All Land Frontier traffic was rail-borne, and the quantities in (a) included it. To estimate the total traffic considered we cannot simply add up (a) and (b), as except for the relatively small amounts produced or consumed within the districts on the coastline all the sea traffic would involve previous or subsequent movement on rail and would be included in (a). It was assumed that of the total sea traffic considered only 10 per cent did not involve movement by rail, and this was added to the quantities handled by the railway systems so as to get the total traffic so far considered.

The total of market supplies (the total to be considered) equalled marketed surplus plus imports. Only a small proportion* of the total market supplies involved movement by rail or sea. All the rest reached consumers by pack animals, carts and lorries on roads and by country boats and barges on rivers and canals. The extent of traffic by the latter was very significant in case of rice, but no quantity estimates were available. Specimen freight rates were available. These were applied to arbitrary guesses of total volume

* Approximately 20 per cent for rice, 35 per cent for wheat, 20 per cent for *jowar* and *bajra*, 40 per cent for gram and pulse and 30 per cent for other sorts.

and average distance covered to obtain the value contribution of agencies operating on internal waterways.

The balance was carried on roads. It was assumed that about 5 per cent of the marketed surplus in assembling markets was purchased directly by those urban consumers who bought their annual requirements at the harvest time. Traffic on road in these cases consisted of the small distances from the markets to their premises, and costs of this local transport were included when the value of all marketed surplus was marked up as indicated on page 201, and no further adjustments were required. The balance yet unaccounted for was, therefore, relatively long distance road traffic. Upto a distance carriage by road (usually costing more than railways for the same distance) was preferred to rail as the produce could be directly delivered at consignee's premises, and thus there was a saving of costs to, from and at the stations. The critical distance appeared to be 80 miles in the case of rice and 40 miles in the case of wheat. Beyond this distance the produce was covered by rail traffic except where the latter was not available. The average distance covered by the total road traffic could only be a guess, and as this item was significant it severely reduced the accuracy of the calculations of distributive costs.

Wholesalers' Earnings and Wholesale Values

We so far managed to bring 5 per cent of marketed surplus to consumers' premises, and the rest together with imports to wholesalers' premises. The wholesalers' earnings were considered next. These included among various things, (a) commission for buying and transporting the produce, (b) interest on capital invested in these transactions, (c) rents on godowns and office expenses and (d) expected and unexpected earnings (or losses generally unexpected) due to changes in prices over time. The total investments of the wholesalers comprised of the value of non-consumer purchase in the assembling markets, and c.i.f. value of imports, *plus* all subsequent expenses on handling and transportation. The f.o.b. values were not excluded at this stage as they contained exporting wholesalers' earnings. Only after the latter were added to the pool deductions were made for the exports (and re-exports, i.e., exports of imported goods).

Of the items enumerated above (a), (b), (c) and the expected part of (d) might be described as 'normal' earnings. But by the time the wholesaler purchased the produce and sold it the prices might change in an unexpected direction, or to an unexpected extent, giving rise to windfall profits or losses, according as the prices moved in an upward or downward direction. The available income-tax statistics did not give the net or gross incomes from

wholesale distribution. And thus their gross earnings could not be correctly ascertained. The 'normal' earnings were calculated per cent of the wholesalers' total investments on financing the purchase and transport and storage of supplies handled by them on the basis of the data in the *Marketing Reports*. Their gross earnings were obtained by two arbitrary assumptions that

- (a) they recovered their investments on the purchase and transportation, etc., of the supplies they handled, and
- (b) earned their 'normal' personal earnings on account of commission, interest and overhead costs on an arbitrary portion of supplies disposed of immediately.

The normal earnings on the rest were deflated by an arbitrary index of windfall gains or losses due to price changes.

Retail Values

Having obtained the wholesale values of market supplies, the f.o.b. values of exports were deducted to obtain the wholesale values of consumer purchase. Retail values were obtained on the basis of the ratios of retail to wholesale prices. These showed varying differences. In some cases the wholesalers themselves were retailers and the difference was small. In others the wholesalers sold the produce to the retailers. These carried the produce to their shops, and in the final values they realised they expected to cover their shop rents, interest and the net margins for their economic performance. So far as the price spread on this last lap of the journey involved transport and handling, the mark up was a function of weight, and for the rest it was a function of value. But as a large part of the produce was retailed by wholesalers themselves, and where this was not the case, transport was only local, the whole of retailers' gross earnings were adopted as a percentage of wholesale values. Because there was, in this case also, a time lag between purchase and sale, the problem of ascertaining windfall gains or losses again arose. The time lag in retail sale was relatively larger, and to that extent a larger proportion of the supplies handled by the retailers would be subject to windfall gains or losses. Any particular allocation, however, was arbitrary.

Values of Products

In the cases of grains acting as 'intermediate' goods care was exercised to deduct relevant values at the stage at which they leaked out of the central flow. These leakages were then followed up, till the consumers purchased them as finished products. There was a logical problem in the case of marks up to obtain the value of flour. Rice is usually consumed in the form of grains, but most of

wheat, *jowar*, *bajra*, maize, etc., are consumed in the form of flour. Some milling is done on a commercial basis by the flour mills, but the rest is converted to flour in consumers' houses. In such cases, the grains were considered 'unfinished' commodities and the imputed values of conversion to flour, to the value of consumer purchase of grains were added. Once the imputed values were sanctioned for the services of housewives on grains purchased on the market, there was no excuse to avoid imputing values to similar services rendered by the housewives in respect of quantities retained 'off' the market, and these were also accordingly adjusted.

Illustrative Notes on the Valuation of Consumer Purchase of Rice and its Products

The notes below give a detailed account of the valuation of market supplies of rice to serve as an illustration to the general description (given above) of the operations involved in the valuation of consumer purchase, and bring this long chapter to an end. But before this is proceeded to, note may be taken of the two specific factors in the case of rice. (a) Rice was valued at the price at which dehusked rice was sold in the assembling markets. A significant quantity of rice, however, was sold by the cultivators in husk, and this was purchased by the Rice Mills. *Paddy* retained by the cultivators was hulled by them, and since village retention was valued at the net prices for rice, this aspect of their 'economic' activity was already accounted for. Of the marketed surplus more than half* was bought by Mills in the form of *paddy*. So far as the latter were situated in the same districts as the assembling markets, the values of marketed surplus include additional costs of transport of paddy to the mill, and of rice from the mill to the market. But in the case of inter-district, and further of inter-provincial, transport of *paddy*, valuation at the district prices in the assembling markets did not take into account the additional costs of transportation.

These transportation costs were, therefore, added in the total pool of values in the distribution of the market supplies of rice. (b) The net balance of imports or exports of paddy needed adjustments on account of the costs of hulling. In all years there was a net import of paddy, and the hulling costs on these were added to get corresponding values of rice.†

* The *Report on the Marketing of Rice* gave 55.8 as the percentage of rice which was machine-milled.

† The figures in the notes are given to the nearest thousand, not because they are so accurate, but because they are reproduced from working sheets, and if rounded up at every stage would have created difficulties in discussing smaller items which have been considered in an attempt to give as complete a picture as possible.

Step 1. Add market charges borne by the buyers of produce in assembling markets to get this to (a) consumers' premises in case of 5 per cent. of the marketed surplus and (b) to wholesalers' godowns or railway stations for the rest of the marketed surplus. In the case of (a) the value of direct purchase by consumers in the assembling markets and its subsequent transport to their premises is obtained. The steps which follow involve a consideration of (b) only.

TABLE A.
Quantities and Values of Marketed Surplus in Assembling Markets.

Year	Quantities (000 Tons)			Values (000 Rs.)				
	Market- ed Surplus	Consu- mer Pur- chase	Whole- salers' Pur- chase	Market- ed Surplus at H P.	Buyers' Expens- es	Total Cols. 5+6	Direct Consum- er Pur- chase	Whole- salers' Pur- chase
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1931-2..	13,885	694.2	13,190.8	1,262,528	20,309	1,282,837	64,142	1,218,695
1932-3..	12,935	646.8	12,288.6	1,051,877	16,920	1,068,797	53,440	1,015,357
1933-4..	12,773	638.6	12,134.4	996,251	16,026	1,012,277	50,614	961,663
1934-5..	12,474	623.7	11,850.3	1,082,378	17,411	1,099,789	54,989	1,044,800
1935-6..	11,238	561.9	10,676.1	1,020,430	16,415	1,036,845	51,842	895,003
1936-7..	13,425	671.2	12,753.8	1,182,532	19,022	1,201,554	60,078	1,141,476
1937-8..	12,995	649.8	12,345.2	1,161,121	18,678	1,179,799	58,990	1,120,809
1938-9..	11,593	579.6	11,013.4	1,063,110	17,101	1,080,211	54,011	1,026,200
1939-40	10,722	536.1	10,185.9	1,318,353	21,207	1,339,560	66,978	1,272,582
1940-1..	12,286	614.3	11,671.7	1,315,471	21,161	1,336,632	66,832	1,269,800

Column 5. Values as in Table 96 less 5 per cent. as indicated in the last paragraph of Chapter 10.

Column 8. 5 per cent. of Column 7.

Column 9. 95 per cent. of Column 7.

Step 2. About 50,000 tons of rice are converted into flour. Cost of grinding rice to flour was given at 2 annas per maund (*Marketing Report*, p. 421). Assuming a constant quantity add Rs. 1,70,000 as additional cost of conversion of rice into flour. The weight of the product is not appreciably different, and the totals of quantities of wholesalers' purchase in Column 4 of Table A do not need adjustment.

Step 3. (a) The quantities carried, (b) freight and other earnings and (c) handling expenses at the stations in assembling and consuming markets and the transport charges to port or wholesalers' godowns in the consuming markets are given below. The total quantities of traffic originating on Class I Railways and their gross earnings from rice traffic exclude Burma and were taken from *The Annual Administration Reports* of the Railway Board. Commodity classification of goods traffic on Classes II & III Railways was not available. The gross revenue on rice on these was taken the same proportion of earnings from all goods traffic as in case of Class I Railways. As goods on these covered shorter distances the quantities carried on these should be relatively higher. Those lines are ordinarily feeder lines and supplement the traffic on Class I Railways. Thus there would be two types of traffic: produce-collecting lines will have all their traffic "originating on home lines", while produce-distributing lines would have none of that description. On balance the same ratio of quantities as for freights was adopted. Handling charges and other station expenses were calculated from the data in the *Marketing Report* (at Rs. 7.8155 per ton).

TABLE B.

Quantities of Rice Carried on Railways.

(000 Tons)

Year	Class I Railways			Class II and III Railways	Total All Railways
	Paddy	Rice	Total		
(1)	(2)	(3)	(4)	(5)	(6)
1931-2 ..	608.6	2182.3	2790.9	87.1	2878.0
1932-3 ..	572.9	2133.6	2706.5	80.7	2787.2
1933-4 ..	592.6	2485.5	3078.1	94.5	3172.6
1934-5 ..	708.9	2749.5	3458.4	103.8	3562.2
1935-6 ..	829.4	2363.9	3193.3	92.6	3285.9
1936-7 ..	714.1	2563.7	3277.8	89.5	3367.3
1937-8 ..	670.1	2496.6	3166.7	92.8	3259.5
1938-9 ..	760.3	2752.4	3512.7	99.1	3611.8
1939-40 ..	862.1	3026.7	3888.8	108.1	3996.9
1940-1 ..	659.8	2503.3	3163.1	79.4	3242.5

TABLE C.

Gross Earnings from Rail Traffic on Rice.

(000 Rs.)

Year	Class I Railways			Class II and III Rail- ways	Total Freight Cols. 4+5	Hand- ling Charges etc.	Total Freight and Hand- ling charges Cols. 6+7
	Paddy	Rice	Total Cols. 2+3				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1931-2 ..	3,569	24,640	28,209	880	29,089	22,493	51,582
1932-3 ..	3,568	25,196	28,764	857	29,621	21,783	51,404
1933-4 ..	3,333	27,397	30,730	943	31,673	27,495	59,168
1934-5 ..	3,947	28,492	32,439	973	33,412	27,840	61,252
1935-6 ..	5,186	25,430	30,616	888	31,504	25,681	57,185
1936-7 ..	4,589	29,172	33,761	922	34,683	26,317	61,000
1937-8 ..	3,931	29,086	33,017	967	33,984	25,475	59,459
1938-9 ..	4,284	29,624	33,908	956	34,864	28,228	63,092
1939-40 ..	4,989	30,983	35,972	1,000	36,972	31,238	68,210
1940-1 ..	4,059	26,526	30,585	768	31,353	25,342	56,695

Step 4. The quantity carried, freight and insurance charges, transport to wholesalers' godowns or loading into waggons in importing ports in intra-provincial and intra-state coastal traffic are considered below.

(a) Total intra-provincial traffic equals imports or exports, whichever was higher. The trade between two non-Customs ports was neglected.

(b) Intra-provincial traffic in the *Accounts* prior to 1936-37 included traffic of Burma. Figures in Columns 2 and 3 (Table D) are net of Burma, deduction for which was arbitrary. Total intra-provincial traffic inclusive of Burma was as below :

	(000 Tons)	
	Paddy	Rice
1932-3	.. 29.4	115.0
1933-4	.. 30.2	126.8
1934-5	.. 30.5	93.8
1935-6	.. 40.7	112.9

(c) The *Accounts* were not available for 1931-2, and the volume of traffic for the year, therefore, is a guess.

(d) Intra-stato trade of Kathiawar group of states and Travancore by sea is an arbitrary rounding off guess.

(e) Freight and insurance were taken at Rs. 3.5 for paddy and Rs. 3 for rice and rice flour per ton, plus 33 per cent. for 1939-40 and plus 50 per cent. for 1940-1.

(f) Port charges were taken at Rs. 2 per ton at both ends, i.e., Rs. 4 per ton of traffic.

(g) Expenses at the station or to the godown incurred by the importing wholesalers were taken at Re. 1 per ton.

The volume of traffic was taken from *The Coasting Trade Accounts* and data on items (f) and (g) were taken from the *Marketing Report*.

Step 5. Interprovincial (and interstate) trade by sea is considered next. The figures given below suffer from similar limitations as in intra-provincial coastal trade.

(a) Total volume of Trade of British India prior to 1936-7 was obtained as follows :

(i) Total Volume of Coastal Trade (including Burma) = Total registered Imports or Exports whichever was higher. Thus, in 1935-6,

	(Tons)	
	Imports	Exports
Paddy	170,170	216,332
Rice	1,320,840	1,626,625
Rice Flour	383	384

Total Trade : Paddy 216,332 tons, Rice 1,626,625 tons, Rice Flour 384 tons.

(ii) Total Volume of Coastal Trade of Burma : Total of registered imports or exports whichever was higher.

	(Tons)	
	Imports	Exports
Paddy	150	174,271
Rice	1,105	1,573,359
Rice Flour	1	1

Total Coastal Trade of Burma : Paddy 174,271 tons, Rice 1,573,359 tons, Rice Flour 1 ton.

(iii) Total Trade of British India : Total Trade (i)—Total Trade (ii), i.e., Paddy 42,061 tons, Rice 53,354 tons, Rice Flour 383 tons.

(b) Volume of traffic 1931-2 is a guess.

(c) Interstate trade of Kathiawar and Travancore is also a guess.

(d) "Before the outbreak of war the rates of freight (which include insurance) on rice from Calcutta to Madras, Bombay and Cochin were respectively Rs. 7, Rs. 8 and Rs. 12 per ton less 10 per cent." (*Report on the Marketing of Rice*, p. 372). An arbitrary average rate of Rs. 7.2 per ton of rice prior to 1939-40 was taken. "Rates for paddy for the same destinations were a rupee higher in each case." Pre-war freight rates on paddy therefore are taken at Rs. 8.2 per ton, + 33 p.c. for 1939-40, + 50 p.c. for 1940-1.

(e) Port Charges were taken at Rs. 2 per ton at each end and importing wholesalers' other expenses were taken at Re. 1 per ton of traffic.

TABLE D.
Inter-Provincial (and Inter-State) Costing Trade.

Year	Quantities (000 Ton-)									Values (000 Rs)				
	British India			Maritime States			Total			Freight	Port Charges	Import- ing Whole- salers' Ex- penses	Total Cols. 11+12 + 13	
	Paddy	Rice	Rice Flour	Paddy	Rice	Rice Flour	Paddy	Rice	Rice Flour					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1931-2	..	..	..	..	..	..	(22.0)	(25.0)	(1)	(452)	(588)	(147)	(1187)	
1932-3	..	19.4	105.0	.1	1.6	15.0	..	21.0	120.0	.1	434	564	141	1139
1933-4	..	20.2	116.8	..	1.8	13.2	.1	22.0	130.0	.1	467	608	152	1227
1934-5	..	20.5	83.8	..	1.5	16.2	.1	22.0	100.0	.1	377	488	122	987
1935-6	..	30.7	112.9	..	2.3	17.1	.1	33.0	130.0	.1	506	652	163	1321
1936-7	..	30.2	116.5	..	2.8	13.5	.1	33.0	130.0	.1	506	652	163	1321
1937-8	..	28.8	46.9	..	2.2	13.1	.1	31.0	60.0	.1	289	364	91	744
1938-9	..	30.5	59.1	..	2.5	10.9	.1	33.0	70.0	.1	326	412	103	841
1939-40	..	27.4	33.4	..	2.6	6.6	.1	30.0	39.0	.1	296	276	69	641
1940-1	..	30.3	49.2	.1	2.7	10.8	..	33.0	60.0	.1	444	372	93	909

TABLE E.
Inter-Provincial (and Inter State) Coastal Traffic.

Year	Quantities (000 Tons)						Values (000 Rs.)							
	British India			Maritime States			Total		Freight and Insurance	Port Charges	Im- porters' Other Expenses	Total		
	Paddy	Rice	Rice Flour	Paddy	Rice	Rice Flour	Paddy	Rice						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
1931-2	..	..	..	..	..	..	(15 0)	(100.0)	(.6)	(847)	(462)	(116)	(1,425)	
1932-3	..	12.1	122.5	.6	1 9	12.5	.1	14.0	135.0	.7	1,092	599	150	1,841
1933-4	..	13.4	67.7	.4	1.6	7.3	.1	15 0	75.0	.5	667	362	91	1,120
1934-5	..	17.4	56.1	.4	2.6	8.9	.1	20.0	65 0	.5	636	342	86	1,064
1935-6	..	42 1	53.3	.4	2.9	6.7	.1	45 0	60 0	.5	805	422	106	1,333
1936-7	..	42.9	59.4	.5	2.1	8.6	.1	43.0	68 0	.6	847	446	112	1,405
1937-8	..	24.2	61.5	.5	1.8	8.5	.1	26 0	70 0	.6	722	386	97	1,205
1938-9	..	36.1	75.6	.5	2 9	9.4	.1	39.0	85.0	.6	936	498	125	1,559
1939-40	..	22.4	81.8	.4	2.7	8.2	.1	25.0	90.0	.5	1,143	462	116	1,721
1940-1	..	9.4	82.8	.4	.6	7.2	.1	10.0	90.0	.5	1,101	402	101	1,604

TABLE F.
Foreign Trade in Paddy, Rice and Rice Flour.
Quantities (Tons)
Imports

Year	Imports into British India		Share of Burma in		Imports into Kathia-war		Imports into Travancore		Imports from Burma		Total Imports*		Re-Ex-ports	
	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1931-2	..	9,042	17,931	1	..	8	..	..	169,000	1,088,000	178,042	1,103,933	1	1,973
1932-3	..	11	35,510	1	..	2	..	..	110,184	936,078	110,194	971,571	1	..
1933-4	..	4,381	84,024	..	..	1	..	..	160,537	1,628,357	164,938	1,712,342	..	5
1934-5	..	111,133	282,918	..	..	3,351	..	..	221,739	1,977,940	332,872	2,264,209	..	20
1935-6	..	119,731	90,273	..	..	1,592	..	3,424	174,271	1,573,359	294,002	1,668,668	..	148
1936-7	..	67,702	18,080	..	..	..	..	..	87,391	1,533,829	155,093	1,551,909	..	1
1937-8	..	36,013	1,198,063	..	..	39,795	15,780	58,072	..	..	51,793	1,295,930	..	5,789
1938-9	..	83,841	1,281,697	..	..	29,894	25,827	63,246	..	..	109,668	1,374,837	..	5,201
1939-40	..	339,358	1,887,298	..	..	44,985	9,162	79,552	..	..	348,520	2,011,835	..	4,025
1940-1	..	44,784	1,206,933	1	..	14,867	4,184	45,919	..	..	48,968	1,267,719	1	7,226

* Total Imports: Paddy (Col. 12)=Cols. 2-5+8+10.
 Rice (Col. 13)=Cols. 3-6+7+9+11.
 Rice Flour (Col. 15)=Col. 4.

TABLE F.—(Contd.)

Foreign Trade in Paddy, Rice and Rice Flour.

Exports

Year	Exports of British India			Share of Burma in		Exports of Kathiawar		Exports to Burma		Total Exports*		
	Paddy	Rice	Rice Flour	Col. 2	Col. 3	Paddy	Rice	Paddy	Rice	Paddy	Rice	Rice Flour
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1931-2	..	70,291	2,301,415	73	67,920	2,065,815	..	55	(..)	2,371	237,655	73
1932-3	..	58,844	1,828,196	92	54,653	1,602,239	..	52	158	4,349	228,193	92
1933-4	..	11,384	1,732,539	101	10,293	1,516,396	..	47	..	1,091	217,749	101
1934-5	..	14,357	1,592,537	70	9,954	1,389,264	1	80	19	4,423	204,612	70
1935-6	..	16,552	1,393,615	39	12,470	1,205,339	..	86	150	4,232	189,467	39
1936-7	..	8,191	1,457,030	75	7,441	1,222,702	..	55	481	1,231	235,334	75
1937-8	..	831	227,269	64	..	..	..	43	..	831	227,312	64
1938-9	..	2,689	281,602	113	..	..	..	82	..	2,689	281,684	113
1939-40	..	4,236	262,494	106	..	..	..	50	..	4,236	262,544	106
1940-1	..	2,044	251,033	99	..	..	..	336	..	2,044	251,369	99

* Total Exports: Paddy (Col. 11) = Cols. 2-5 + 7 + 9.
 Rice (Col. 12) = Cols. 3-6 + 8 + 10.
 Rice Flour (Col. 13) = Col. 4.

TABLE G.
Foreign Trade in Paddy, Rice and Rice Flour.

Values (000 Rs.)

Imports

Year	Imports into British India		Share of Burma in	Imports into Kathia-war		Imports into Travancore		Imports from Burma (f.o.b. values)		Freight and Insurance on		Total Value of Imports* (c.i.f. values)		Re-Exports
	Paddy	Rice	Col 3.	Rice		Paddy	Rice	Paddy	Rice	Col. 8	Col. 9	Paddy	Rice	
(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1931-2	..	571	1,620	1	1	..	..	7,024	76,601	1,633	9,481	9,228	87,702	173
1932-3	..	1	3,110	3	..	..	..	5,539	73,654	1,102	8,229	6,642	84,990	..
1933-4	..	224	4,899	5	..	..	..	6,633	99,297	1,582	14,287	8,439	118,478	1
1934-5	..	5,637	18,801	..	184	..	..	10,018	125,183	2,153	17,273	17,808	161,441	2
1935-6	..	7,066	6,711	..	130	..	263	9,576	122,999	1,683	14,132	18,325	144,255	1
1936-7	..	3,866	1,657	..	..	..	..	4,895	121,639	811	13,298	9,572	136,594	..
1937-8	..	2,132	109,836	..	4,052	1,108	5,241	..	..	..	..	3,240	119,129	699
1938-9	..	4,733	113,733	..	2,869	1,707	5,645	..	..	..	..	6,440	132,247	615
1939-40	..	19,945	178,535	..	4,437	790	8,343	..	..	..	..	20,675	191,315	499
1940-1	..	3,331	129,709	..	1,745	352	5,625	..	..	..	..	3,683	136,449	1,010

(*) Total Imports : Paddy (Col. 19)=Cols. 2+6+8+10.
Rice (Col. 13)=Cols. 3-4+5+7+9+11.

TABLE G. (Contd.)
Foreign Trade in Paddy, Rice and Rice Flour.

Exports

Year	Exports of British India			Share of Burma in		Exports of Kathia-war			Exports to Burma (c.i.f. values)		Freight on Exports to Burma		Total value of Exports* (f.o.b. Values)	
	Paddy	Rice	Rice Flour	Col. 2	Col. 3	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice	Paddy	Rice Flour
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1931-2	2,986	178,439	8	2,823	145,712	8	(..)	(400)	(..)	(16)	163	33,119	8	
1932-3	2,738	141,838	9	2,499	114,112	7	4	369	1	17	242	28,085	9	
1933-4	442	105,214	10	389	83,788	6	..	233	..	12	53	21,633	10	
1934-5	663	103,028	8	432	81,300	9	1	190	..	10	232	21,917	8	
1935-6	864	109,474	4	609	87,705	13	5	174	1	9	259	21,947	4	
1936-7	451	115,777	8	405	88,774	6	14	158	4	8	56	27,189	8	
1937-8	50	26,124	7	..	..	5	..	..	..	..	50	26,129	7	
1938-9	162	31,653	12	..	..	10	..	..	..	..	162	31,663	12	
1939-40	287	31,911	12	..	..	7	..	..	..	..	287	31,918	12	
1940-1	155	33,472	13	..	..	46	..	..	..	..	155	33,318	13	

(*) Total Exports : Paddy (Col. 12) = Cols. 2-5+8-10.
Rice (Col. 13) = Cols. 3-6+7+9-11.
Rice Flour (Col. 14) = Col. 4.

Step 6. Quantity balance of imports, re-exports and exports of paddy, rice and rice flour are obtained next. The operations have been discussed in Chapter 8 and the Table F is self-explanatory.

(a) The quantity of imports of paddy and rice from Burma were taken from the *Marketing Report*, p. 63.

(b) There were no exports of paddy or rice from Travancore.

Step 7. Next are obtained the c.i.f. values for imports and f.o.b. values for exports, of quantities considered in Step 6. All other values were directly available except the values of imports from and exports to Burma prior to 1937-8. (Columns 10 and 11 in the Table F on Imports and Columns 9 and 10 on Exports.)

(a) Values of imports from Burma were registered as 'exports from Burma' in the *Coasting Trade Accounts* and were f.o.b. values. C.i.f. values at the ports of landing in India, and Pakistan were required and thus the f.o.b. values had to be marked up by insurance and freight from Burma to India and Pakistan. This would vary with the volume and destination of these 'exports'. Imports of paddy and rice into Kathiawar and Travancore from Burma were directly available in the *Marketing Report*. These quantities were deducted from the total, the residual quantities were imports into British India. Small variations due to time lag in transit were neglected. The *Marketing Report* gave percentage share of the three Provinces of Bengal, Madras and Bombay in British India imports from Burma for the years 1935-6 to 1939-40 (p. 65). Allocation only upto 1936-7 was required. These percentages were, therefore, available for the two years 1935-6 and 1936-7 and the rest could only be a conjecture. The error, however, was small. Freight rates to Bombay, Madras, Calcutta, Bhavnagar (Kathiawar) and Cochin were available in the *Marketing Report* (p. 377). Travancore imports were valued at freight same as Cochin. The total freight and insurance then were calculated on the basis of the volume of traffic to each unit and the freight rates thereon.

(b) Corresponding deductions had to be made on the relatively small exports of paddy and rice to Burma, which were registered at c.i.f. values at the ports of entry into Burma, so as to get the f.o.b. values at the exporting ports in India and Pakistan. An average rate of Rs. 9 per ton of paddy and Rs. 8 per ton of rice was adopted, and total values for freight and insurance were deducted from the c.i.f. value of exports.

(c) F.o.b. values for imports from Burma in 1931-2 were obtained from the price per ton registered for Burmese exports as part of Indian foreign exports of paddy and rice. (Paddy Rs. 41.5632 and Rice Rs. 70.5348 per ton).

(d) C.i.f. values of imports of rice flour were less than Rs. 500 and were neglected.

Step 8. Port charges were calculated at the rate of Rs. 2 per ton on imports, exports and re-exports. A Customs duty began to be levied on broken rice from 1935-6. Gross Revenue from Customs was obtained from the *Combined Financial Accounts*. Importing wholesalers' other expenses on loading the supplies in railway waggons or transporting to their godowns at Re. 1 per ton were also added.

TABLE H.
Additional Expenses on Imports and Exports.
(000 Rs.)

Year	Expenses at the Ports Port Charges				Importing Wholesalers' other Expenses	Total
	Imports	Re-exports	Exports	Customs		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1931-2	2,564	4	480	..	1,282	4,330
1932-3	2,164	..	465	..	1,082	3,711
1933-4	3,755	..	438	..	1,877	6,070
1934-5	5,194	..	418	..	2,597	8,209
1935-6	3,925	..	387	1,152	1,963	7,427
1936-7	3,414	..	473	56	1,707	5,650
1937-8	2,695	12	456	..	1,348	4,511
1938-9	2,969	10	569	1	1,485	5,034
1939-40	4,721	8	534	642	2,360	8,265
1940-1	2,633	14	507	3	1,317	4,474

TABLE J.
Land Frontier Trade.
(In terms of Rice)

Year	Quantity (Tons)					Value (000 Rs.)				
		Gross Total of Imports	Gross Total of Exports	Net Balance of Imports	Net Exports Group A	Net Exports Group B	Net Imports Group C	Value of Col. 4 at Harvest Price	Market Charges on value in Col. 8	Total Cols. 8+9
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
1931-2	74,718	24,624	50,094	2,240	6,691	59,025	5,254	85	5,339	
1932-3	81,602	24,349	57,253	1,540	7,171	60,964	7,013	113	7,126	
1933-4	56,133	25,606	30,527	1,678	7,354	39,559	3,053	49	4,102	
1934-5	66,988	26,351	40,637	1,647	5,039	47,323	4,232	68	4,300	
1935-6	66,631	22,698	43,933	382	5,943	50,258	4,971	80	5,050	
1936-7	54,720	22,273	32,447	840	8,106	41,393	3,869	62	3,931	
1937-8	69,460	22,586	46,874	1,520	7,599	55,993	5,747	92	5,839	
1938-9	72,923	19,010	53,913	1,451	3,344	58,708	6,679	107	6,786	
1939-40	64,122	18,487	45,635	2,020	4,327	51,982	5,853	94	5,947	
1940-1	54,658	16,003	38,655	1,109	4,880	44,644	5,779	93	5,872	

Step 9. Adjustments for net excess of imports of paddy were made in order to get corresponding quantities and values of rice.

(a) Imported paddy was converted into rice in mills in the ports. The mills brought out polished rice and on an average the percentage recovery was lower than in handpounded rice. The recovery was given at 68 per cent. in the *Marketing Report*.

(b) The value of rice needed a mark up on account of hulling costs and profit margins. But the mills realise some earnings from the sale of by-products and thus the discrepancy between the two prices was small. From 8 observations given in the *Marketing Report* (pp. 614-5) the net difference between the cost of paddy at the mill and sale price of rice worked out at Rs. 1-7 as. per ton of rice. The values of net imports of paddy were marked up at this rate.

TABLE I.
Adjustments to the Values of Net Imports of Paddy.

Year	Net Imports of Paddy (000 Tons)	Quantities of Rice Equivalent to Paddy in Col. 2 (000 Tons)	Value Increment at Rs 1 4375 per Ton in Col. 3 (000 Rs.)
(1)	(2)	(3)	(4)
1931-2	175,671	119,456	172
1932-3	105,845	71,975	103
1933-4	163,847	111,416	160
1934-5	328,449	223,345	321
1935-6	289,770	197,044	150
1936-7	153,862	104,626	150
1937-8	50,962	34,654	50
1938-9	106,979	72,746	105
1939-40	344,284	234,113	337
1940-1	46,924	31,908	46

Step 10. Next consider Land Frontier Trade. (Table J)

(a) Imports of Paddy were converted to rice at the rate of 70 per cent recovery.

(b) Only the net balances in each Group were considered.

(c) Net balance in Group A was valued at the harvest price in Sind less 2 annas per Maund (as harvest prices in Sind were retail prices), net balance in Group B was valued at the harvest price in the North-West Frontier Province and net balance in Group C was valued at the harvest price in the United Provinces.

(d) To the total of the values at harvest prices in the three Groups were added the marketing expenses borne by the buyers in the assembling markets at 1.6086 per cent.

Step 11. Estimate the total market supplies of rice.

(a) Total supplies on the market equalled :

(i) Marketed surplus of rice. (Step 1).

plus (ii) Gross total imports by sea. Paddy converted to rice at 68 per cent. (Step 6).

plus (iii) Gross imports by land. Paddy converted to rice at 70 per cent. (Step 10).

Of this total, the quantities involving sea and rail transport have been accounted for. These quantities cannot simply be added because (i) All Land Frontier Trade, so far as it was ascertained, was rail borne and was included in the rail traffic considered in Step 3. (ii) About 90 per cent. (it was assumed) of the sea-borne trade also involved previous or subsequent transport by rail and would be included in the quantities considered in Step 3. The total of quantities so far considered, therefore, was equal to

(1) Rail-borne Traffic (rice only), 'originating on home lines' (Step 3) plus (2) 10 per cent of quantity total of

(i) Intra-Provincial (and intra-State) coastal trade of rice and rice flour (Step 4).

(ii) Inter-Provincial (and inter-State) coastal trade of rice and rice flour (Step 5).

and (iii) Sea-borne imports of rice, and exports and re-exports of rice, paddy (in terms of rice) and rice flour (Step 6).

Of the marketed supplies direct consumer purchase in the assembling markets was estimated in Step 1. The residual quantities still to be considered were obtained as below :

TABLE K.
Transportation of Market Supplies of Rice.
(000 Tons)

Year	Market Supplies	Direct Consumer Purchase	Quantities involving Rail & Sea Transport	Col. 4 per cent of Col. 2	Quantities not involving rail or sea Transport
(1)	(2)	(3)	(4)	(5)	(6)
1931-2	15,184.7	694.2	2,407.50	15.9	12,128.00
1932-3	14,063.1	646.8	2,343.07	16.7	11,073.23
1933-4	14,653.6	638.6	2,775.44	18.9	11,239.56
1934-5	15,031.6	623.7	3,095.75	20.6	11,312.15
1935-6	13,153.2	561.9	2,635.68	20.0	9,955.62
1936-7	15,137.1	671.2	2,832.38	18.7	11,633.52
1937-8	14,395.6	649.8	2,735.84	19.0	11,009.96
1938-9	13,115.3	579.6	3,011.93	23.0	9,523.77
1939-40	13,034.9	536.1	3,351.89	25.7	9,146.91
1940-1	13,641.7	614.3	2,733.94	20.0	10,293.46

Step 12. A general description of traffic on the internal waterways was available in the *Marketing Report*, but no quantity estimates were given. "The probable total traffic of rice and paddy by internal waterways can hardly fall short of 1 million tons and may indeed be much greater" (p. 367). A total traffic of 1,250,000 tons was adopted; of this rice was taken to constitute 750,000. The rates of freight on country boats and barges on these rivers and canals worked out on an average at .23 pies per maund per mile in the case of sundry observations given in the *Marketing Report* (pp. 368-9), and assuming an average distance of 150 miles for internal water traffic, an average freight expense was taken at Rs. 4.8915 per ton. Handling costs and the costs of transportation to the wholesalers' godowns were taken at Rs. 5 per ton. The quantities were taken as constant over the period. The total of freight and other expenses on this 1.25 million tons of water traffic worked out at Rs. 12,364,000.

Step 13. This still left a large balance of rice unaccounted for. Paddy was left at this stage by conveniently assuming that the balance of paddy did not involve inter-district movement by road. The average cost of transport by road worked out about 1.5 pies per maund per mile. Assuming an average distance of 50 miles, an average of Rs. 10.6 per ton of produce distributed to consignees' premises by road was obtained.

TABLE L.
Quantities of Rice Transported by Road.
Freight and Distribution Costs.

Year	Quantities of Rice involving Road Transport (000 Tons)	Freight and Distribution costs (000 Rs.)
1931-2 ..	11,378.00	120,607
1932-3 ..	10,323.23	109,426
1933-4 ..	10,489.56	111,189
1934-5 ..	10,562.15	111,959
1935-6 ..	9,205.62	97,580
1936-7 ..	10,883.52	115,365
1937-8 ..	10,259.96	108,756
1938-9 ..	8,773.77	93,002
1939-40 ..	8,396.91	89,007
1940-1 ..	9,543.46	101,161

Step 14. Add up the various items considered to obtain wholesalers' investments. In the case of rice purchased from the mills the price difference between the rice in the assembling market and the rice at the mill should approximately equal transport costs on paddy from assembling markets to the mill. The transport costs on paddy considered so far were included in the investments of wholesalers. The total investments included, therefore,

- (a) Value of the purchase of rice in the assembling markets and market charges and other expenses thereon. (Step 1).
- (b) Additional cost of converting rice into rice flour (Step 2).
- (c) Freight on rail, expenses at stations and transport costs in the consuming markets on quantities transported by rail (Step 3).
- (d) Freight, port charges, and transport costs in importing centres in intra-provincial (Step 4) and inter-provincial (Step 5) coastal trade.
- (e) C.i.f. values of imports of paddy and rice by sea (Step 7).
- (f) Port charges on imports, re-exports and exports, customs duties, and importing wholesalers' costs on all imports (Step 8).
- (g) Costs of conversion of net imports of paddy into rice (Step 9).
- (h) Value of net imports across the Land Frontiers (Step 10).
- (i) Freight and other expenses on traffic on internal waterways (Step 12) and
- (j) Transport and handling costs on traffic on roads (Step 13).

The wholesalers' normal returns were obtained on the basis of 16 observations in the *Marketing Report* (pp. 389-393, 614-6); the average of which worked out at 3.91 per cent. on their investments. The relative time lag in wholesale distribution was very short and windfall gains or losses were obtained only in case of quantities held from sale. It was assumed that 90 per cent. of the supplies were distributed by wholesalers more or less on a commission basis with negligible time lags, and about 10 per cent. were withheld from sale. In the case of the former it was assumed that the wholesalers earned their normal margins and on the rest an index of mark up/down on their normal earnings was adopted on the basis of the relative price changes during the period. There were no data on the actual volume of stocks, or their response to changes in price levels. The figures given below are arbitrary and subject to a significant degree of error. The quantities and wholesale values refer to market supplies, less consumer purchase in the assembling markets and exports across the Land Frontiers.

TABLE M.
Wholesale Values of Rice.

Year	Quantities in Wholesale Trade (000 Tons)	Wholesalers' Investments (000 Rs.)	Index of Windfall Gains or Losses per cent of Normal	Per cent gross earnings of wholesalers on Col. 3	Wholesale Values of Quantities in Col. 2 (000 Rs.)
(1)	(2)	(3)	(4)	(5)	(6)
1931-2	14,465.9	1,512,801	— 50	3.7145	1,568,994
1932-3	13,392.0	1,294,273	+ 20	3.9882	1,345,891
1933-4	13,989.4	1,284,150	—100	3.5190	1,329,339
1934-5	14,381.5	1,424,675	+ 20	3.9882	1,481,494
1935-6	12,568.6	1,329,011	...	3.91	1,380,975
1936-7	14,443.7	1,488,942	+ 50	4.1055	1,550,071
1937-8	13,723.2	1,436,276	+ 50	4.1055	1,495,242
1938-9	12,516.7	1,337,839	— 25	3.81225	1,388,841
1939-40	12,480.3	1,670,652	+100	4.301	1,742,507
1940-1	13,011.4	1,593,224	+ 50	4.1055	1,658,634

Step 15. 1. From the above were deducted :

- (i) F.o.b. values of exports of 'Indian and Foreign Merchandise' by sea (Step 7).
- (ii) Value of 4,000 tons of rice used by laundries at wholesale prices calculated from Step 14.
- (iii) Values of 1.5 million tons of paddy (given as equivalent to 1 million tons of rice in the *Marketing Report*, p. 415) and 350,000 tons of rice used for the manufacture of parched rice, beaten rice and parched paddy (also at the prices per ton in Step 14).

2. The residual was distributed either by wholesalers direct or by retailers. The average normal difference (in 62 observations in the *Marketing Report*) between the retail and wholesale price came to 10.65 per cent. of the latter. If half of the quantities was directly retailed at this normal margin and another half involved a time lag, and consecutive windfall gains or losses as indexed in the case of the wholesalers in Step 14, the distributive over-all mark up on this last lap of their journey to the final consumers is indicated in Column 3 of Table N.

TABLE N.
Retail Values of Rice.
(000 Rs.)

Year	Wholesale Value of Net Consumer Purchase	Price Mark Up Per cent of Col. 2	Retail Values of Consumer Purchase
(1)	(2)	(3)	(4)
1931-2	1,388,676	7.9875	1,499,596
1932-3	1,181,478	11.715	1,319,888
1933-4	1,178,965	5.325	1,241,745
1934-5	1,319,859	11.715	1,474,480
1935-6	1,209,986	10.65	1,338,850
1936-7	1,377,507	13.3125	1,560,888
1937-8	1,320,825	13.3125	1,496,660
1938-9	1,206,149	9.31875	1,318,547
1939-40	1,520,746	15.9	1,762,545
1940-1	1,451,330	13.3125	1,644,538

Step 16. Rice Products.

(a) The value of rice equivalent of paddy used for rice products was adjusted to give corresponding values of paddy. This involved a deduction of Rs. 5,104,000 as the hulling costs of 1.5 million tons of paddy at the rate of 2 annas per maund.

(b) These values of paddy were divided according to the quantities used in the production of parched paddy, parched rice and beaten rice. This distribution of paddy was obtained on the basis of data in the *Marketing Report* (Appendix 35, pp. 532-3). The percentage share of each was

Parched Paddy	18.1
Beaten Rice	55.8
Parched Rice	26.1

About 350,000 tons of rice were used in the manufacture of parched rice in addition to paddy as indicated above. The value of raw materials used in the manufacture of rice products was thus obtained. (Table O, Columns 5, 6, 7 and 8).

(c) From the *Marketing Report* observations (pp. 415-429) the following pattern of average price spreads in distribution was obtained :

TABLE O.
Values of Rice Products.
(000 Rs.)

Year	Value of Rice=t of Paddy	Deduct Hulling Costs	Value of Paddy	Share in Column 4 of			Cost of Rice for Parched Rice	Value of Consumer Purchase			Total
				Parched Paddy	Beaten Rice	Parched Rice		Parched Paddy	Beaten Rice	Parched Rice	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1931-2	.. 108,460	504	107,956	19,540	60,239	28,177	37,961	39,227	122,153	117,633	279,013
1932-3	.. 100,500	504	99,996	18,099	55,798	26,099	35,175	36,334	113,147	108,982	258,463
1933-4	.. 95,020	504	94,516	17,107	52,740	24,669	33,257	34,342	106,946	103,027	244,315
1934-5	.. 103,010	504	102,506	18,554	51,798	32,154	36,054	37,247	105,036	121,315	263,598
1935-6	.. 109,880	504	109,376	19,797	61,032	28,547	38,458	39,742	123,761	119,175	282,678
1936-7	.. 107,320	504	106,816	19,334	59,603	27,879	37,562	38,813	120,863	116,393	276,069
1937-8	.. 108,960	504	108,456	19,631	60,518	28,307	38,136	39,409	122,718	118,176	280,303
1938-9	.. 110,960	504	110,456	19,993	61,634	28,829	38,836	40,136	124,981	120,349	285,466
1939-40	.. 139,620	504	139,116	25,180	77,627	36,309	48,867	50,549	157,412	151,404	359,455
1940-1	.. 127,480	504	126,976	22,983	70,853	33,140	44,618	46,138	143,673	138,309	328,111

TABLE P.

Price Spreads in the Distribution of Rice Products.

		Cost of Raw Material	Cost of Produc- tion	Sale Price	Retail Price per cent of Sale Price	Col. 5 per cent of Col. 2
(1)		(2)	(3)	(4)	(5)	(6)
Parched Rice	..	76.36	100.0	109.44	124.1	177.86
Parched Paddy	..	76.7125	100.0	110.95	138.8	200.75
Beaten Rice	..	71.4	100.0	122.39	118.3	202.78

Retail margins were high as these products were retailed in extremely small amounts, worth a pice ($\frac{1}{4}$ anna) or measuring a handful, and thus gave high distributive margins for the retailer. The prices were customary and were mainly influenced by the purchase price of rice, and hence a constant mark up was adopted for the period.

Step 17. The journey's end has been reached. The values of consumer purchase were added up as below :

(i) in the assembling markets (Step 1).

(ii) through wholesale and retail agencies (Step 15).

and (iii) as products (Steps 16).

Thus the total values of consumer purchase of rice and its products on the market were :

TABLE Q.

Values of Consumer Purchase of Rice and its Products
(Million Rs.)

1931-2	..	..	..	..	1,843
1932-3	..	..	..	..	1,632
1933-4	..	..	..	..	1,537
1934-5	..	..	..	..	1,793
1935-6	..	..	..	..	1,673
1936-7	..	..	..	..	1,897
1937-8	..	..	..	..	1,836
1938-9	..	..	..	..	1,658
1939-40	..	..	..	..	2,189
1940-1	..	..	..	..	2,039

CHAPTER 12

FOOD, ALCOHOLIC DRINKS, DRUGS AND TOBACCO

In the last chapter were reviewed the various factors consideration of which was necessary to arrive at estimates of the value paid by final consumers. In the remaining section the final estimates of consumer expenditure are obtained. For reasons of space discussion is confined only to brief notes on the items included and the sources used. A detailed discussion of the various operations could not be undertaken.

Classification of Items

Classification of items into each group mainly conforms to the analysis of wartime consumer expenditure available for the United Kingdom, the United States and Canada in *The Impact of the War on Civilian Consumption* published in 1945. Some changes were necessitated, however, (a) by the inadequacy of data, (b) by inclusion of items absent from consumer expenditure in the West, and (c) by what was believed to be the more logical arrangements. (a) Consumers in India purchase cloth in the form in which it is obtained from mills or handloom weavers, and not as tailored garments as in the West. *Dhotis*, *sarees*, etc., do not need to be tailored, while consumers arrange for the tailoring of the rest. Price data, therefore, related to clothing material and not garments. It was, therefore, chosen to value dress material, and the estimated earnings of tailors were included in the Services Group. In this respect it resembles purchase of food in restaurants, where cost to the establishment of the food comes under the Food Group, rent, etc., under the 'Rent, Rates and Fuel' Group, utensils, cutlery, etc., under the 'Household Goods' and services of "cooks, owners of tea-shops, *serais*, etc." in the Services Group. On practical rather than logical grounds paid or imputed value of consumer 'purchase' of services of the millers or housewives are included in the Food Group and not in the Services Group. On the other hand, it was not possible to separate expenditure on furnishing textiles from dress materials. (Thus, no breakdown of coloured piecegoods produced in textile mills or of handloom products was available. Even in the grey and bleached goods 'Trouser cloth, Domestic and Sheetings' were lumped together). The values recorded under the 'Dress and Furnishing Textiles' Group have thus a classification on the basis of material used, instead of the use of the products obtained. The Group includes all textile products (excluding coir ropes) available

for clothing, furnishings, household linen and floor coverings. Non-textile products (e.g., bamboo, thatch, etc.) used for these purposes, and textile products, like coir ropes, not used for these purposes were included in the 'Household Goods' Group. The arrangement is unsatisfactory, but could not be helped. (b) Narcotic Drugs provided an instance of items excluded from the list of items of consumer expenditure in the West. Expenditure on these keeps company with that on intoxicating liquors. (c) In the available estimates of consumer expenditure in the United Kingdom and the United States, clocks together with watches are put into the 'Personal Effects' Group. Together with radio sets and other musical instruments these have been included in the 'Durable Household Goods' Group. Watches, of course, are kept into the 'Personal Effects' Group. It would also be more logical to put Money Order Receipts of Post Offices along with expenses on Transfer of Property into Miscellaneous Services Group and not in the Communications Group as in the case of the United Kingdom and the United States.

Sources of Information on Prices and Distribution Costs

The usual sources of information on prices of commodities and price spreads in their distribution were the *Marketing Reports*, the publications on coastal and foreign trade, *Labour Gazettes* for Bombay, cost of living publications for the Punjab, and *Fort St. George Gazettes* for Madras. All of these were subject to the general criticism that they did not provide adequate samples to adopt average prices for the whole of consumer purchase. In India and Pakistan the sea-borne trade is less important than the trade by road, rail and river, and value statistics in respect of traffic on these were not available. Thus where prices were obtained from quantities and values registered in foreign and coasting trade publications, these were in fact a very small sample. Retail price data directly obtained or worked out from cost of living indices were not available for all provinces, and where available referred to the larger cities only, and there too, they referred only to those qualities that were generally purchased by the working classes. In India and Pakistan cities are less important than small towns and villages and data on prices in these were not available. Year to year variations required data over a continuous period, and except for cereals and pulses these were not available. The *Marketing Reports* were used in this connection so far as they went. These Reports lately had got into the habit of giving estimates both in terms of quantity and value of supplies available for sale on market. But they did not indicate to what stage of sales and to what year or period of time these values referred and how they were ascertained. It makes a world

of difference whether these values were taken to be (a) wholesale values in the assembling markets, (b) wholesale values in consumer markets or (c) retail values. Wherever these values were used an attempt was made to check the average price with other data on prices in the *Reports*, but still the decision had to be arbitrary. And the absence of information on how these values were calculated influenced adversely the judgment on their reliability. Distributive price spreads were taken from specific instances given in the *Reports*. For commodities for which these were not available, information collected during the author's stay at Delhi on the distributive marks up adopted by the Import Control and various Control and Supply Directorates of Indian products was drawn upon. These could only give a single mark up considered as "pre-war normal". This was either assumed to be constant over the entire period, or where some adjustments were made these were arbitrary.

Thus in the building up of estimates answers to two problems were sought, viz. (a) what was the approximate magnitude of expenditure on a particular item, and (b) what variations it showed from year to year. The answer to the former depended on the comprehensiveness of statistics and, to the second, on their continuity. A third important characteristic was reliability, which was partly a function of comprehensiveness. Very few of the items considered in this essay were provided with data (be it quantity or price) satisfying all the three requirements of comprehensiveness, continuity and reliability.

Cereals, Pulses and Miscellaneous Food Crops

The estimates of rice were described in considerable detail in Chapter II. Cereals and pulses other than rice were also considered in as much detail as could be available on the lines similar to those indicated for rice. A significant step in respect of wheat, *jowar*, *bajra*, maize, barley, *ragi* and gram was the imputation of value to housewives' services in cleaning and grinding into flour of the quantities retained as well as marketed, in so far as the latter did not involve commercial milling. Specific notes follow.

Wheat. Includes a mark up of Rs. 10 million for various flour products such as vermicelli, noodles, biscuits, etc. Bakers' products (from about 3000 tons of flour) were valued at twice the value of flour.

Gram. Ata, Dal, Baisin, Parched gram, etc., were valued on the basis of marks up or down on the value of gram used. Marks down were needed in the case of the first three as the value received

for by-products (*chooni* and husk used as cattlefeed) exceeded the cost of manufacture, and the products, therefore, were selling at relatively cheaper prices.

Barley. Pearl barley and barley powder were separately valued. Rs. 2,178,000 were uniformly added to account for the cost of converting 80,000 tons of barley into *Sattu* at the rate of Re. 1 per maund of barley used.

Maize. Value of maize in the production of starch for textile mills was deducted at the wholesale stage. A small addition of Rs. 100,000 was made to account for the additional value of parched maize.

Other Cereals and Pulses and Miscellaneous Foodcrops. These include barley, maize, *ragi*, small millets, unclassified 'foodgrains and pulses', and 'Miscellaneous food crops'. An addition of Rs. 10 million was made to take into account farinaceous foods, imports of which were also included. The group also includes imports of sago and potato flour.

Meat

Mutton. The only available data on the retail prices were for Bombay and the Punjab. From the data on Sind along with Bombay up to 1935-6, it appeared that Sind prices were lower than in Bombay and worked out at 74.5 per cent. It would have been very desirable to get the prices in Madras, as Madras was one of the largest consuming units in India.

Beef. Retail prices were available in the *Bombay Labour Gazette*. Data for a few cities were also available in the *Marketing Report on Cattle* from 1934 onwards. Bombay prices of beef on an average were higher than in Agra (the United Provinces), Bangalore (Mysore), Karachi (Sind) or Nagpur (the Central Provinces) as given in the *Marketing Reports*. Data on retail prices in Bengal and Madras were not available, but these should be definitely higher than in these cities. The entire consumption was, therefore, valued at the average prices in the Bombay Presidency.

Poultry. The value of poultry was approximately guessed by the *Marketing Report on Eggs** for the year 1937-8, and on an assumption of equal weight for consumption by the producers and through market, values were calculated for the year. These were indexed on the same basis as the values of eggs, indicated below on page 236.

The value of consumer purchase of home produced bacon, ham, rabbits and birds was taken at 10 per cent of the total value of consumer purchase of mutton, beef and poultry. The values are arbitrary.

Fish

The estimated values of the production of sea fish and of the marketable surplus of freshwater fish on pages 14 and 15 of the *Marketing Report* were taken to refer to the prices in the assembling centres in the year 1938-9. The average price was marked down by 5 per cent to value fishermen's retention for personal consumption. Valuation of the marketed balance was obtained, first, at the wholesale stage in consumer markets on the basis of the price spread in the case of 20 instances given in the *Marketing Report*. Of these 5 also gave the spread between the wholesale price and the retail price in these markets, and were used to obtain retail values. An index of prices was obtained on the basis of prices of unsalted and salted dry and wet fish in foreign and coasting trade, and retail prices of dry *Bumblows* and fresh *Bhings*, Prawns and *Bumblows* in Bombay City. No other data on the prices of fish were available, and the entire value of consumer purchase of fish in 1939-40 was deflated at an index of the above prices. These only referred to sea fish, which had a relatively smaller value significance than freshwater fish, and in view of this the entire estimates of the values of consumer purchase of fish, should be considered arbitrary.

Oils and Fats

Ghee and Butter. The value of ghee and butter was obtained for the year 1938-9 at the prices available in the *Marketing Report*. An index of the prices of ghee was obtained from (a) wholesale prices of *Khurja* ghee in the Punjab for the years 1931 to 1939 in the *Report*, (b) retail prices in each of the District Headquarters towns in the Bombay Presidency for all the years, (c) in 5 towns in the Punjab in the Board of Economics Inquiry Cost of Living publications from 1936 onwards and (d) the f.o.b. export and c.i.f. import prices in sea-borne foreign trade for all the years and coastal trade for the years available. Values of home production of butter were indexed on the basis of the f.o.b. prices in coastal and sea-borne foreign trade.

Linseed. Village retention of seeds and their purchase on the market were valued at marks down and up respectively on the average wholesale prices of linseed at Calcutta obtained from the Chambers of Commerce *Reports* and the f.o.b. values of British India exports. Consumer purchase of raw linseed oil was valued

on the basis of the coasting trade prices. The price per gallon of oil in the coasting trade, however, includes superior qualities of boiled oil required for paints and varnishes. The average disparity of prices between raw oil and boiled oil was about 40 per cent. Prices paid by final consumers were taken at 15 per cent above the wholesale price. Since the coasting trade included also boiled oils, consumer purchase for food was valued at 90 per cent of the coasting trade prices.

Groundnuts. The retention and subsequent consumption in shell on farms and the purchase on the market were valued on the basis of the average wholesale prices of groundnut kernels of Coromandel variety at Madras and Bold variety at Bombay. The price spread was obtained from the data in the *Marketing Report*. Retention and market purchase of groundnut oil were valued on the basis of wholesale prices at Bombay, Madras, Calcutta, and the f.o.b. prices of foreign exports and the c.i.f. prices of coastal imports. Deduction for oil used for the production of *Vanaspati* (dehydrated groundnut oil) was valued at the wholesale stage. Since the factories producing this "vegetable ghee"* paid large amounts on commission on sales, etc., the retail value mark up was taken at 40 per cent over its ex-factory value.

Coconuts. Tender nuts generally bring lower prices than mature nuts, but this is not uniform. In some consuming areas, specially during summer months, tender nuts sell at a premium. On balance they were valued at the same average price as mature nuts. Values were deflated by 10 per cent to allow for wastage. As regards mature nuts prices were available per 000 nuts at Calicut, Cochin, Bombay and in the coasting trade and for the exports in the foreign trade. The prices of copra were available for a few principal markets such as Alleppey, Cochin, Calicut and Bombay. Prices in Alleppey, Cochin and Calicut referred to the principal producer markets, while consumption, specially in Northern India markets would be at very much higher prices. The differences, for instance, between prices at Bombay and prices at Alleppey, Cochin and Calicut were Rs. 25, 21 and 20 per ton respectively. Freight alone would cost extra Rs. 35 per ton for the produce to be railed from Bombay to Delhi. In view of this the relevant average wholesale prices were taken at one-third of (a) the average of Alleppey, Cochin and Calicut prices, *plus* (b) the average in (a) *plus* Rs. 45 per ton, *plus* (c) Bombay prices. Of the total net supplies† of coconut oil consumer use as food was taken at 60.5 per cent on the basis of the data in the *Marketing Report*.

* Known by this term as it resembled ghee in appearance, texture and consistency.

† After adjustments for foreign trade and for soapmaking.

Continuous data on wholesale prices were available again for Alleppey, Cochin, Calicut, Bombay, Calcutta and Karachi. The weightage to these prices was given on the basis of estimated consumption as food in different provinces and states in the *Marketing Report*.*

Sesamum. Consumption of seed was valued on the basis of the wholesale prices in Bombay as given in the *Statistical Abstract*†, the f.o.b. export prices, and the prices registered in the coasting trade. The consumption of oil was valued at the average of (a) 115 per cent of the average of the foreign export and coasting trade prices, and (b) the average retail prices in Ahmedabad, Sholapur and Bombay as available in the *Bombay Labour Gazette*.

Rape and Mustard. The consumption of seed was valued at a mark up on the average wholesale prices of rape seed at Karachi in the *Statistical Abstract* and of rape and mustard seeds of foreign exports and in the coasting trade. Mustard oil was valued at a mark up on the average of whole prices at Calcutta in the *Statistical Abstract* and the prices of exports and those registered in the coasting trade.

No attempt was made to estimate the quantity production of acreage under "other oilseeds". Consumer use of the products of these was taken uniformly at Rs. 10 per acre under cultivation. Of this 40 per cent was assumed to come under the food group.

The values also include the imports of cod liver oil and lard.

Sugar

The consumption of cane by cultivators and their employees on farms was valued at the net realised prices obtained for the sales of cane sugar to the factories less 10 per cent, an arbitrary deduction made necessary by the fact that its alternative price as juice or as *gur* would be lower. The consumption of cane juice on farms was valued at the prices paid by *Khandsaris* for sugarcane juice as given in the *Marketing Report*. *Gur* retained by the producers and in the villages was valued at 80 per cent of the

* Province or State	Weight	Centre for which price quotations available
Madras	30	Calicut
Travancore	15	Alleppey
Cochin	8	Cochin
Bombay	3	Bombay
Bengal	3	Calcutta
Others	16	Karachi

† These prices were described as 'Wholesale Prices of Certain Staple Articles of Trade at Selected Stations in India' in the last week of each month, and were compiled mainly from 'Price Reports of the local Chambers of Commerce.

corresponding wholesale price in the provincial distributing markets.

Cane consumed in the urban areas was of a special superior quality and sold at higher prices. Cane juice consumed in urban areas was valued at a mark up above the value of chewing cane required to be crushed. *Gur* and sugar were valued at the wholesale stage in the main distributing markets. Valuation of *gur* involved a breakdown into (a) cane, palm and molassein *gur*, and of the first two into (b) lumps, powder and semi-liquid. Consumer purchase of Indian factory produced crystal sugar, imported sugar, sugar refined from cane *gur*, sugar refined from palm *gur*, *Khand* and *Minja Dana*, etc. were separately valued.

The data on prices were taken from the *Marketing Report*, which gave monthly wholesale prices of cane *gur* in lumps and of crystal sugar in a number of distributing markets from 1934 onwards. The global average was obtained on the basis of weights relative to quantities distributed by each market. Indian sugar was not an important factor before 1934, and its prices were governed by the prices of imported sugar. Prices of Indian sugar prior to 1934 were obtained by regression on the prices of imported sugar. The prices of the various kinds of sugar and *gur* were available in the *Marketing Report* for the four or five years from 1935-6 onwards. Prices for the rest were obtained by linear regression on the corresponding prices for cane *gur* in lumps or of crystal sugar.

Honey. No data were available except that approximately 5000 workers were engaged full time or part time at 'cultivation of birds, bees, etc.' in 1931. The Imperial Entomologist in evidence before the Royal Commission on Agriculture had estimated that the quantity of honey produced ran into "several scores, if not hundreds of millions of pounds."* For lack of evidence an approximate figure of Rs. 15 million was adopted as the value of honey produced and consumed in India.

The group also includes the adjusted values of imports of confectionery, jams and jellies and saccharin.

Dairy Produce

Milk. The valuation of fluid milk was based on the data on prices and price spreads of cow, buffalo and goat milk as given in the *Marketing Report*. No date was specifically mentioned but from context it was taken to refer to the year 1938-9. The *Marketing Report* gave three sets of prices, producers' prices, collectors'

* *Report of the Royal Commission on Agriculture in India, Part II, Volume, I, p. 243.*

prices and retail prices. Producers' retention was valued at the first, and market purchase for fluid consumption at the last. The data on prices ex-producers' holdings since 1930 were available on a provincial basis for cow milk, buffalo milk and mixed milk. *The Bombay Labour Gazette* gave retail prices of buffalo milk in District Headquarters towns in the Bombay Presidency for all the years, and the Punjab Board of Economic Inquiry Publications gave the retail prices of cow milk in 5 towns from 1936 onwards. All these data were pooled together to obtain an index of milk prices for the period.

Milk Products other than Butter and Ghee. These were valued at a mark up above the value of milk utilised for their production.

Eggs. Values of producers' retention for own consumption and of market supplies of eggs for the year 1937-8, were obtained separately for *Desi* Hen, Improved Hen, Turkey, Guinea Fowl, Duck and Goose eggs on the basis of the data on prices at the three main stages of marketing through which the eggs pass, viz., (i) the village egg collectors, (ii) wholesale merchants and (iii) retail shopkeepers. Eggs are sorted at the last stage, and hence retail prices were available for large eggs, for small eggs and for "rejected", i.e., cracked or leaking eggs. Producers' retention was valued at the prices the producers received from village collectors. The rest of the market supply was valued at retail prices. Quality weightage adopted was 5 large eggs : 3 small eggs : 2 "rejected" eggs, on the basis of sample observation in the *Marketing Report*. The price spreads in the *Report* in respect of *Desi* Hen eggs covered 18 Provinces and States and gave averages of 56 towns in all. In the case of Improved Hen eggs, the data in the *Report* related to 14 cities and in the case of duck eggs the number of reporting towns was 42. Improved Hen eggs are generally well-packed and the prices referred only to large and small eggs, and both of these were given an equal weightage. Values for other years were obtained on the basis of an index of wholesale prices of eggs in "important" producing tracts.* These prices were available up to 1937 only, and the values from 1938-9 onwards are arbitrary.

Fruits and Vegetables

Potatoes. The village retention and marketed surplus in each Trade Bloc were valued at wholesale prices during harvest periods available in the *Marketing Report* for the crop years 1932-3 to

* Hen eggs: The North-West Frontier Province, Gujarat, Eastern Bengal, Southern Madras, Cochin and Travancore.

Duck eggs: Eastern Bengal, Southern Madras, Travancore and Cochin. (*Report on the Marketing of Eggs*, p. 66).

1936-7. The net values of village retention and the values of consumer purchase on the market were obtained in the same way as for cereals and pulses. The values for 1937-8 to 1940-1 were obtained by an index constructed from (i) the retail prices in District Headquarters towns in Bombay, (ii) average prices of British India imports and exports in the coasting trade, and (iii) average f.o.b. wholesale prices of exports to foreign countries.

Citrus Fruits. The reported values of market supplies in the *Marketing Report* were assumed to be wholesale values in consumer markets, and to refer to the year 1939-40. A chain index of prices was constructed from the data on orchard, wholesale and retail prices in the *Report*. A nominal mark up of Rs. 1 million was adopted to account for value addition for squashes and other products for the years 1937-8 to 1939-40, and of Rs. .5 and 1.5 million for 1936-7 and 1940-1.

Bananas. The values in the *Marketing Report* were assumed to be retail values and to refer to the year 1940-1. A chain index of prices was obtained from the data on prices in the *Report*, but the quotations were too few towards the end, and thus values for 1931-2 to 1935-6 (inclusive) should be considered arbitrary. The values given in the *Report* were, however, open to objections.

Grapes. The values of market supplies given in the *Report* were assumed to be at producers' prices in 1935-6. A chain index of prices was prepared backwards up to 1931-2 and forwards up to 1937-8. Values from 1938-9 onwards are arbitrary.

Cashewnuts. Retention was valued at the prices of nuts during March to June from 1937-8 to 1940-1. The marketed surplus was converted to kernels, which were valued at the wholesale prices for the years from 1936-7 onwards, and the retail values were obtained by a mark up on the basis of data in the *Report*. The prices (and values) for the years 1931-2 to 1935-6 are arbitrary.

Of the rest production and acreage were available for an unspecified year in the *Food Statistics*.* It was a jumble; thus the average production as reported for different years in the *Marketing Reports* on Potatoes, Citrus Fruits, Bananas, Grapes, etc. was given in the same Table. If it was assumed that the information on the rest of the items† would hold true for 1938-9, there was in addition the production of 1,298,800 acres of fruit and 703,500 acres of

* Statement No. LXLVII, p. 169.

† Fruits: Mangoes, Peaches, Apricots, Plums, Cherries, Strawberries, Apples, Pears, Loquates, Quince, Pine Apples and Guavas.

Vegetables: Onions, Carrots, Turnips, Radish, Cabbage, Cauliflower, Khol-Khol, Tomatoes, Peas, Beans and Spinach.

vegetables. Of the vegetables continuous prices were available for onions in (i) District Headquarters towns in Bombay for all years, (2) 5 towns in the Punjab from 1936 onwards, (3) f.o.b. average prices of foreign exports for all years and (4) c.i.f. import and f.o.b. export prices in the coasting trade from 1936-7 onwards. The production of onions was assumed to be constant during the period, and on arbitrary assumptions of gross retention, seed and wastage, the net retention (5 per cent) and marketed surplus (85 per cent) were valued at the average of prices with 2 weights for the Punjab prices, and 1 each for Bombay and coasting trade and export prices. The rest of the production of vegetables and fruits was valued at the adjusted retail prices, ascertained for the year 1938-9, in Bombay and Calcutta Markets.

This still left out a substantial portion of the total acreage under 'fruits and vegetables' included in Table 11. This was valued at the average of returns per acre on fruits and on vegetables so far ascertained. Thus, in 1938-9, the producers' returns per acre worked out as below :

TABLE 107.
Average Return per Acre under Fruits and Vegetables.

	Acre under crop 000 acres	Net Realised Returns per acre Rs.
Fruits :		
Citrus Fruits	124	195
Bananas	407	48
Grapes	4	596
Other Fruits	1293	394
	<u>1828</u>	<u>400</u>
Vegetables :		
Potatoes	446	217
Onions	242	344
Other Vegetables	462	269
	<u>1150</u>	<u>264</u>

The rest of the acreage yet unaccounted for 2,838,700 acres was valued at a rough average of Rs. 332 per acre. This figure was marked up to account for the price spreads in retail sales. And similar steps were taken for the different years.

A flat addition of Rs. 10 million was made to allow for canned fruits, and other manufactured products.

Spices

Spices. The acreage under spices was valued at the same net return received by the producer per acre as unclassified fruits and vegetables, with adjustments for the retail values of consumer purchase.

Betelnuts. The village retention and consumer purchase of home production were valued on the basis of export and coasting trade prices. Imports were taken at c.i.f. values, *plus* amounts collected as Customs Duty, *plus* 40 per cent to allow for distributive costs.

Betel leaves. These are an article of daily purchase from the tobaccoists. The outlays are small but more frequent. No value estimate of consumer purchase was at all possible, and the leaves were arbitrarily valued at very nearly the same value as nuts.

A uniform addition of Rs. 20 million was made to account for the production of pickles, vinegars and sauce.

Salt and Domestic Chemicals

Salt. Salt was valued at the retail stage. The *Statistical Abstract* retail prices (quotations for 87 centres)* were compared with the corresponding prices recorded by 'statistical' offices of the Salt Revenue Departments and were found to be identical. From the latter, additional quotations were available for 8 centres in Rajputana and Central India, and 2 centres in the Punjab, 3 in Bihar and Orissa and 1 in the Central Provinces, thus bringing the total to 101 quotations each year. Sind was the only snag. Previous to 1932 the *Statistical Abstract* had 3 quotations for Sind, but since gave only one quotation (for Karachi). Karachi prices for the 6 years (1926-1931) were lower than prices in the other two centres (Hyderabad and Shikarpur) and were accordingly marked up by 8 annas a maund to give the average for Sind.

* Provincial Distribution as below.

Assam	6
Bengal	12
Bihar	8
Orissa	3
U. P.	15
Punjab	10
Dolhi	1
N. W. F. P.	2
Sind	1
Bombay	9
C. P.	9
Madras	9
Coorg	1
Ajmer	1

The prices referred to above were urban prices. Retail prices in rural areas were assumed to be the same as increased costs of transport from urban markets to rural areas of consumption would be offset by lower shop rents.

The compensations paid to the princely states on account of the excise levied on salt consumed in areas under their control were neglected as none of these flowed back to consumers of salt as subsidies. No information was available on the prices of the salt sent duty free and locally produced in these states. But most of the states availed themselves of the opportunity of obtaining revenue by levying duty at the same rate as in British India. In many cases the free concessions or local production were inadequate to meet full demand, and thus duty paid salt was imported from British India and all salt presumably sold at the same price.

Domestic Chemicals. These include alum and sodium bicarbonate.

Non-Alcoholic Beverages

Tea. The retail prices in the cities of Bombay, Ahmedabad and Sholapur, obtained from the *Bombay Labour Gazette*, and the wholesale prices in the coasting trade were used to value consumer purchase.

Coffee. Arabica Plantation, Arabica Cherry and Robusta types were separately valued. The prices were obtained from the *Marketing Report* for 6 years for Arabica Plantation, for 8 years for Arabica Cherry and for 4 years for Robusta coffee. Gaps in the data were filled up by regression on the f.o.b. prices of foreign exports available for all years, and the c.i.f. prices of imports in the coasting trade available from 1932-3 onwards.

The value of imports includes cocoa and chocolate*.

Miscellaneous Food Items

Miscellaneous Provisions. The estimates include the retail value of imports of canned goods other than fish and fruits, 'other patent foods,' isinglass and 'other provisions'—in fact all that could not be conveniently placed under any of the above groups.

Ice and Aerated Waters. In a hot climate like that of India and Pakistan the expenditure on aerated drinks and ice should be of a fair size. Nothing at all was available by way of information

* Chocolate should properly belong to sugar group, but separate statistics were not available, and hence the combined values of cocoa and chocolate were included in this group.

on this item. Employment statistics covered firms employing not less than 20 persons each. But the unit of production in these industries being small, a considerable number were excluded. A list of 103 firms was, therefore, prepared from business almanacs and directories, and a sample inquiry was sent to 11 of these requesting information on (all, or any) : (i) production, gross value and retail prices of aerated water and ice, and (ii) the average daily number of workers employed and their wage bills. Not a single reply was received. Letters were then sent to another batch of 11 firms within the scope of employment statistics (excluding 5 firms covered by the first inquiry), which also met the same fate. Conjectures were, therefore, resorted to on the basis of (a) the number of urban and rural families available in the Census Reports for 1931 and 1941, and (b) a guess of an average family expenditure of 12 and 3 annas respectively in 1931 and progressively increasing up to Re. 1 and 4 annas respectively in 1941.

Alcoholic Drinks

Country Spirits. Retail prices for each district per London Proof gallon were supposed to be recorded in Imperial Return IV in each Provincial *Excise Administration Report*. But in many cases the reported prices refer to bulk gallons, and the retail value had to be calculated for each district for spirits of varying strength and prices. In one case (the North-West Frontier Provinces) prices had been given for bulk gallons but no mention of the fact was made. This was checked up only when retail values fell considerably below the duty realised by the Provincial Government. Bombay and Sind did not give any retail prices at all except for Bombay for the last three years under study. The retail values for the seven years for Bombay and for all years in Sind were obtained on the basis of the ratio of retail value to revenue for these three years. There were practically no data on the consumption in the princely states. This was estimated on an assumption that per capita expenditure in the states was the same in British India.

Country Fermented Liquors. Since information neither on consumption nor on prices was available retail values for these were calculated by applying the ratios of retail values to revenue for Country Spirits. The values, therefore, should be considered arbitrary.

Foreign Liquors. No data on the prices of Indian made foreign liquors were available at all. Letters were sent to a few distilleries and breweries requesting information on the ex-factory prices and approximate retail prices per L. P. gallon of Brandy, Whisky, Rum, Gin and Beer and Stout. Information was supplied only by two

firms, of which one gave the ex-factory and retail prices for Rum and Gin, and the other gave only ex-factory prices for Brandy, Whisky, Rum, Gin and Beer. In the case of imported liquors, were available the c.i.f. values in ports and the amount of revenue realised by the Government from Customs duty on these. The retail values on all 'foreign liquors'—imported as well as home produced—also include duty on home made spirits and licence fee on the sale of home made as well as imported spirits including beer.

Drugs

Opium. Retail prices were obtained from the *Excise Administration Reports*. Bombay gave retail prices for the three years 1938-9 to 1940-1 only. The retail prices for other years, and for all years in Sind, were estimated on the basis of the ratios of retail values for these three years to the rates of duty and vend licences. In the case of two of the Provinces, Punjab and the North-West Frontier Province,* the retail values fell below the revenue of the Excise Department for the period. In the case of the North-West Frontier Province, the only explanation, it seems plausible, was that there was a good amount of trade in smuggled opium and perhaps the retailers were prepared to pay heavy licence fees in order to be able to distribute illicit opium. The Province showed the same results in the case of *Charas* as well. There were no data on the retail prices of opium in the princely states. Consumer purchase was valued at the average price of opium sold in British India.

Ganja, Charas, Bhang, Morphia and Cocaine. Like Opium retail prices were obtained for each district in each Province for *Ganja, Charas* and *Bhang*. No data were available on the prices and values of morphia and cocaine but their consumption was negligible and a flat addition of Rs. 100,000 was made to cover the retail values both of morphia and cocaine.

Tobacco

Cigarettes. From the data on the retail prices given in the *Marketing Report on Tobacco* the following set of prices was obtained.

		Rs. per 000
Cheaper quality	..	6.25
Medium quality	..	18.00
Superior quality	..	25.00

The weighted mean on these three prices worked out at Rs. 9.5375 per 000. The Report noted changes in prices at the wholesale level

* Also for 1936-7 in the United Provinces.

but mentioned that retail prices of all tobacco remained steady all through the previous ten years or so. Prices, however, went up with the beginning of the War and the rise was about 10 per cent on an average for 1939-40 and 25 per cent for 1940-1 over the pre-War prices. In the case of cigarettes the rise was smaller compared with the prices for other tobacco products. Prices for 1939-40 were taken at Rs. 10 and for 1940-1 at Rs. 11 per 000. Imports belonged to superior category and were valued at Rs. 25 per 000 upto 1938-9, at Rs. 27.5 in 1939-40, and at Rs. 30 in 1940-1.

Cigars. Home produced cigars were valued at Rs. 5 and imported cigars at Rs. 15 for a box of 50. In 1939-40, the home produced cigars were valued at the same price but the prices of imported cigars had gone up to Rs. 20. In 1941, home produced cigars sold at Rs. 6 and imported cigars at Rs. 25 for a box of 50.

Cheroots. These were valued at Re. 1 for a box of 100 up to 1939-40, and at Re. 1-4 as. in 1940-1. These were the cheap quality mainly consumed in Madras which accounted for roughly 98 per cent of total consumption. Imported Burmese *cheroots* were valued at $\frac{1}{2}$ anna each, i.e. Rs. 3-2 as. per 100, up to 1940-1, when the prices rose by 10 per cent.

Bidis. Prices were fairly steady, though they varied from place to place. Patronised chiefly by the working classes, information was obtained from publications on cost of living index numbers. 9 pies for 25 bidis seemed to be the average price before the War. The average for 1939-40 worked out at $10\frac{1}{2}$ pies, and for 1940-1 at 1 anna.

Other Products. Quantities of unmanufactured tobacco retained by producers were valued at 60 per cent of the average prices of exports, but as these were converted to products a mark up on these was required and hence they were valued at the export prices. Observations (in the *Marketing Report*) on the products obtained from market supplies gave the ratio of the value of unmanufactured tobacco to retail values of its products at 37 per cent. Values of the products were obtained accordingly.

CHAPTER 13

DRESS AND FURNISHING TEXTILES AND FOOTWEAR

Cotton Piecegoods

Produce of Textile Mills

Chadars and Dhoties. These were valued on the basis of ex-mill prices for *Chadars* and *Dhoties* of $\frac{1}{2}$ " and $\frac{5}{8}$ " border available in the *Annual Reports* of the Millowners' Association in Bombay. The $\frac{5}{8}$ " border is common in Eastern markets and the weightage given to the types $\frac{1}{2}$ " and $\frac{5}{8}$ " borders was 4 : 1.

Drills and Jeans. These were valued on the basis of export prices.

Cambrics and Lawns. These represent cloth of finer quality, generally above 60s., and provided a good indication of the progress of Indian mills in producing finer qualities of cloth. They were valued at 3 times the price per pound of shirtings.

Shirtings and Longcloth. Ex-mill prices of shirtings were taken from the Millowners' Association *Reports*. Ex-mill prices of longcloth referred to two varieties, one giving prices for bleached qualities from 1935-6 onwards. Retail prices of shirtings were available for the 3 centres—Bombay, Ahmedabad and Sholapur. Ex-mill prices appeared to be very low. Shirtings were valued, therefore, at the simple average of export price plus 15 per cent and the three retail prices. After adjusting for width and quality it was decided to value longcloth at the same price per yard as for shirtings.

T. Cloth and Domestics. Export trade in Domestics was very irregular and hence the prices were not taken into account. Ex-mill prices of two qualities of Domestics were available. Retail prices for T. cloth were available for Bombay, Ahmedabad and Sholapur in the *Bombay Labour Gazette*. Of the three, prices in Ahmedabad seemed to be too high and were discarded.

Tent Cloth, Khadi, etc., and other sorts. These referred to coarse qualities. Prices were not available, and hence they were valued at the average of prices per pound of all products discussed so far, except cambrics and lawns.

Printers are ultimately printed and hence are included with the items in the next paragraph.

Printed, Coloured and Dyed Piecegoods. These were valued at a mark up on the average price of coloured piecegoods in export trade and in coasting trade.

Products of Powerlooms and Handlooms

The qualities produced on powerlooms in small units are generally in medium counts, particularly shirtings, and were, therefore, valued at the average price for shirtings above.

There was quite a vacuum with respect to the prices of the products of handloom manufacture. There had been a few attempts to ascertain gross and net earnings of the weavers, but for lack of any precise knowledge on the extent of unemployment nothing was definitely known. The sample specifications and prices of handloom products in the Tariff Board and the Fact Finding Committee Reports (referred to on page 90) were utilised to obtain the price (in annas) per square yard of the various handloom products in 1931-2 and 1941-2. From the sample in the Report of the Fact Finding Committee the weighted average worked out as below :

TABLE 108.

Price per Square Yard on the Basis of the Samples obtained by the Fact Finding Committee.

					Yarn used Million lbs.	Cloth produced Million sq. yds.	Price per square yard Annas
Coarse	..	..	..	..	230.58	900.77	4.895
Medium	..	..	..	..	86.17	571.31	4.36
Fine	..	..	..	..	42.57	434.59	9.07
Total ..					359.32	1906.67	5.6863

Prices of cloth in medium counts fell below coarse cloth probably because handlooms held their own against mills in coarse and fine counts, but in medium they suffered a strong competition and prices were therefore depressed. The Tariff Board quotations in 1931-2 were available only for coarse (3.83 annas) and medium goods (4.425 annas).

These prices referred to the cost of production of handloom fabrics and not their selling prices. The Fact Finding Committee gave a few quotations showing the prices of cloth realised by the weavers and the prices paid by the consumers. In items common to the cost of production and price spread tables, the same quotations

were taken into account as 'total cost of production' and the 'price at which the weaver sold'. On the basis of this sample the distributive price spread obtained as below :

		Retail Price Per Cent of Producer's Selling Price
Coarse Quality	..	126.6
Medium Quality	..	118.8
Fine Quality	..	113.95
All Products*		120.2

The spread appeared reasonable, and the retail price was accordingly worked out at 6.8355 annas per square yard in 1941-2.

Price level had shot up as a result of the wartime expenditure, and thus the average obtained for 1941-2 was considerably higher than the prices during the ten years under study. An index of prices was difficult to obtain. Export figures gave a couple of qualities which were definitely handloom products, but their prices showed quite an erratic behaviour. The nearest group one could get was the set of prices of coloured goods in export and coasting trade. Most of the handloom products come under this category. Handloom products were, therefore, valued on the basis of this index.†

Miscellaneous Cotton Products

Goods other than piecegoods, *Grey and Coloured*. These were valued at the average of prices per pound of all piecegoods produced in the textile mills.

Hosiery. Hosiery generally is in finer counts and involves a larger proportion of yarn wastage and packing expenses. No data were available on hosiery prices, except certain arbitrary calculations on 'fair price' in the Tariff Board Reports. The price per pound was taken at double the average of all cotton piecegoods.

Tapes, niwar, etc. These were valued at half the price per pound of piecegoods.

Weighted on the basis of value of products of each quality.

		Index Base 1941-2	Retail Price per square yard Annas
1931-2	..	86.7	5.9
1932-3	..	82.3	5.6
1933-4	..	72.3	5.0
1934-5	..	76.6	5.2
1935-6	..	76.0	5.2
1936-7	..	74.1	5.1
1937-8	..	84.4	5.8
1938-9	..	88.3	6.0
1939-40	..	90.3	6.2
1941-2	..	85.2	5.8

Rope and Twine, Braids and Thread. These were valued on the basis of the export prices of thread.

The value of Government purchase was obtained from the *Annual Administration Reports* of the Indian Stores Department. This was deducted to obtain consumer purchase by the public.

Rayon

Products were valued on the basis of the import prices of yarn and the export prices of piecegoods.

Silk

Weavers' sale prices per square yard of various products in 1933 were obtained from the specifications and prices given for 42 items in the *Tariff Board Report*. Export prices were used to obtain an index over the period.

Wool

Products of Merino Wool were valued at an arbitrary index of prices. Products from Indian and Tibetan wools were valued on the basis of weighted means of export prices of blankets, carpets and shawls.

Mixtures

Mixtures produced in the textile mills were valued on the basis of the above prices of cotton, rayon, silk and wool products per pound with weights 10 : 50 : 25 : 15 respectively. The mixtures produced on handlooms could not be separately valued, and the values in proportion to their yarn content were already included in the values of cotton, rayon, silk and wool above.

Other Textiles

Coir Mats and Matting. These were valued on the basis of export prices.

Hair Products. The value of consumer purchase of hair products was taken at Rs. 2.5 million up to 1938-9, Rs. 3 million for 1939-40 and Rs. 4 million for 1940-1.

Footwear

The *Report* of the Central Provinces Industrial Survey Committee (1939) gave the prices of village shoes as between Rs. 1/8 and 2/- a pair, and slippers and sandals at Re. 1/- and -/8 annas respectively per pair. An average price of Rs. 1/4 a pair in 1938-9 was indexed on the basis of the prices of leather shoes in the coasting and export trade. Prices of Western type shoes were taken as twice the average of the country shoes. Prices of footwear with rubber soles and canvas uppers were obtained from statistics in the export trade.

CHAPTER 14

RENT, RATES, FUEL, HOUSEHOLD GOODS AND PERSONAL EFFECTS

Rent

The rental value of urban property in British India was obtained on the basis of ratios of "tax on houses" to the assessed rental value, available for each municipality in Bengal, and a few in Madras in the *Provincial Reports on the Working of Municipalities*, and for the rest on the basis of an overall average (8.22 p.c.) from the data obtained by Rao.* Assessed rental values of property in Bombay, Calcutta and Madras were directly obtained from the Corporation Reports.

Commercial and Government expenditure on rents was allocated at 10 per cent and deducted. 25 per cent values were added to include the value of urban residential property in the States.

The estimates certainly have a downward bias due to the understatement of taxable value. Rents have increased in the past fifteen years, but in most cases assessments have only been revised in the event of new construction. Thus the figures are underestimates on the whole and with respect to the initial year.

Imputation of value to rural huts was arbitrary. The typical hut is built of thatch, mud and a few bamboo poles, and is blown away in storms or washed away in floods. The cost of erecting such a hut did not generally exceed Rs. 5 and a use-life of a year might be given to it. At this rate was estimated the annual value of residential property of rural families which numbered 60.3 millions in 1931 and 66.4 millions in 1941.

Rates

Rates. The *Provincial Reports on the Working of Municipalities*, the Corporation Reports of Bombay, Madras and Calcutta and *Statistical Abstract* provided the amounts levied on urban property in British India in respect of (i) taxes on houses, (ii) water rates, (iii) lighting rates, (iv) conservancy rates, and (v) other conservancy receipts. The rates levied by local boards were obtained also from the *Statistical Abstract*. There was no information for

* *The National Income of British India, 1931-2*, p. 177.

the States, but these were poorer in municipal facilities and the total rates were taken at 10 per cent. of the British India total. A deduction of 15 per cent was made for the rates chargeable to business and government accounts.

Fuel

Dungcakes. An arbitrary value of Re. 1 per ton was imputed to the estimated production/consumption.

Firewood and Charcoal. The data on the prices of firewood included the value/quantity ratios of sales and concessions by the Forest Departments, wholesale prices in the coasting trade, and urban retail prices in Bombay, Ahmedabad and Sholapur in the *Bombay Labour Gazette*. Retail prices of charcoal were available only for Bombay and were deflated by 10 per cent to give probable global average. Consumer purchase was valued at the following weights :

Firewood :	Rural consumption	10
	Urban consumption	20
Charcoal :	Urban consumption	3

Kerosene. Retail prices in annas per gallon were available for Bombay, Ahmedabad and Sholapur in the *Bombay Labour Gazette*. Only the latter two were used, prices for Bombay proper being unreliable as often for lack of regular collection, the same quotations were repeated. Government purchase was deducted.

Electricity. Gross revenue, rates per unit and meter rent were obtained separately for (i) lights and fans and (ii) heat and power from 19 firms in reply to the questionnaire, and these data were used for valuation.

Castor Oil. Data on the prices of castor oil included the wholesale prices in Calcutta available in the *Statistical Abstract*, and in export and coasting trade. Retail prices were available only for Ahmedabad in the *Bombay Labour Gazette*. A marked up average of the wholesale prices was used for valuation.

Coconut Oil and Shells. Of the net supplies of coconut oil available for use by consumers, quantities used as illuminant were taken at 3.2 per cent on the basis of data in the *Marketing Report*. Coconut shells were valued at Rs. 1/4 per 1,000.

Other Oils. Of the total value of consumer purchase of the products of "other oilseeds", 60 per cent was allocated to this group.

Gas. There were 14 gas works in India and Pakistan employing about 2,000 people. But none was significant for domestic consumption except the Bombay Gas Company. The firm was approached for particulars of gross revenue from domestic consumption of gas in Bombay City, but due to shortage of staff they could not comply with the request. The value, however, was not likely to exceed Rs. 1 million.

Durable Household Goods

Furniture. In countries like India and Pakistan furniture usually consists of a wooden *charpoy* and a few cabinets. Production was described by Dr. Thomas as being carried on "by a large number of people working whole time and part time in their homes . . . Organised (if at all) on the small scale (it) is an intrinsic part of village life."* Values were guessed on an assumption that an urban family spent annually Rs. 5 a year and a rural family Re. 1, the latter being mostly the expenses of re-retting and rewinding of *charpoy*s. Index of values was obtained from the Forest Department's sales of timber.

Musical Instruments. The group includes the value of the purchase of imported products like wireless sets, gramophones and accessories like valves, pickups, etc. The production of musical instruments (including gramophone records) was a guess on the basis of the value of exports.

The Furniture Group also includes steel furniture, safes and clocks. A uniform addition of Rs. 5 million was made for art and decorative works, such as marble and bronze statuettes, decorative glass, conch and ivory products.

China and Earthenware

Crockery. Home production was guessed at Rs. 1 million† for 1931-2 and indexed on the basis of the value of exports.

Earthenware. The industry being scattered, and on a small scale, no information was available. In a hot climate like that of

* *Development of Industries for War Supplies*, p. 68.

† There are two main classes of crockery in use in India and Pakistan. (a) Crockery made in the old style, jars, bowls, plates etc. "made in Nagpur, Calcutta, Raniganj, Jubbulpore and other places" and (b) crockery made in modern style. "The demand for crockery of the modern type was met largely by imports from Europe and from Japan. A certain quantity of such crockery was also made in India in the Bengal Potteries (Calcutta), Gwalior Potteries, Government Porcelain Factory (Bangalore) and elsewhere. But the crockery made in these factories found it difficult to compete with imports, especially Japanese imports, for a tea-set which in India costs Rs. 15 to make, the Japanese price was Rs. 1/8, and home production was kept down within narrow limits." *Development of Industries for War Supplies*, p. 75.

India and Pakistan the significance of earthen water jars could well be imagined. The Central Provinces Rural Economic Survey Committee estimated an annual purchase of 2 water jars worth about 8 annas per family. Apart from water jars poorer families use earthen utensils, bowls, glasses, cups and plates. An initial expenditure of Rs. 80 millions was indexed on the basis of the growth of population since 1931.

Imports of Chinese and Japanese ware are also included in this Group.

Domestic Utensils: Copper and Bronze. The ex-factory sale price per ton of copper realised by the Indian Copper Corporation was available in the *Records of the Geological Survey in India*. Wholesale prices were also available in the *Statistical Abstract* as reported by the Chamber of Commerce, and there were the import and coasting trade prices. The Central Provinces Rural Economic Survey Committee gave a few instances giving the cost structure of copper and copper alloys. The value of copper going into alloys (excluding brass) and their products was marked up on the basis of these data.

Brass. The ex-factory net prices realised by Messrs. Jeewanlal & Co.,* the biggest utensil manufacturers in India, were marked up to obtain the retail values.

All tin was imported and 400 tons (assumed to be the consumer purchase for coating brass utensils) were valued at the c.i.f. import price *plus* Customs Duty *plus* a distributive mark up.

Aluminium utensils are the virtual monopoly of Messrs. Jeewanlal & Co. Their valuation was based on the prices net realised by this firm.

All *German silver* was imported and the valuation was based on import prices.

A flat addition of Rs. 10 million was made to include *iron and steel* pans, tongs etc.

Cutlery.† Arbitrary values ranging from Rs. 1 million in 1931-2 to Rs. 2.5 million in 1940-1 were allocated to consumer purchase of local manufacture.

Hardware. There was a considerable home production of buckets from galvanised iron, and a little of enamelled ironware.

* Supplied by the Non-Ferrous Metals Directorate.

† "This industry has been pursued on a small scale by the village blacksmith from times immemorial. But such production continued to be small for long, and the large proportion of the pen-knives, table knives, scissors, razors, spoons and forks etc., used in cities and towns were imported." *Development of War Industries*, p. 74.

The consumer purchase of local manufacture was taken at 5 times the marked up value of exports, which consisted also of cutlery and plated ware—mainly penknives, scissors and daggers. Imports included buckets, domestic hardware, enamelled ironware, stoves, electroplated ware and hardware of other sorts.

Lanterns, Lamps and Electric Bulbs

Lanterns and Lamps. "In early 'thirties India made lanterns, viz. *Prabhakar* and *Dipti*, came to the markets... But the bulk of the civilian demand was met by imported lanterns which were cheap and convenient."*

Electric Bulbs. India and Pakistan consumption before the war stood at "nearly 14 million electric lamps. Of this about 11 million came from overseas."† Of the Indian firms the production and gross earnings from sale of lamps by the Bengal Electric Works were obtained from the Profit and Loss Account in their balance sheets. India and Pakistan production was estimated ranging from 1 million in 1931-2 to 3 million lamps in 1940-1, and was valued on the basis of the prices realised by the Bengal Electric Works. The value of Government purchase was obtained from the *Administration Reports of the Indian Stores Department*. Business demand was taken at 10 per cent of the supplies (including imports) of the glow and vacuum lamps, and 50 per cent of all other lamps.

Other Electrical Goods

Fans. Before the War the great majority of fans and their parts used in India and Pakistan were imported. "Pre-War production of fans in India came to about 30,000 ceiling fans and 5,000 table fans on a very rough estimation."‡ The table fans were all produced by the India Electric Works and the position had not changed since. 80 per cent of the total supply was allocated to consumer use.

The Group also includes electric bell apparatus, refrigerators, and other electrical goods and 25 per cent of accessories, all of which were imported.

Sewing Machines

The Group excludes the machines purchased by tailors.

* *Report on Metallurgical and Engineering Industries*, p. 83.

† *Ibid.*, p. 58.

‡ *Metallurgical and Engineering Industries*, p. 61.

Other Household Goods

Matches

The data on prices were reliable. The sudden jump in 1934-5 was caused by the levy of an excise duty. The retail prices were obtained from the *Bombay Labour Gazette*. The prices in Sholapur and in Bombay were quoted for a dozen boxes, while the Ahmedabad prices were quoted per single box. Since the usual purchase was by single items, Ahmedabad prices were adopted for valuation. 1 per cent deduction was made on the assumption that 10 per cent of the supplies were purchased in dozens (usually by the middle classes) at a 10 per cent discount.

Soap and Washing Soda

The retail price of a cake of washing soap weighing $3\frac{1}{2}$ oz. was an anna in 1938-9. This worked out at Rs. 32 per hundredweight. Toilet soap would sell at a higher price. On balance a basic retail price of Rs. 35 per hundredweight of all soap was adopted and indexed on the basis of export prices.

The Group includes consumer purchase of washing soda.

Bamboo Products

These include baskets, floor coverings, chairs, brooms, etc., being products of bamboos, thatch, leaves, reeds and similar materials. The values for 1931-2 were guessed on the basis of the numbers reported in the *Census* as following the occupation and arbitrary assumptions of employment and earnings. These values were indexed on the basis of the value of bamboo sales by the Forest Department.

Miscellaneous Goods

For reasons of space, the valuation of the miscellany of items which constitute this Group is not individually described. These items are brushes, excluding toothbrushes, coir ropes, candles, torches and nightlights including bulbs for torches, metal polishes, ammonia, camphor and saffron. Imports accounted for a large part of the consumer purchase.

Personal Effects

Suitcases, wallets and ladies' handbags, satchels and other leather goods. These were valued on the basis of the prices of hides and skins.

Bangles, beads and glass pearls. Value production was guessed on the same basis as other glassware.

Umbrellas. The estimates were based on arbitrary assumptions of the average number of families purchasing an umbrella in urban and rural areas. The values have varied between Rs. 15 and Rs. 20 million, which is not an exaggeration as imports of umbrella fittings alone averaged about Rs. 2 million.

Toys and Sports Requisites. The Punjab was the only province producing sports goods of the western type but nothing was available in the Board of Economic Inquiry Publications or in the Director of Industries' *Annual Reports*. Nothing at all was known about the production of other toys, and Rs. 10 million were taken as a conjecture for the value of consumer purchase of home-produced toys.

Stationery and Writing Materials. The Group includes pencils and fountain pens, pictures, picture cards, writing and blotting paper and envelopes. Consumer purchase was taken at 50 per cent of the total supplies of all stationery. Production of factory-made writing paper and envelopes was available in the *Monthly Statistics of Production of Selected Industries in India*. The *Report of the Panel on Paper Industry* gave the value of production of handmade paper at its highest at Rs. 25,000. Prices were obtained from export trade statistics.

The Group also includes portable typewriters, optical glasses, photographic instruments, cycles, watches, toothbrushes, perambulators, buttons, bangles of lac*, hair oils (particularly coconut oil)†, sandalwood and sandalwood oil‡, and perfumes.

* An attempt was made to estimate the production of lacqueredware on the basis of the available supplies of lac, calculated from the data in the *Marketing Report* based on the information on production obtained by the Lac Cess Committee from different Circles. Statistics on stock were available since 1934-5. Even taking into account changes in stocks, the exports exceeded supplies. In any case home consumption was very small. Exports fell since the war and larger supplies were available for utilisation at home.

† 36.3 per cent of the net consumer use of coconut oil was valued at double the price of oil used. Source : *Marketing Report*.

‡ Sales of sandalwood and oil by the Forest Departments of Mysore, Madras and Coorg were obtained from their *Administration Reports*. There was a big factory for production of sandalwood oil at Mysore with an average production of 120,000 pounds a year. "The output of all the other factories in India (there were six of them) is about 40,000 to 50,000 pounds a year." (S. G. Sastry : *Journal of Scientific and Industrial Research*, Volume III, No. 2, August 1944, pp. 113-33). Prices were obtained from export statistics.

CHAPTER 15

COMMUNICATIONS, TRANSPORT, AMUSEMENTS, READING MATTER AND SERVICES

Communications

The revenue of the Post and Telegraphs Department from the sale of stamps and in cash for postal, telegraphic and telephone services was obtained from the annual *Administration Reports* of the Department, and the *Combined Financial Accounts* and the *Statistical Abstract*. Burma figures prior to 1936-7 were not separately available, and these were obtained by regression on the data available since. The revenue from messages sent on railway telegraphic lines was obtained from the *Annual Administration Reports* of the Railway Board. Telephone rentals collected by private telephone companies were available in the *Statistical Abstract*. Of the total revenue from postal, telegraphic and telephone services 80, 70 and 30 per cent respectively were allocated to consumers.

Long Distance Public Transport

Railways

The earnings of Class I, II and III Railways were available in the *Annual Administration Reports* of the Railway Board for the passengers travelling by 1st, 2nd and 3rd classes. Of the total revenue in each class 60, 90 and 99 per cent respectively were allocated to consumer travel.

Short Distance Public Transport

Railways

The earnings from the suburban transport of the B.B. & C.I., G.I.P. and S.I. Railways were also available in the Railway Board Reports. Consumer allocation was made at 95 per cent.

Trams and Buses

Information was obtained on the gross earnings from tramways and bus traffic in Bombay and Delhi and, only the tramways in Madras, from the Companies concerned. Earnings of Calcutta Tramways Company were obtained from their balance sheets. Expenditure per capita calculated from these figures showed a great variation, depending on the size of the city and local conditions. A bigger sample was required for adequate estimation. There were no data on the earnings of taxi and *tonga* drivers, who generally

owned them. An average per capita expenditure of Rs. 2/8 in 1940-1 was taken for the urban population. The value estimate was deflated on the basis of a simple index of earnings in the abovementioned four cities.

Private Transport

The number of motor cars and motor cycles licensed in British India for private use as on 31st March was available in the *Statistical Abstract* since 1935. The number prior to that was obtained on the basis of import figures.

An average of Rs. 1,000 per annum for cars and Rs. 100 per annum for motor cycles was taken as the maintenance expenditure before the War. This included license fees and in the case of cars the value of services of drivers and attendants as only a small proportion was self-driven. Maintenance expenses were taken at extra 20 per cent in 1939-40 and 100 per cent in 1940-1.

The number of cars in the States was smaller, and so were the running expenses. A 20 per cent over all addition was made to the British India values on this account.

The marked up value of imports and customs duty was included in estimating the value of the purchase of new motor cars and cycles. Properly the depreciation during the year on all cars existing as well as newly purchased should be taken to be a measure of current use made of these cars, and not the value of the purchase of new cars. Thus in countries like India and Pakistan where a higher number of cars was left at the end of the period than at the beginning, a substantial amount of capital formation might be wrongly entered as consumer expenditure. But any dividing line was likely to be arbitrary* and in the present estimates the British and American practice of treating the purchase of new cars to be a measure of their current use has been followed. Residential property is the only exception to this practice.

A flat addition of Rs. 5 millions was made to include the purchase and maintenance expenses of horsedrawn vehicles, lincensed or otherwise, maintained for private use.

Rural areas consist of villages with a population of less than 5,000 in each. These can hardly boast of any transport. Carts may serve for private transport, or may even be hired out for marriage processions, etc., but value imputation would be nominal and small, and was neglected.

* Kuznets in his *Commodity Flow and Capital Formation* takes 3 years' use life as the dividing line between current goods and capital goods. According to this definition consumer purchase of durable household goods or woollen clothing, along with cars and dwellings, should be treated, as capital formation by consumers.

Amusements

Taxed entertainment added up to a total of Rs. 40 millions on the basis of revenues raised from the Entertainments Tax levied by all provincial governments in 1940-1. The lowest slab, however, did not pay any tax, and this was often the mainstay of the revenue of public entertainment places, mainly cinemas. Untaxed entertainment expenses were taken the same amount as taxed entertainments. The total refers primarily to urban areas only. Rural areas have hardly any organized entertainments, and the villagers often go to fairs on festive or religious holidays and spend money on toys, etc. which have been taken into account earlier. The rest of the expenses are on food, dress, etc. and were included in relevant sections. A total of Rs. 100 million (to include states as well) was taken as consumer expenditure in 1940-1 and the figure was indexed on the basis of the revenues from Entertainments Tax in Bengal, Bombay and Sind for the ten years.

The Group also includes the value of the purchase of fireworks, which were mostly imported.

Reading Matter

The number of newspapers, periodicals and books (i) in English and (ii) in Indian languages published in British India was available in the *Statistical Abstract*. The average circulation of newspapers was taken at 3,000 daily copies available at $\frac{1}{2}$ anna each, of periodicals as 500 copies at Rs. 6 per annum, and of books at 1,000 copies (i) English books selling at Rs. 2/8 per copy and (ii) books in Indian languages selling at Re. 1 per copy. Figures of imports of newsprint were also used to adjust the total number of newspaper copies printed. A 20 per cent addition was made to take into account publications in the States.

Services

Services are by far the weakest Group in the whole of this work. The last available Census, that of 1931, referred to occupations. No data since were available. There were none on employment. Nor was there much by way of data on wages and earnings. During the period under study there had been the Fifth (August 1934) and Sixth (August 1939) Wage Censuses in the United Provinces, the Fifth (December 1932) and Sixth (December 1937) Censuses in the Punjab, and two Censuses (August 1932 and August 1935) in Coorg. Bombay Province gave wages of agriculture and moffusil non-factory wages in each of the four Divisions over the entire period in the *Labour Gazette*. And that was about all. The 1931 Census figures were used to get an approximate idea of the numbers in-

volved. Estimates of employment and earnings were more or less arbitrary. The wage figures in the various censuses were used to obtain the average level, and Bombay figures were used for index purposes. The sample was admittedly inadequate. Most of the estimates, therefore, were simple conjectures, the only exception being the expenditure on education, and to some extent, on medicine.

Education. The *Statistical Abstract* and the reports on the progress of '*Education in India*'* provided the estimation of expenditure from private incomes on education, which consisted mainly of fees and donations. The number of pupils (i) college, (ii) high school, (iii) middle school, and (iv) primary school stages, and in (v) special schools, and in (vi) unrecognized institutions was also taken from the same source, and on arbitrary assumptions of Rs. 30, 20, 15, 5, 25 and 10 per head respectively other expenditure on education was estimated. In states there were relatively fewer students and fewer at the upper levels. The total British India expenditure was marked up, therefore, by only 25 per cent.

Medicine. The Group includes the adjusted value of imports of proprietary and patent medicines and quinine salts, and a flat addition of Rs. 10 millions for non-hospital purchase of home produced western type and indigenous medicines. Next were added the income (from subscriptions and other private sources) of public, local fund and private aided hospitals and dispensaries available in the *Statistical Abstract*. The incomes of private hospitals and nursing homes and income from private practice of the various categories of doctors and nurses, dentists and other specialists, midwives, masseurs, etc., were also added. These are arbitrary.

Food. The services in connection with food include the net income of sweetmeat and condiment makers, owners and employees of hotels, cookshops, *serais*, etc., hawkers of drink and foodstuffs, and the dealers in sweetmeats.

Dress and Toilet. The services in connection with dress and toilet include the net value of the services of (i) tailors, milliners, dressmakers and darners, (ii) embroiderers, hatmakers, makers of other articles of wear, (iii) washermen, (iv) barbers and hairdressers, (v) makers of and dealers in jewellery and ornaments. The earnings of the first three were indexed on the basis of the consumption of cloth available for making garments, of barbers on the basis of the growth of urban male population and of the goldsmiths on the basis of the total absorption or otherwise of the precious metals. Goldsmiths earn both ways, when the peasant buys his gold and when he sells it. Acquisition of gold and silver has not been taken as a consumer purchase for two reasons. (a) The portion of total

* Published by the Bureau of Education.

imports in bars that was held by speculators was not known. (b) Gold acquired by the peasants is always turned into ornaments and should have been included in consumer purchase. On the other hand attracted by the high prices and forced by the Depression there had been on balance a net selling of gold during the period. Gold and silver therefore were treated as capital assets, and only the services of goldsmiths were taken as consumer services.

Religion. The services in connection with religion includes the value of flowers, and the net incomes of (i) priests, ministers, etc., (ii) monks, nuns and religious mendicants, (iii) other religious workers and (iv) servants in religious edifices, burials and burning grounds, pilgrim conductors and circumcisers. The services of horoscope casters, astrologers, fortune tellers, wizards, witches and mediums, not strictly religious, were also included in this group.

Prostitution. The services of prostitutes were included because prostitution was not illegal in India and Pakistan.

Domestic Service. Compared with the 1921 Census there was a tremendous increase of 8.4 million workers under this Group in 1931. Of this 7.2 millions were accounted by Madras Presidency and States alone. Actually most other provinces showed a decline, and the increase in the case of Bengal, Bombay, the North-West Frontier Province, the United Provinces, and Hyderabad was small. In the case of Madras and States the number increased from 107,000 to 7,349,000. The reason probably was that the enumerators in Madras Presidency were instructed that "housekeeping might be entered among the occupations of the dependants."* As a result "women who in all probability did housework in their own houses were mistaken for domestic servants who work in other peoples' houses for a regular wage".† As a result of adjustments the total number of workers under this occupation was reduced from 12,557,000 to 6,057,000.

Miscellaneous Services. These include receipts from wireless licences, repairs on wireless sets and other electrical goods, net incomes from the sale of secondhand goods including motor cars, the stamp duty and payments for legal services in connection with the transfer of property, money order receipts of the Post Offices, the expenses of management incurred by insurance companies and by banks on current account transactions (a conjecture), and trade union subscriptions.

* "This gave rise to much trouble and misconception which...is reflected in the statistics themselves. Housekeeping is undoubtedly an occupation, but it is extremely difficult to confine entries to the correct interpretation. As a result the domestic service entries seem enormously swollen as compared with those for 1921." *Census Report for Madras*, p. 194.

† B. G. Ghate: *Changes in the Occupational Distribution of the Population* (1940) p. 10.

CHAPTER 16

CONSUMER EXPENDITURE, 1931-2 to 1940-1: CURRENT VALUES AND VALUES AT CONSTANT PRICES

Current Values

The journey's end has been reached. Table 109 sets out the completed estimates of Consumer Expenditure at current values, inclusive of imputed values of non-market transactions.

TABLE 109.
Consumer Expenditure, 1931-2 to 1940-1: Current Values.
(Rs. Million)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
1. Food										
(a) Cereals & Pulses										
Rice ..	3,310	2,819	2,679	3,065	2,837	3,309	3,201	2,940	3,817	3,581
Wheat ..	644	663	821	702	745	739	891	849	828	1,006
Jowar and Bajra	603	669	608	684	657	765	732	711	833	860
Gram and Pulse ..	568	535	517	560	515	611	579	585	650	678
Other ..	640	678	625	647	684	671	665	619	754	792
Total (a)	5,765	5,364	5,250	5,658	5,438	6,095	6,068	5,704	6,882	6,917
(b) Meat										
Beef ..	199	174	166	177	173	178	176	179	189	197
Mutton ..	265	257	245	234	225	232	230	240	246	262
Poultry ..	40	35	36	36	35	37	39	40	44	51
Other ..	52	48	46	46	45	46	46	48	50	52
Total (b)	556	514	493	493	478	493	491	507	529	562
(c) Fish	333	430	344	360	355	349	390	383	363	383
(d) Oils & Fats										
Butter ..	32	34	29	30	30	29	30	31	32	30
Ghee ..	1,401	1,216	973	1,021	1,021	943	982	972	1,001	1,109
Vegetable Oils etc. ..	579	477	469	514	460	539	530	505	454	563
Total (d)	2,012	1,727	1,471	1,565	1,511	1,511	1,542	1,508	1,487	1,702
(e) Sugar	721	781	796	888	834	713	950	1,267	821	751
(f) Dairy Products										
Milk & Milk Products ex-Butter and Ghee ..	2,539	2,312	2,148	2,032	1,964	1,916	1,977	1,957	2,028	2,144
Eggs ..	37	33	34	34	33	35	37	37	42	49
Total (f)	2,576	2,345	2,182	2,066	1,997	1,951	2,014	1,994	2,070	2,193

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
1. Food— <i>contd.</i>										
(g) Fruits and Vegetables ..	4,836	3,799	3,592	2,948	2,507	2,984	2,916	2,784	2,649	2,839
(h) Spices										
Betelnuts ..	120	122	111	108	102	120	124	143	139	143
Other ..	1,647	1,411	1,384	1,100	1,346	1,315	1,177	1,056	1,072	1,215
Total (h) ..	1,767	1,533	1,495	1,208	1,448	1,435	1,301	1,199	1,211	1,358
(i) Salt, etc.	151	140	152	142	150	157	155	150	169	170
(j) Non-alcoholic Beverages										
Tea ..	53	47	45	52	54	52	58	61	51	59
Coffee etc. ..	29	24	20	21	20	24	21	15	22	24
Total (j) ..	82	71	65	73	74	76	79	76	73	83
(k) Miscellaneous										
Other Provisions ..	20	20	18	18	19	18	20	20	20	22
Ice & Soft Drinks ..	17	17	16	18	20	22	24	24	25	26
Total (k) ..	37	37	34	36	39	40	44	44	45	48
Total Food ..	18,836	16,741	15,874	15,437	14,831	15,804	15,950	15,616	16,299	17,006
2. Alcoholic Drinks & Drugs :										
(a) Alcoholic Drinks										
Country Spirits & Fermented Liquors	161	162	162	165	176	173	193	170	150	154
'Foreign' Liquors	71	62	60	60	63	65	64	65	62	69
Total (a)	232	224	222	225	239	238	257	235	212	223
(b) Narcotic Drugs										
Opium ..	30	28	26	26	25	26	24	24	23	25
Hemp, Drugs, etc. ..	27	27	27	26	26	28	29	27	24	25
Total (b) ..	57	55	53	52	51	54	53	51	47	50
Total Alcoholic Drinks and Drugs ..	289	279	275	277	290	292	310	286	259	273
3. Tobacco :										
Cigarettes ..	70	72	72	69	72	77	82	88	104	123
Cigars and Cheroots ..	246	235	217	188	179	188	198	188	207	271
Bidis ..	141	141	141	141	141	141	141	141	164	188
Other Products	670	609	603	509	670	593	553	786	703	688
Total Tobacco	1,127	1,057	1,033	907	1,062	999	974	1,203	1,178	1,270

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
4. Dress and Furnishing Textiles :										
Cotton ..	1,595	1,686	1,554	1,678	1,654	1,696	1,812	1,904	2,056	2,023
Silk ..	135	132	127	113	103	133	96	138	86	162
Rayon ..	127	142	124	105	139	134	182	231	142	299
Woollen ..	111	130	124	101	96	93	120	120	114	89
'Mixtures' ..	42	21	16	36	38	46	88	64	77	127
Coir, Hair, etc..	26	24	16	19	16	19	25	19	6	29
Total Textiles	2,036	2,135	1,961	2,052	2,046	2,121	2,323	2,476	2,481	2,729
5. Footwear	203	202	173	132	125	135	162	168	213	334
6. Housing—										
Rent ..	1,281	1,265	1,306	1,335	1,315	1,312	1,327	1,355	1,392	1,422
Rates ..	192	192	197	204	199	200	203	206	209	214
Total Housing	1,473	1,457	1,503	1,539	1,514	1,512	1,530	1,561	1,601	1,636
7. Fuel Light & Power—										
Dungcakes ..	90	90	90	90	90	90	90	90	90	90
Firewood and Charcoal ..	196	185	186	190	191	184	201	194	185	208
Kerosene ..	197	163	149	166	150	157	188	178	187	211
Electricity ..	37	38	38	37	38	41	45	48	52	56
Oils, Gas, etc...	31	32	36	35	34	37	44	38	42	37
Total Fuel, Light and Power	551	508	499	518	503	509	568	548	556	602
8. Household Goods:										
(a) Furniture										
Furniture ..	101	108	104	110	118	113	131	133	139	152
Musical Instruments ..	23	21	23	27	29	30	32	30	31	34
Art Works ..	5	5	5	5	5	5	5	5	5	5
Total (a)	129	134	132	142	152	148	168	168	175	191
(b) Hardware										
Crockery, Earthenware and Glassware	92	96	96	98	100	102	107	107	109	111
Utensils, Cutlery and Hardware	131	110	143	124	157	157	125	128	136	151
Electric Bulbs, Lanterns and Lamps ..	12	15	14	17	18	16	20	17	17	17
Electrical Goods ..	4	4	5	6	7	8	8	7	8	7
Sewing Machines ..	9	8	8	14	12	9	14	10	13	8
Total (b)	248	233	266	259	294	292	266	269	283	294

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
(c) Other Household Goods										
Matches ..	18	18	18	42	52	53	56	55	57	70
Soap and Washing Soda ..	41	42	41	43	42	43	57	72	68	90
Bamboo Products ..	104	110	97	104	94	90	104	97	100	105
Other ..	13	13	13	13	14	15	18	16	18	15
Total (c) ..	176	183	169	202	202	201	235	240	243	280
Total Household Goods	553	550	567	603	648	641	669	677	701	765
9. Personal Effects ..	197	208	210	202	222	224	246	241	248	244
10. Amusements	53	53	58	58	69	73	80	81	97	101
11. Reading Matter ..	101	98	105	120	125	122	125	150	156	168
12. Private Transport ..	130	130	143	166	172	181	182	164	182	185
13. Public Transport :										
Long Distance Railways ..	301	302	291	293	295	292	310	307	305	327
Local ..	89	88	93	97	98	98	103	102	99	109
Total Public Transport	390	390	384	390	393	390	413	409	404	436
14. Communications—										
Letters and Parcels ..	40	41	41	42	44	44	47	47	47	48
Telegrams ..	16	15	16	16	16	16	16	15	18	20
Telephones ..	2	3	3	3	3	3	4	4	4	5
Total Communications	58	59	60	61	63	63	67	66	69	73
15. Services										
(a) Medicine	177	179	179	190	200	208	210	218	216	228
(b) Education	226	223	221	230	240	247	271	275	297	317
(c) Food	76	78	79	81	82	84	85	87	88	90
(d) Dress and Toilet —										
Tailoring ..	110	124	116	125	131	138	147	156	163	165
Laundry ..	141	160	150	161	168	178	189	201	209	212
Barbers ..	158	157	160	161	168	176	180	180	187	201
Jewellers ..	276	271	262	249	262	276	290	276	304	331
Total (d) ..	685	712	688	696	729	768	806	813	863	909

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
15. Services-contd.										
(e) Religion ..	268	254	239	218	222	221	213	209	224	233
(f) Domestic ..	553	525	486	442	475	448	437	464	481	525
(g) Manual Labour ..	20	19	18	16	17	16	15	15	16	17
(h) Prostitutes ..	32	33	34	35	36	37	38	39	42	45
(i) Miscellaneous	54	57	60	64	71	76	82	86	90	98
Total Services	2,091	2,080	2,004	1,972	2,072	2,105	2,157	2,206	2,317	2,462
Grand Total	28,088	25,947	24,849	24,434	24,135	25,171	25,756	25,852	26,761	28,284

Imputed Values

Imputed values, as set out in Table 110 include the value of

- (a) village retention of commodities,
- (b) services of housewives in cleaning and processing of grains, and
- (c) rental value of owner occupied houses

and a uniform addition of Rs. 100 millions to take into account all other non-market values which could not be separately ascertained. Of these Rs. 50 millions are allocated to Food Group. The values are, of course, to a degree more or less arbitrary. The Table is given in order to suggest an approximate magnitude of the non-market sector in the total consumer expenditure. This works out at 1/6 of the total in terms of value. In 'real' terms it should be higher as retention excludes the value marks up on account of distributive services.

TABLE 110.

Consumer Expenditure, 1931-2 to 1940-1 : Imputed Values.

(Rs. Million)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1937-9	1939-40	1940-1
A. Village Retention.										
1. Food—										
(a) Cereals and Pulses—										
Rice ..	1,467	1,187	1,142	1,272	1,164	1,412	1,365	1,282	1,628	1,542
Wheat ..	184	197	255	211	232	241	312	270	253	348
Jowar ..										
Bajra ..	382	432	379	446	423	502	478	461	549	565
Gram ..										
Pulses ..	164	155	155	157	150	165	174	166	198	210
Other ..	364	392	354	374	403	390	386	351	438	468
Total (a) ..	2,561	2,363	2,285	2,460	2,372	2,710	2,715	2,530	3,066	3,133
(b) Meat—										
Poultry ..	13	12	12	12	12	12	13	13	15	17
Other ..	6	5	5	5	4	5	5	5	5	5
Total (b) ..	19	17	17	17	16	17	18	18	20	22
(c) Fish ..	10	13	11	11	11	11	12	12	11	12
(d) Oils & Fats—										
Butter ..										
Ghee ..	143	125	100	105	105	97	101	100	103	114
Oils, &c. ..	9	8	7	9	7	9	9	9	9	10
Total (d) ..	152	133	107	114	112	106	110	109	112	124
(e) Sugar ..	49	58	61	70	63	62	76	96	51	62
(f) Dairy Products—										
Milk ..										
Milk Products ..	404	367	341	323	313	307	319	315	328	358
Eggs ..	6	5	5	5	5	5	6	6	7	8
Total (f) ..	410	372	346	328	318	312	325	321	335	366
(g) Fruits and Vegetables	493	381	364	294	294	297	291	278	262	281
(h) Spices—										
Betelnuts ..	5	6	6	5	5	6	6	6	6	6
Other ..	63	54	53	42	51	50	45	40	41	46
Total (h) ..	68	60	59	47	56	56	51	46	47	52
(i) Miscellaneous	50	50	50	50	50	50	50	50	50	50
Total Food ..	3,812	3,447	3,300	3,391	3,292	3,621	3,648	3,460	3,954	4,102

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
2. Tobacco ..	30	30	27	22	28	26	23	27	31	30
3. Dung Fuel ..	90	90	90	90	90	90	90	90	90	90
Total Village Retention ..	3,932	3,567	3,417	3,503	3,410	3,737	3,761	3,577	4,075	4,222
B. House wives' Services										
1. Food —										
Wheat ..	23	21	22	22	23	23	23	26	24	27
Jowar & Bajra ..	65	65	65	63	63	67	65	65	64	73
Gram ..	4	4	4	4	4	4	5	4	5	6
Other Cereals ..	54	54	51	51	53	50	49	47	48	50
Total ..	146	144	142	140	143	144	142	142	141	156
C. Owner-Occupied Dwellings Rent ..	369	370	377	383	384	386	390	396	402	408
D. Total of Imputed Values										
1. Food—										
A ..	3,812	3,447	3,300	3,391	3,292	3,621	3,648	3,460	3,954	4,102
B ..	146	144	142	140	143	144	142	142	141	156
Total Food ..	3,958	3,591	3,442	3,531	3,435	3,765	3,790	3,602	4,095	4,258
2. Tobacco A ..	30	30	27	22	28	26	23	27	31	30
3. Rent. C ..	369	370	377	383	384	386	390	396	402	408
4. Fuel. A ..	90	90	90	90	90	90	90	90	90	90
5. Miscellaneous ..	50	50	50	50	50	50	50	50	50	50
Grand Total ..	4,497	4,131	3,986	4,076	3,987	4,317	4,343	4,165	4,668	4,836
Per Cent of Total Expenditure ..	16.0	15.9	16.0	16.7	16.5	17.15	16.9	16.1	17.4	17.1

Values at Constant Prices

Table 111 gives consumer expenditure revalued at 1938-9 prices, in order to obviate the differences due to the changes in price levels. The physical quantities of purchases have been revalued at 1938-9 prices. There were some obvious limitations to revaluation. Thus quality changes, which are not reflected in the quantity indices used for revaluation, could not be taken into account. The difficulty of getting information had occasionally caused assumptions of constant output or consumption, which reacts adversely the primary purpose of such revaluation, namely, to compare annual consumption levels in terms of 'real' goods and services. In order to give as far an accurate picture as was possible, the items of purchases were broken down into as many sub-categories as could be obtained. Only after a good bit of pruning the statistics might be used for broad observations on general trends.

TABLE 111.

Consumer Expenditure, 1931-2 to 1940-1, Revalued at 1938-9 Prices.
(Rs. Million)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
I. Food—										
(a) Cereals and Pulses ..										
Rice ..	3,419	3,136	3,184	3,235	2,853	3,382	3,234	2,940	3,013	2,841
Wheat ..	725	701	732	725	766	713	714	849	794	842
Jowar and Bajra ..	708	721	715	696	699	737	713	711	706	807
Gram & Pulse ..	608	655	605	661	608	629	614	585	524	544
Other ..	695	698	675	664	631	651	645	619	614	668
Total (a) ..	6,155	5,911	5,911	5,981	5,607	6,112	5,920	5,704	5,651	5,702
(b) Meat—										
Beef ..	162	145	146	158	163	171	176	179	185	193
Mutton ..	220	237	245	250	250	238	232	240	248	257
Poultry ..	34	35	36	36	37	38	39	40	40	41
Other ..	43	43	44	46	47	47	47	48	49	50
Total (b) ..	459	460	471	490	497	494	493	507	522	541
(c) Fish ..	382	383	383	382	381	381	382	383	383	383
(d) Oils & Fats—										
Butter ..	29	30	30	30	30	30	30	31	30	30
Ghee ..	1,070	1,021	973	953	953	943	980	972	981	963
Vegetable Oils, etc. ..	472	395	490	512	393	456	449	505	443	526
Total (d) ..	1,571	1,446	1,493	1,495	1,376	1,429	1,459	1,508	1,454	1,519
(e) Sugar ..	853	937	1,055	1,126	1,175	1,235	1,413	1,267	808	963
(f) Dairy Products										
Milk & Milk Products, ex. Ghee & Butter ..	1,840	1,819	1,820	1,839	1,859	1,917	1,996	1,957	2,017	2,053
Eggs ..	32	33	33	34	35	36	37	37	38	39
Total (f) ..	1,872	1,852	1,853	1,873	1,894	1,953	2,033	1,994	2,055	2,092
(g) Fruits and Vegetables ..	2,724	2,745	2,659	2,796	2,795	2,825	2,767	2,784	2,834	2,816
(h) Spices—										
Betelnuts ..	110	110	103	104	102	113	123	143	132	132
Other ..	1,015	1,115	1,112	1,048	1,278	1,245	1,099	1,056	1,139	1,187
Total (h) ..	1,125	1,225	1,215	1,152	1,380	1,358	1,222	1,199	1,271	1,319
(i) Salt, etc. ..	153	133	148	140	149	156	156	150	165	160
(j) Non-Alcoholic Beverages										
Tea ..	39	40	41	48	51	51	58	61	52	46
Coffee ..	17	14	13	16	17	23	20	15	20	22
Total (j) ..	56	54	54	64	68	74	78	76	72	68

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
(k) Miscellaneous Other Provisions ..	19	21	19	18	19	18	20	20	19	17
Ice and Soft Drinks ..	17	17	16	18	20	22	24	24	25	26
Total (k) ..	36	38	35	36	39	40	44	44	44	43
Total Food ..	15,386	15,184	15,277	15,535	15,361	16,057	15,948	15,616	15,259	15,606
2. Alcoholic Drinks & Drugs										
(a) Alcoholic Drinks										
Country Spirits & Fermented Liquors ..	140	143	148	157	165	167	186	170	153	159
'Foreign' Liquors ..	90	62	61	62	64	66	64	65	62	69
Total (a) ..	230	205	209	219	229	233	250	235	215	228
(b) Narcotic Drugs										
Opium ..	30	28	27	27	25	26	25	24	22	22
Hemp Drugs, etc. ..	27	27	28	29	29	31	30	27	22	22
Total (b) ..	57	55	55	56	54	57	55	51	44	44
Total Alcoholic Drinks and Drugs ..	287	260	264	275	283	290	305	286	259	272
3. Tobacco—										
Cigarettes ..	70	72	72	69	72	77	83	88	104	123
Cigars and Cheroots ..	246	235	217	188	179	188	198	188	207	217
Bidis ..	141	141	141	141	141	141	141	141	141	141
Other Products ..	645	675	708	623	825	737	663	786	741	725
Total Tobacco..	1,102	1,123	1,138	1,021	1,217	1,143	1,085	1,203	1,193	1,206
4. Dress and Furnishing Textiles										
Cotton ..	1,682	1,725	1,673	1,746	1,766	1,831	1,812	1,904	1,983	1,977
Silk ..	93	127	160	115	122	157	86	138	98	153
Rayon ..	173	251	162	122	169	173	181	231	144	252
Woollen ..	104	132	139	121	120	118	119	120	104	83
'Mixtures' ..	28	18	17	35	42	54	74	64	80	111
Coir, Hair, etc... ..	25	23	18	23	19	21	24	19	6	34
Total Textiles..	2,105	2,276	2,169	2,162	2,238	2,354	2,296	2,476	2,415	2,610
5. Footwear ..	125	124	126	121	126	139	167	168	193	237

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
6. Housing—										
Rent ..	1,281	1,265	1,306	1,335	1,315	1,312	1,327	1,355	1,392	1,422
Rates ..	192	192	197	204	199	200	203	206	209	214
Total Housing..	1,473	1,457	1,503	1,539	1,514	1,512	1,530	1,561	1,601	1,636
7. Fuel, Light & Power—										
Dungcakes ..	90	90	90	90	90	90	90	90	90	90
Firewood & Charcoal ..	179	178	181	189	195	190	201	194	190	197
Kerosene ..	189	169	154	173	163	175	193	178	178	178
Electricity ..	28	28	30	32	34	38	44	48	52	56
Oils, Gas, etc.	29	31	37	36	32	35	41	38	40	33
Total Fuel, Light & Power	515	496	492	520	514	528	569	548	550	554
8. Household Goods:										
(a) Furniture—										
Furniture ..	100	108	104	110	118	113	132	133	139	151
Musical instruments ..	23	21	23	27	29	30	32	30	33	36
Art Works ..	5	5	5	5	5	5	5	5	5	5
Total (a) ..	128	134	132	142	152	148	169	168	177	192
(b) Hardware—										
Crockery Earthenware & Glassware ..	92	96	96	98	100	102	107	107	109	111
Utensils, Cutlery & Hardware ..	130	115	161	145	192	176	126	128	119	120
Electric Bulbs, Lamps ..	8	10	12	16	18	17	23	17	18	26
Electrical Goods ..	3	3	4	5	6	8	8	7	8	8
Sewing Machines	7	6	8	12	12	9	15	10	12	6
Total (b) ..	240	230	281	276	328	312	279	269	266	271
(c) Other Household Goods—										
Matches ..	36	36	36	42	52	53	56	55	57	62
Soap and Washing Soda ..	55	59	62	59	53	57	59	72	68	81
Bamboo Products ..	104	100	97	96	94	90	104	97	100	105
Other ..	14	15	15	17	17	17	19	16	16	13
Total (c) ..	209	210	210	214	216	217	238	240	241	261
Total Household Goods ..	577	574	623	632	696	677	686	677	684	724

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
9. Personal Effects ..	160	179	198	187	209	216	235	241	240	219
10. Amusements	55	60	65	65	72	73	80	81	95	97
11. Reading Matter ..	95	95	100	115	117	125	140	150	156	168
12. Private Transport ..	126	127	144	170	172	182	182	164	167	151
13. Public Transport—										
Long Distance Railways ..	304	302	291	293	295	292	310	307	305	315
Local ..	89	88	93	97	98	98	103	102	99	109
Total Public Transport ..	393	390	384	390	393	390	413	409	404	424
14. Communications—										
Letters and Parcels ..	42	41	41	42	44	44	47	47	47	48
Telegrams ..	16	15	16	16	16	16	16	15	18	20
Telephone ..	2	3	3	3	3	3	4	4	4	5
Total Communications ..	60	59	60	61	63	63	67	66	69	73
15. Services—										
(a) Medicine ..	177	179	179	190	200	208	210	218	226	228
(b) Education ..	226	229	232	242	246	253	264	275	289	302
(c) Food ..	89	87	84	80	84	89	89	87	93	98
(d) Dress and Toilet—										
Tailoring ..	121	139	131	140	144	145	148	156	156	151
Laundry ..	156	179	168	181	185	187	190	201	201	195
Barbers ..	163	165	168	170	173	175	178	180	182	187
Jewellers ..	276	271	262	249	262	276	290	276	304	331
Total (d) ..	716	754	729	740	764	783	806	813	843	864
(e) Religion ..	268	254	239	218	222	221	213	209	224	233
(f) Domestic ..	422	413	401	380	422	422	443	464	485	527
(g) Manual Labour ..	15	15	15	14	15	15	15	15	16	17
(h) Prostitutes ..	32	33	34	35	36	37	38	39	42	45
(i) Miscellaneous ..	54	57	60	64	71	76	82	86	90	98
Total Services	1,999	2,021	1,973	1,963	2,060	2,104	2,160	2,206	2,308	2,412
Grand Total ..	24,458	24,425	24,516	24,756	25,035	25,853	25,863	25,852	25,593	26,389

Reliability

Right from the inception of the work an attempt was made to follow Professor Bowley's precept of keeping a running account of errors. This, in fact, involved two sorts of errors. These were :

- (a) Calculated Errors, involving two types of what may be described as purely technical calculations of probability, such as (i) calculation of standard errors, and (ii) propagation of errors by which means the significance of the errors in one or more of the variables on their total function is evaluated.
- (b) Assumed Errors, indicative of a subjective estimate of the nature of data rather than any precise knowledge of the extent of error.

Errors of the type (a) were available only in case of a few items, agricultural prices for instance, where averages from sufficiently large samples were obtained. Most of the errors come across in national income estimates, however, are of the type (b). When errors are of this nature, it would be unwise to give any quantitative precision to such errors. The purpose of giving such errors, that or indicating snags in the data, would be well served by following a broad classification as adopted, for instance, in the *Irish White Paper on National Income and Expenditure* (pp. 21-25). Here four indices of the nature of data were adopted :

- A. Firm Figures.
- B. Good Estimates.
- C. Rough Estimates.
- D. Conjectures.

In the present estimates there were no 'firm figures'. Most of the values were products of quantity and prices, and these could not have an accuracy comparable to that of census data. The symbols were adopted but these stand for :

- A. Good Estimates,
- B. Fair Estimates,
- C. Rough Estimates, and
- D. Conjectures.

From this qualitative classification, the imputation of a quantitative limiting value to the various categories involves a purely subjective element. The probable errors per cent were taken to be

- A. 5
- B. 15
- C. 25

No positive error could be assigned to D. One cannot quarrel, if for lack of data, a national income computer resorted to a conjecture, but he should not indulge in another (and possibly equally or relatively more) unjustifiable conjecture as to the likely error of the previous conjecture.* This may at times only mislead.

Having imputed any values to A, B, C and D, we have the problem of propagation of error in order to obtain a quantitative measure of the error of the totals in the estimates. The general equations of propagation of error are set out below.†

If F is a linear function of x, y, z with standard errors $\sigma x, \sigma y$ and σz and if r_{xy} is introduced as a correlation co-efficient between Δx and Δy , etc., neglecting the higher terms,

$$\sigma F^2 = (F_x \sigma x)^2 + (F_y \sigma y)^2 + (F_z \sigma z)^2 + 2(F_x F_y \sigma x \sigma y r_{xy} + F_y F_z \sigma y \sigma z r_{yz} + F_x F_z \sigma x \sigma z r_{xz}), \text{ where } F_x = \frac{\delta F}{\delta x} \dots\dots\dots (1)$$

$$\text{If } F = x + y + z, \quad F_x = F_y = F_z = 1 \dots\dots\dots (2)$$

It follows

$$\sigma F^2 = \sigma x^2 + \sigma y^2 + \sigma z^2 + 2(r_{xy} \sigma x \sigma y + r_{yz} \sigma y \sigma z + r_{xz} \sigma x \sigma z) \dots\dots\dots (3)$$

The terms in the parenthesis are zero if the errors in the variables x and y etc., are independent i.e. uncorrelated. Thus if r_{xy} , etc., = 0,

$$\sigma F^2 = \sigma x^2 + \sigma y^2 + \sigma z^2 \dots\dots\dots (4)$$

Alternatively, the errors in the variables might be perfectly positively or negatively correlated.

$$\text{If } r_{xy}, \text{ etc.} = 1, \sigma F = \sigma x + \sigma y + \sigma z \dots\dots\dots (5)$$

$$\text{If } r_{xy} = -1 \text{ and } r_{xz} = -1, r_{yz} = 1 \dots\dots\dots (6)$$

It then follows

$$\sigma F = \sigma x - \sigma y - \sigma z \dots\dots\dots (7)$$

If $F = xyz$,

$$F_x = yz, F_y = xz, F_z = xy \dots\dots\dots (8)$$

The mean square error corresponding to Equation (i) would be

$$\sigma F^2 = (yz \sigma x)^2 + (xz \sigma y)^2 + (xy \sigma z)^2 + 2(r_{xy} yz^2 xy \sigma x \sigma y + r_{yz} x^2 yz \sigma y \sigma z + r_{xz} y^2 xz \sigma x \sigma z) \dots\dots\dots (9)$$

Equation (9) holds good for any value of r_{xy} , etc., Where r_{xy} , etc. = 0,

$$\sigma F^2 = (yz \sigma x)^2 + (xz \sigma y)^2 + (xy \sigma z)^2 \dots\dots\dots (10)$$

* Thus, for instance, after ascertaining the *per capita* consumption of fluid milk in urban areas Dr. Rao observed that the *per capita* urban consumption of milk products would have a milk equivalent of 50 per cent of the consumption of fluid milk. (*National Income of British India, 1931-2*, p. 94). The data collected from 23 cities by the Marketing Adviser gave it at 240 per cent of the consumption of fluid milk. (Daily *per capita* consumption—fluid milk 3.7 oz. and milk equivalent of milk products, 8.9 oz.). The maximum error assigned by Dr. Rao is ± 20 per cent.

† For further reference see Deming, *Statistical Adjustment of Data* (1938), particularly Chapter Three.

Simplifying (i.e. by dividing by $F^2 = x^2 y^2 z^2$) we get

$$\left(\frac{\sigma F}{F}\right)^2 = \left(\frac{\sigma x}{x}\right)^2 + \left(\frac{\sigma y}{y}\right)^2 + \left(\frac{\sigma z}{z}\right)^2 \dots\dots\dots(11)$$

Thus on an assumption of independent errors in the variables, the squares of the percentage or relative mean square errors are additive. If the percentage errors are perfectly correlated these percentage errors would be simply additive, i.e.,

$$\frac{\sigma F}{F} = \frac{\sigma x}{x} + \frac{\sigma y}{y} + \frac{\sigma z}{z} \dots\dots\dots(12)$$

The above formulations are applicable only if (a) the variables x , y , z , etc., are stochastic, and (b) the exact value of the coefficient of correlation r_{xy} , etc. between the errors is known. In practical works of this kind neither of the conditions is satisfied, and to that extent, not only the imputation of error to a single item, but its propagation also involves the operation of subjective element to a significant degree. The only mitigating factor in the case of consumer expenditure estimates is that they are prepared from an intensive breakdown of each single item, and the errors are likely to be more independent than in the case of purely income estimates where values are obtained in large blocs from single sources.

In Table 112 the estimates of all the items, for the last pre-war year (1938-9), have been classified into the four categories A, B, C and D. While intellectually unsatisfying, an attempt has been made to work out the consequences of the subjective assumption of error imputation. The following arbitrary steps were taken: (a) The average percentage error of the estimates in each category was taken at 3, 10, 20 and 50 per cent respectively. (b) If all the errors were perfectly positively correlated the error of the global estimate would be ± 21.78 per cent. Alternatively, if all the errors taken to tiniest sub-group, were independent the error added up to less than 3 per cent. Neither of the assumptions was justifiable, and given (a) they only set the outer limits. A modified approach was, therefore, adopted. Where there was any reason to believe the correlations in the errors concerned were nearer to 1 than 0 (for example, when the estimates were obtained from the same sources, or compiled by the same agencies, etc.), these errors were taken to be perfectly correlated. Thus each of the constituents of the estimates of each item was taken to be perfectly correlated. Each individual item within the sub-Groups of the Food Group were also assumed to be correlated. Errors in these cases were added up. On the other hand, estimates which were obtained from independent sources were treated as independent, even though they might possibly involve a small correlation. In the Table the errors marked

* are obtained on an assumption of independence of the Groups constituting the total. The error in the Tobacco Group (marked **) was obtained on an assumption of perfect negative correlation between (a) cigarettes, cigars and *cheroots* and *bidis*, all with perfect positive correlation, and (b) Other Tobacco Products. The Global Total obtains its error *** (Rs. 1856 millions, or ± 7.18 per cent) on an assumption of independence between the Group Errors. This might well be an underestimate. The real error is anybody's guess.

The data were inadequate for the earlier years of the decade, and for 1940-1, as some of the publications giving information for the year were yet to be published. The errors for these years should be higher.

The error calculation refers to absolute values. The errors would be smaller for the purposes of year to year comparisons. Alternatively there is a significant reduction in comparability because of the inability to consider changes in stocks, differences in time lags, and the assumptions of constant output or value where the data yielded only an undated approximate of the absolute value. Beyond the general impressions given by the global totals, the estimates might not be used in refined techniques of economic analysis.

Of the two, the values at constant prices are more reliable than current values, as errors arising from the data on the variations in prices are removed. Errors due to the neglect of quality changes, however, offset this advantage to some extent.

TABLE 112
Consumer Expenditure, 1938-9. Reliability.
 Rs. Million

	A	B	C	D	Total	Error	Error Per Cent
1. Food—							
(a) Cereals and Pulses							
Rice ..	2,494	143	35	268	2,940	..	..
Wheat ..	698	81	16	54	849	..	..
Jowar & Bajra ..	613	64	..	34	711	..	..
Gram & Pulses ..	235	241	15	94	585	..	..
Other ..	105	418	47	49	619	..	..
Total (a) ..	4,145	947	113	499	5,704	491.15	..
(b) Meat—							
Beef ..	..	..	179	..	179	..	..
Mutton ..	..	..	240	..	240	..	..
Poultry ..	..	..	40	..	40	..	..
Other ..	..	..	..	48	48	..	..
Total (b) ..	..	..	459	48	507	115.8	..
(c) Fish.. ..	1	..	..	382	383	191.03	..
(d) Milk Products ..	7	1,010	1,943	..	2,960	489.81	..
(e) Vegetable Oils ..	..	290	201	14	505	76.2	..
(f) Eggs	..	..	37	..	37	7.4	..
(g) Sugar	462	790	..	15	1,267	100.36	..
(h) Fruits and Vegetables ..	..	114	182	2,488	2,784	1,291.8	..
(i) Spices—							
Betelnuts ..	39	..	..	104	143	53.17	..
Other ..	3	..	..	1,053	1,056	526.59	..
Total (i) ..	42	..	..	1,157	1,199	..	..
(j) Salt, etc. ..	149	1	..	..	150	4.57	..
(k) Non-Alcoholic Beverages—							
Tea ..	61	..	..	..	61	1.83	..
Coffee ..	..	15	..	..	15	1.5	..
Total (k) ..	61	15	..	..	76	..	..

	A	B	C	D	Total	Error	Error Per Cent
(l) Miscellaneous—							
Other Provisions ..	10	..	..	10	20	5.3	..
Ice & Aerated Waters	..	..	..	24	24	12.0	..
Total (l) ..	10	..	..	34	44	..	..
Total Food ..	4,877	3,167	2,935	4,637	15,616	1,574.44*	10.08
2. Alcoholic Drinks and Drugs:							
(a) Alcoholic Drinks—							
Country Spirits and Fermented Liquors	83	..	46	41	170	..	..
'Foreign' Liquors ..	47	4	..	14	65	..	..
Total Alcoholic Drinks	130	4	46	55	235	41.0	..
(b) Narcotic Drugs—							
Opium	24	..	..	..	24	..	..
Hemp Drugs, etc. ..	..	..	27	..	27	..	..
Total Drugs ..	24	..	27	..	51	6.12	..
Total Alcoholic Drinks & Drugs ..	154	4	73	55	286	41.45*	14.49
3. Tobacco—							
Cigarettes	12	..	76	..	88	..	..
Cigars & Cheroots..	1	..	187	..	188	..	..
Bidis	..	..	141	..	141	..	..
Other Products ..	3	..	783	..	786	..	..
Total Tobacco ..	16	..	1,187	..	1,203	75.5**	6.28
4. Dress and Furnishing Textiles—							
Cotton	675	1,137	69	23	1,904	159.25	..
Silk	12	121	..	5	138	14.96	..
Rayon	13	218	..	..	231	22.19	..
Wool	15	..	105	..	120	21.45	..
'Mixtures'	..	64	..	..	64	6.4	..
Coir, Hair, etc. ..	..	15	..	4	19	3.5	..
Total Textiles ..	715	1,555	174	32	2,476	163.06*	6.59
5. Footwear	..	9	159	..	168	32.7	19.46

	A	B	C	D	Total	Error	Error Per Cent
6. Housing							
Rent	895	..	..	460	1,355	..	..
Rates	192	..	..	14	206	..	..
Total Housing ..	1,087	..	..	474	1,561	269.61	17.27
7. Fuel, Light and Power							
Dungcakes	..	..	..	90	90	45.0	..
Firewood	..	..	194	..	194	38.8	..
Kerosene	178	..	..	..	178	5.34	..
Electricity	48	..	..	..	48	1.44	..
Oils, etc.	..	..	38	..	38	7.6	..
Total Fuel, Light and Power	226	..	232	90	548	60.16*	10.97
8. Household Goods :							
(a) Furniture—							
Furniture	..	..	..	133	133	66.5	..
Musical Instruments	12	..	..	18	30	9.36	..
Art Works	..	..	..	5	5	2.5	..
Total (a)	12	..	..	156	168	..	..
(b) Hardware—							
Crockery, etc. ..	..	..	..	107	107	53.5	..
Utensils, Cutlery, etc	16	76	20	16	128	20.08	..
Lanterns, Lamps, etc.	5	1	..	11	17	5.75	..
Electrical Goods ..	7	..	..	..	7	.21	..
Sewing Machines ..	10	..	..	..	10	.3	..
Total (b)	38	77	20	134	269	..	..
(c) Other Household Goods—							
Matches	55	..	..	..	55	1.65	..
Soap	9	..	63	..	72	12.87	..
Bamboo Products ..	..	..	..	97	97	48.5	..
Other	10	..	..	6	16	3.3	..
Total (c)	74	..	63	103	240	..	..
Total Household Goods	124	77	83	393	677	101.72*	15.02

	A	B	C	D	Total	Error	Error Per Cent
9. Personal Effects ..	62	47	44	88	241	59.36	24.63
10. Amusements ..	35	..	..	46	81	24.05	29.69
11. Reading Matter ..	8	..	142	..	150	28.64	19.10
12. Private Transport ..	31	128	..	5	164	16.23	9.90
13. Public Transport— Long Distance Railways ..	307	..	..	..	307	9.21	..
Local	..	..	102	..	102	20.4	..
Total Public Transport	307	..	102	..	409	22.38*	5.47
14. Communications—							
Letters & Parcels ..	47	..	..	..	47	..	..
Telegrams ..	15	..	..	..	15	..	..
Telephones ..	4	..	..	..	4	..	..
Total Communications	66	..	..	..	66	1.98	3.0
15. Services—							
Education	114	106	..	55	275	41.52	..
Medical	15	..	..	203	218	915.45	..
Food	..	..	..	87	87		
Dress and Toilet ..	..	..	..	813	813		
Religion	..	..	..	209	209		
Domestic	..	..	..	464	464		
Manual Labour ..	..	..	..	15	15	8.69	..
Prostitutes ..	..	..	..	39	39		
Miscellaneous ..	73	..	..	13	86		
Total Services ..	202	106	..	1,898	2,206	916.43*	41.54
Grand Total ..	7,910	5,903	5,131	7,718	25,852	1856.37***	7.18

CHAPTER 17

CONCLUDING OBSERVATIONS

Per Capita Expenditures

The Population of India and Pakistan numbered 338,119,000 and 388,977,000 in the last week of March, 1931 and 1941 respectively. The population at the end of each of the intervening Census Years was obtained by fitting an ordinary exponential curve. Mid-Year populations are the running averages of two successive Census Year populations. This slightly overestimates the actual mid-Year populations, but the errors are negligible and do not affect the per capita calculations for which these population deflators are used. (Table 113).

TABLE 113.
Per Capita Consumer Expenditure in India and Pakistan.

Mid-year	Population (000)	Per Capita consumer Expenditure (Rs.)	
		Current Values	At 1938-9 Prices
(1)	(2)	(3)	(4)
1931-2	340,507	82.5	71.8
1932-3	345,319	75.1	70.7
1933-4	350,199	71.0	70.0
1934-5	355,148	68.8	69.7
1935-6	360,166	67.0	69.5
1936-7	365,255	68.9	70.8
1937-8	370,416	69.5	69.8
1938-9	375,650	68.8	68.8
1939-40	380,958	70.2	67.2
1940-1	386,341	73.2	68.3

National Income Estimate For 1931-2

Consumer expenditure at current values in these estimates, therefore, works out at Rs. 82.5 per capita in 1931-2. Rao arrived at a national income figure of Rs. 65 per capita in the same year.*

Rao's figure referred to British India alone and included Burma. Income per capita of the population in Burma was estimated by him at Rs. 67.5.† The income of British India excluding Burma would be lower than Rs. 65. The income of the population in princely states was also likely to be lower than in British India. Thus the national income of all-India (excluding Burma) would be lower than Rs. 65 per capita on the basis of Rao's figures.

* *National Income of British India, 1931-2*, p. 186.

† *Ibid*, p. 233.

Consumer expenditure falls short of national income by (a) Government expenditure *less* indirect taxes and (b) net capital formation. There was no evidence that either of these two were individually or on balance negative. National income figure, therefore, should have certainly been higher than Rs. 82.5 as arrived at in these estimates. Rao's figure, therefore, is a considerable underestimate.

Rao assigned a total error of ± 6 per cent to his estimates. Apart from the subjective bias in tipping down the value of individual errors, the presentation and calculation of errors were faulty. The relevant portions are reproduced below :*

					Value in Millions of Rupees	Margin of Error Percentage
Value of agricultural output	..	..	..	..	5,927	..
Value of forest products†.....	..	..	..	..	92	..
Incomes assessed to income-tax	..	..	..	..	2,161	..
Grand Total	..				16,890	± 6

He suggested : "If we can infer that the official statistics of agricultural output as a whole were below the actual output by 10 per cent, and if we further assume that evasion of income tax and the consequent understatement of incomes assessed to income tax was not less than 5 per cent we get an alternative estimate of the income of British India", which is put at Rs. 17,664 millions, again "with a margin of error of ± 6 per cent." This take-what-you-will-you-will-be-subject-to-the-same-error attitude is unjustifiable. Re-stated the value of error would be

	Value in Millions of Rupees	Limiting Values of Errors	
		Millions of Rupees	Percentage
Value of agricultural output ..	5,927	0 to 593	0 to +10
Incomes assessed to income-tax ..	2,161	0 to 68	0 to + 5
Grand Total ..	16,890	-1,014 to + 1,675	-6 to +10

The correct limits were neither Rs. 15,876 and 17,904 millions nor Rs. 16,651 and Rs. 18,677 millions, but were wider. The true figure lay between Rs. 15,876 and 18,565 millions.

* *National Income of British India, 1931-2*, p. 186.

† Only Government forests were considered, and private forests were entirely neglected.

Not only the presentation but calculation of errors was also faulty. His estimates of agricultural output, livestock products, fish, forest products and mineral produce were the products of quantities and average prices, and the rest excluding incomes assessed to income-tax, incomes of state employees and value of miscellaneous items were the products of the estimated numbers of employed earners and their average earnings. In these cases errors in each of the two variables in the products would be additive. Rao considers errors in one of the variables only. Thus where values were concerned, errors referred only to errors in quantity estimation, and in the case of incomes these referred to average wages alone. Errors in the estimates of prices in the former, and the numbers employed in the latter were neglected. Even where quantity estimates were the products of more than one variable (e.g. yield of mutton was a product of the estimated number of sheep slaughtered and the average yield per sheep) errors assigned refer to only one of the variables (the number of sheep slaughtered). In the quotation above, Rao was concerned only with the errors in quantity estimates of agricultural output. Errors arising from the use of harvest prices—in fact the character of harvest prices themselves—received no attention. And to this extent the assignment of errors in the estimates was inaccurate, and an understatement.

Beyond this it is unprofitable to criticise the subjective elements in the values assigned to the errors in his estimates by a national income computer.

TABLE 114.
Group Distribution of Consumer Expenditure.
(Per cent of Total Consumer Expenditure)

	India 1938-9	United Kingdom 1938	United States 1938
Food	60.5	29.1	22.3
Alcoholic Drinks and Drugs	1.1	6.5	5.1
Tobacco	4.7	4.2	2.8
Clothing	9.8	9.0	8.5
Footwear	.7	1.8	2.0
Housing	6.0	11.8	14.1
Fuel	2.1	4.6	4.2
Household Goods	3.0	7.3	7.6
Personal Effects	2.1	4.0	3.2
Amusements	.3	1.6	1.5
Reading Matter	.6	1.5	1.1
Private Transport	.6	2.7	6.7
Public Transport	1.6	3.9	2.1
Communications	.3	.7	1.1
Services	6.6	11.3	17.7

Group Distribution of Consumer Expenditure

International comparisons of absolute levels of consumer expenditure can only be misleading. A more profitable way of comparing the standard of living in various countries is to study the distribution of expenditure and see what proportions (of his small income) the average Indian and Pakistani devote to the obtaining of necessities, particularly food. Table 114 gives the group distribution of consumer expenditure for the last pre-War year in India, and in the United Kingdom and in the United States of America.* Due to the differences in the classification various adjustments were made to the India and Pakistan figures to give comparability. These were :—

Item	Amount Rs. Millions	Shifted from Group	Shifted to Group
1. Furnishing Textiles ..	100†	Clothing	Household Goods
2. Services of Tailors ..	156	Services	Clothing
3. Sewing Machines ..	8	Household Goods	Clothing
4. Clocks ..	1	Household Goods	Personal Effects
5. Jewellers' Services ..	276	Services	Personal Effects
6. Money Order Transactions	11	Services	Communications‡
7. Services of Prostitutes ..	39	Services	
8. Drugs and Medicines ..	17	Services	Personal Effects

The surprisingly large proportion devoted to the expenditure on food is quite the characteristic of a low standard of living.

TABLE 115.

Distribution of Food Expenditure.

(Per cent of Total Expenditure on Food)

	India 1938-9	United Kingdom 1938
Cereals and Pulses	36.5	14.0
Meat and Fish	5.7	27.0
Oils and Fats	9.7	8.3
Sugar	8.1	9.1
Dairy Products	12.8	17.2
Fruits and Vegetables	17.8	16.4
Non-Alcoholic Beverages.. ..	.5	4.6
Spices	7.7	....
Miscellaneous	1.2	3.4

* Calculated from the figures given in *The Impact of the War on Civilian Consumption* (1945).

† Guess.

‡ Excluded.

Distribution of Food Expenditure

A further breakdown of the expenditure on food might be obtained into major groups. A breakdown of the United States food expenditure was not available. The United Kingdom figures were calculated from the data given in the White Paper on *National Income and Expenditure of the United Kingdom, 1938 to 1946* (Cmd. 7099). Mainly due to poverty, and to a small extent due to vegetarianism, the proportion of expenditure on cereals is higher than on protein foods like meat and fish. Even if pulses are included with meat and fish, the expenditure on protein foods will be less than 10 per cent of the total, compared with the 27 per cent in the United Kingdom. Probably fruit values are an overestimate and the figure is not very trustworthy. Equally untrustworthy is the figure on spices, but it is more than probable that India and Pakistan do stand up to their reputation for the consumption of spices.

Growth of Consumption

Finally an answer may be sought to the question whether consumption was rising or falling, and how the various groups showed up in this respect. This was the primary purpose for which consumer expenditure was revalued at 1938-9 prices. Table 111, however, included some items for which year to year information was either unavailable or inadequate. In Table 116 these items have been deleted. The coverage of the Table includes only the following :

Food : Cereals and pulses, vegetable oils, sugar, fruits and vegetables, spices excluding betelnuts, salt and non-alcoholic beverages.

Alcoholic Drinks and Narcotic Drugs.

Tobacco.

Dress and Furnishing Textiles : Cotton, rayon, 'mixtures' and imports of woollen and silk goods.

Housing : Urban rents, and rates levied in British India.

Fuel : Kerosene and Electricity.

Household Goods : Utensils, electrical goods including lamps, sewing machines, matches, candles and night-lights, polishes, ammonia, camphor and saffron.

Personal Effects : Stationery, writing paper, picture cards, etc., spectacles, cameras, cycles, watches and buttons.

Private Transport : Motor cars and motor cycles.

Public Transport : Railways.

Communications.

Services : Education.

Table 117 gives the variations in the nine years 1932-3 to 1940-1 as percentages of the initial year 1931-2.

So long as the estimates remain subject to large margins of error any conclusions obtained from these figures remain tentative. In the case of items included in the Tables, however, the data being continuous, the errors in the observations of trend are likely to be smaller. The only source of serious errors lies in and as a result of the commodities excluded. The main picture, it appears, remains unaffected. Both from total values as in the Tables 111 and 116 two facts stand out very prominently. (a) Total consumer expenditure was slowly rising in spite of and even during the Depression.

TABLE 116.
Growth of Consumer Expenditure at 1938-9 Prices.
(Rs. Million)

	1931-2	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Food ..	11,428	11,290	11,429	11,667	11,465	12,103	11,882	11,542	11,112	11,422
Alcoholic Drinks and Drugs ..	287	260	264	275	283	290	305	286	259	272
Tobacco ..	1,102	1,123	1,138	1,021	1,217	1,143	1,085	1,203	1,193	1,206
Dress & Furnishing Textiles	1,916	2,063	1,923	1,979	2,028	2,100	2,123	2,235	2,231	2,355
Housing ..	1,031	1,014	1,051	1,079	1,054	1,050	1,064	1,087	1,119	1,148
Fuel ..	217	197	184	205	197	213	237	226	230	234
Household Goods	180	165	214	213	271	254	217	207	204	201
Personal Effects	30	34	36	40	43	51	59	52	45	37
Reading Matter	95	95	100	115	117	125	140	150	156	168
Private Motoring	121	122	139	165	167	177	177	159	162	146
Long Distance Transport : Railways ..	304	302	291	293	295	292	310	307	305	315
Communications	60	59	60	61	63	63	67	66	69	73
Education ..	226	229	232	242	246	253	264	275	289	302
Total ..	16,997	16,953	17,061	17,355	17,446	18,114	17,930	17,795	17,374	17,879
Per Capita	49.9	49.1	48.7	48.9	48.4	49.6	48.4	47.4	45.6	46.3

TABLE 117.

Variation in Consumer Expenditure, 1932-3 to 1940-1.

(Per cent of 1931-2 Level)

	1932-3	1933-4	1934-5	1935-6	1936-7	1937-8	1938-9	1939-40	1940-1
Food	-1.2	..	2.1	.3	5.9	4.0	1.0	-2.8	-.1
Alcoholic Drinks and Drugs	-9.4	-8.0	-4.2	-1.4	1.0	6.3	-.3	-9.8	-5.2
Tobacco	1.9	3.3	-7.4	10.4	3.7	-1.5	9.2	8.3	9.4
Dress and Furnishing Textiles	7.7	.4	3.3	5.8	9.6	10.8	16.7	16.5	22.9
Housing	-1.6	1.9	4.7	2.2	1.8	3.2	5.4	8.5	11.3
Fuel	-9.2	-15.2	-5.5	-9.2	-1.8	9.2	4.1	6.0	7.8
Household Goods ..	-8.3	18.9	18.3	50.6	41.1	20.6	15.0	13.3	11.7
Personal Effects ..	13.3	20.0	33.3	43.3	70.0	96.7	73.3	50.0	23.3
Reading Matter ..	..	5.3	21.1	23.2	31.6	47.4	57.9	64.2	76.8
Private Motoring ..	.8	14.9	36.4	38.0	46.3	46.3	31.4	33.9	20.7
Long Distance Transport Railways	-.7	-4.3	-3.6	-3.0	-3.9	2.6	1.0	.3	3.6
Communications ..	-1.7	..	1.7	5.0	5.0	11.7	10.0	15.0	21.7
Education	1.3	2.7	7.1	8.8	11.9	16.8	21.7	27.9	33.6
Total	-.3	.4	2.1	2.6	6.6	5.5	4.7	2.2	5.2
Population ..	1.4	2.8	4.3	5.8	7.3	8.8	10.3	11.9	13.5
Per Capita ..	-1.6	-2.4	-2.0	-3.0	-.6	-3.0	-5.0	-8.6	-7.2
Grand Total* ..	-.1	.2	1.2	2.4	5.7	5.7	5.7	4.6	7.9
Per Capita ..	-1.5	-2.5	-2.9	-3.2	-1.4	-2.8	-4.2	-6.4	-4.9

But the rise has not been sufficient to offset the rapid growth in the population, and the per capita expenditure has, therefore, been falling. It is not known whether capital formation and government expenditure grew fast enough to offset the fall in consumer expenditure. It was quite probable that national income per capita was not rising as was generally believed. (b) The most serious cause for concern was that the consumption of food, except for the variations

* Including omitted values.

caused by freaks of nature, was steady while population was increasing so rapidly, thus giving rise to a situation worse than contemplated by Malthus. If casual evidence could be trusted, none of the omitted items (except poultry) showed any compensatory rise. If at all, the supplies of milk and fish were deteriorating, and very little indeed was known about the yield of mutton and beef.

There is the optimistic side to the picture. The growth of urbanisation, literacy and the increasing contact with the western civilisation made easier by improved means of communications had led to a rapid growth in many of the amenities of life. Clothing (and also footwear, the figures were not very reliable and were omitted), household goods, personal effects, reading matter, private motoring, communications, and private expenditure on education, all were increasing more rapidly than the population. There was a growth in housing, but the slow growth suggests an evidence of relative congestion. Consumption of electricity was nearly doubled, at the expense of kerosene, and the great fall in kerosene consumption in earlier years probably showed the effects of the Depression on the consumption in rural areas, where no electricity was available, and kerosene was the only source of light. Drinks and drugs showed a fall during the Depression, and a subsequent rise was arrested by the prohibitory zeal of the Provincial Congress Governments. Changes in the yield of tobacco were not adequately recorded and the neglect to consider quality changes underestimate the increasing smoking habit. Long distance travel by railways showed a fall during the Depression, which was slowly being picked up during the later years.

This essay, therefore, ends with this picture of an increasing number of motor cars, wireless sets, electricity, telephones, cinemas, newspapers, periodicals and books, and clothing in greater quantities and superior qualities. But all of these were overshadowed by Malthusian portents looming on the horizon and waiting, at a little twist of nature, to swoop down on the teeming millions of human lives.

