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**PROSPECTUS**  
**OF THE**  
**INDIAN MERCANTILE**  
**MARINE TRAINING SHIP**  
**“ DUFFERIN ”**



**BOMBAY HARBOUR**

**Illustrations by the Hamilton Studio, Fort, Bombay.**



**CALCUTTA: GOVERNMENT OF INDIA**  
**CENTRAL PUBLICATION BRANCH**  
**1933**

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## IMPORTANT.

### MEMORANDUM.

**Eyesight.**—The attention of Parents and Guardians of Candidates for Cadetships to the “Dufferin” is invited to pages 11 and 12 of the Prospectus regarding Medical Fitness and Eyesight.

“ In after life every candidate for a certificate of competency is required to have normal vision (Snellen’s Standard) using both eyes or at candidate’s option, either eye separately. It is important that every person who contemplates for entry to the “Dufferin” for training should realise that ability to reach this standard at the time of examination does not guarantee that he will be able to pass when he is ready to go to sea and again when he presents himself for his professional examinations in later years or that he will be able to maintain the necessary standard of visual acuteness throughout his working life.

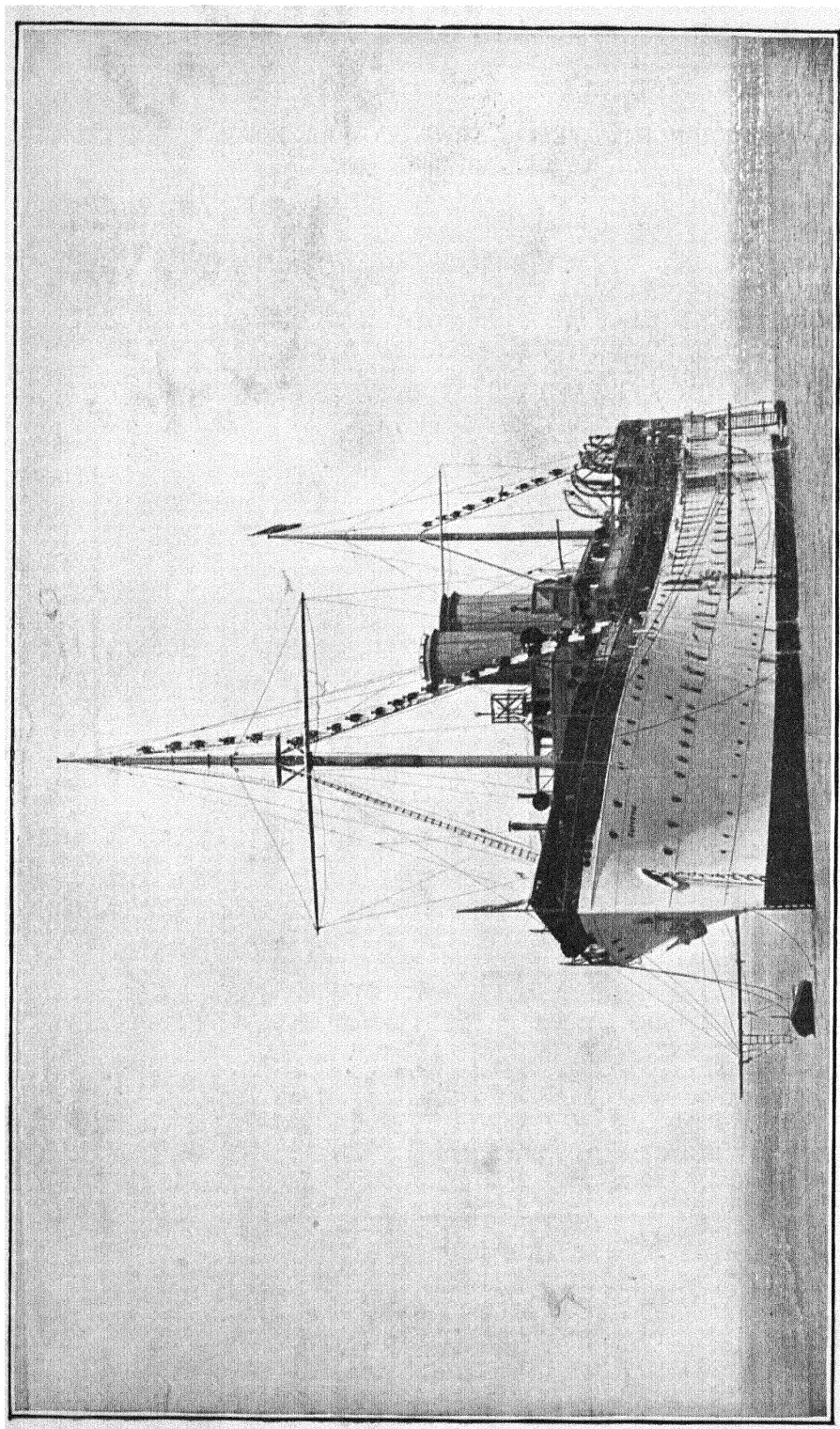
A large number of persons have eyes that, though they are quite healthy, are not optically correct owing to the presence of some error of refraction. The commonest of such errors of refraction is called HYPERMETROPIA. In youth hypermetropia is often latent and does not prevent the person from seeing perfectly at a long distance; but in middle life and later it becomes manifest and glasses are needed for clear vision of distant objects. The age at which this defect becomes manifest depends upon the degrees of hypermetropia, and this varies widely in different persons. Hypermetropia, and other errors of refraction can be efficiently estimated only by those who have been properly trained in the examination of the eye.

A serious falling off of visual acuteness for distance, in after life, is incompatible with the continuance of efficiency at sea. In order, therefore, to guard against the possibility of entering a profession for which after a few years he may prove to be physically unfit, *it is very desirable that every boy before coming for training should undergo a thorough examination of his eyesight by an ophthalmic surgeon.* By this means he will be able to ascertain what, if any, degree of hypermetropia or other imperfection of the eyes he has and what is the probability of his being able to maintain the necessary degree of visual acuteness throughout his working life.”

The Parents and Guardians in the boy’s own interest should have the eyesight of the boy thoroughly examined. If he is successful and comes to Bombay for Selection he has to undergo the Snellen’s Test and one for Colour Vision, but the passing of such test is no guarantee that his eyesight is such as to remain good in after life







**I. M. M. T. S. Dufferin. Cadets Manning Ship.**

**EXTRACT FROM THE EVENING NEWS OF INDIA, BOMBAY, MONDAY,  
DECEMBER 12, 1927.**

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**VICEROY INSPECTS TRAINING SHIP "DUFFERIN".**

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**Advice to Mercantile Marine Cadets.**

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A splendid send-off to the new scheme for training Indian youths for a career in the Mercantile Marine was given this morning, when His Excellency the Viceroy paid a visit to the DUFFERIN, which has been converted into a training ship and lies at anchor off Mazagaon Pier. This engagement was the first in His Excellency's programme to-day and that he found it extremely interesting was proved by his lengthy stay on the ship and careful examination of the arrangements made for the boys' education.

The scheme was launched on December 1, when 30 cadets specially selected from all parts of India joined the DUFFERIN. Since then wonders have been worked. The boys have been fitted out in smart uniforms, and just under a fortnight's drill has given them a smartness which has to be seen to be believed.

**Guard of Honour.**

So it was seemingly no raw recruits whom His Excellency saw lined up on the quarter deck as the trim Indian Marine launch, DIAMOND, drew up at the gangway of the DUFFERIN this morning. His Excellency accompanied by Captain Headlam, Director of R. I. M., embarked on the DIAMOND at the "Gateway of India" at 10-30, after driving through well-lined streets from Government House and inspecting a Guard of Honour of Royal Indian Marine which was drawn up at the Gateway. Members of the Governing Body had preceded His Excellency in another launch, and were awaiting him when he boarded the DUFFERIN, which was "dressed" for the occasion.

**Arrival on Board.**

His Excellency was received by the Captain-Superintendent Digby-Beste, who presented to him the following governors:—Sir Chimanlal Harilal Setalvad, Sir Purshotamdas Thakurdas, Mr. F. P. B. Lory (Director of Public Instruction), Mr. Kaikobad Cowasjee Dinshaw, Mr. D. J. MacGillivray, Mr. M. A. Master, and Mr. Narotam Morarjee. The officers of the ship were then presented, after which His Excellency inspected the boys, pausing to say a few words to every one of them. Then a tour was made of the ship and when this was concluded, the boys—thirty in number, by the way—fell in again and His Excellency spoke a few encouraging and well chosen words.

### Advice to the Boys.

The Viceroy said he was very glad of an opportunity of addressing the boys, because they were the pioneers in an adventure which he hoped with the help of those responsible for guiding it, in their different capacities, was going to be a great contribution towards enabling the sons of India to become responsible in an increasing degree in the Merchant Service and the Mercantile Marine that served India and the world. He had no doubt that they already had had long enough to realise that the profession that they were making up their minds to try and follow was a difficult one, and would require much study before they were competent. They would learn more and more that everything worth doing in life was difficult, and that the easier things would not bring the same reward. They must always keep in their minds the thought that they were doing pioneer work and that they were taking up a career which hundreds of sons of India might follow in later. Just as the foundation of a house was the most important part so the foundation of a new scheme was its most important part, and the cadets he was addressing were responsible for this.

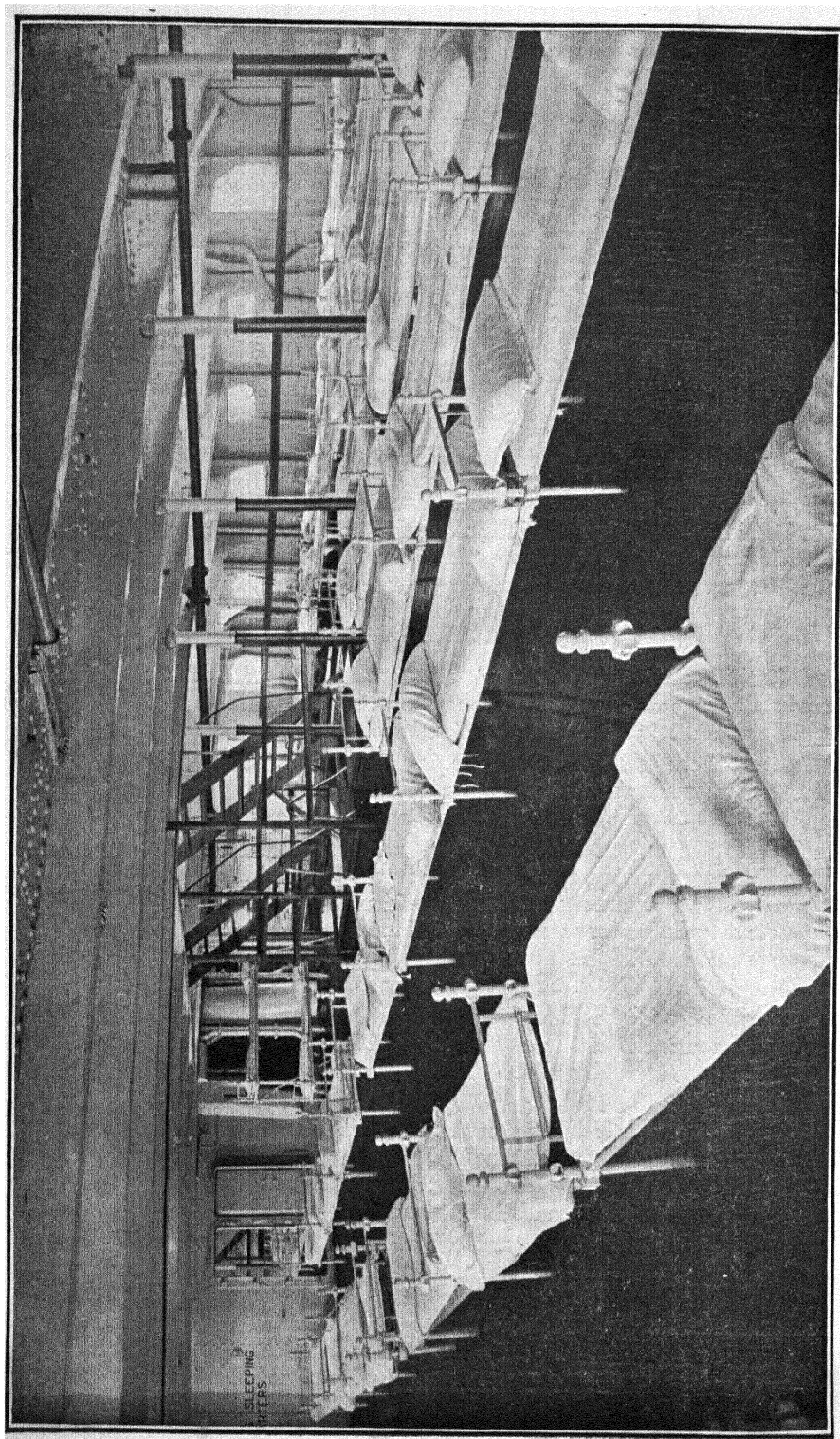
### A Ship with Great Traditions.

The DUFFERIN was a ship with great traditions and they had to follow up these with traditions of a different kind. They must see that these new traditions grew up on sound lines and were built on firm foundations. He did not want to give them a lecture, but he did want to tell them that a great many people over India and outside were watching the DUFFERIN experiment. That was the reason why he insisted on making time to come and see how they were getting on. As long as he was in India, His Excellency concluded, he would always watch and hear with interest what they were doing. They had his warmest wishes for success, which lay mainly in their own hands, for success in life depended on the individual.

When His Excellency sped away in the DIAMOND from the DUFFERIN the cadets manned ship and gave him three hearty cheers. His Excellency waved his "topee" in acknowledgment.

While His Excellency was on board some hundreds of scouts who, after attending Sunday's jamboree, were being given a cruise round Bombay Harbour, passed the DUFFERIN and the ship's sirens were sounded and cheers given in salute.





Cadets' Sleeping Quarters.

GOVERNING BODY.

**Chairman.**

Vice Admiral Sir Humphrey T. Walwyn, K.C.S.I., C.B., D.S.O., The Flag Officer Commanding and Director of the Royal Indian Marine (*ex-officio*).

**Members.**

R. H. Beckett, Esq., C.I.E., I.E.S., Director of Public Instruction (*ex-officio*).

M. A. Master, Esq., B.A., LL.B.

Maulvi Abul Kasem, M.L.C.

K. C. Dinshaw, Esq., J.P.

Syed Munawar, Esq., B.A., M.L.C., J.P.

Walchand Hirachand, Esq.

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A. B. Mallett, Esq.

Dr. Zia Uddin Ahmad, M.A., Ph.D., D.Sc., C.I.E., M.L.A.

1 vacancy.

Captain H. Digby-Beste, C.I.E., O.B.E., R.I.M., J.P. (Secretary).

**Staff.**

*Captain-Superintendent.*—Captain H. Digby-Beste, C.I.E., O.B.E., R.I.M., J. P.

**Executive and Vocational.**

*Chief Officer.*—Lieutenant C. A. H. Clark, R.N.R. (Extra-Master Mariner) (Officiating).

*Second Officer.*—S. E. Chapman, Esq. (Officiating).

*Third Officer.*—Lieutenant M. F. Harvey, R.N.R. (Officiating).

**Scholastic.**

*Headmaster.*—H. I. Jones, Esq., M. A. (Cantab.).

*Assistant Masters.*—R. D. Sathe, Esq., M.A., B.T.

C. R. Pinto, Esq., B.A., B.T.

S. A. Paranjape, Esq., B.A. (Hons.), B.Sc. B.T.

**Medical.**

*Medical Officer.*—Assistant Surgeon G. X. A. Rose, I.M.D.

*Honorary Dental Surgeon.*—Dr. S. M. Khambatta, D.D.S., F.A.C.D., J.P.

**Office.**

*Accountant.*—K. B. Godrej, Esq.

*General Clerk.*—A. W. D'Souza, Esq., B.A.

*Stenographer and Captain's Secretary.*—A. W. Correa, Esq.  
*Chief Steward.*—Mr. S. P. Gonsalves.

*In charge of Machinery and Workshop.*—Mr. F. E. D'Mello.  
 Mr. J. Bhappu.

*Wireman and Store-keeper.*—Mr. H. P. H. Siganporia.

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**Lecturers.**

*Engineering and Naval Architecture.*—Engineer-Lieutenant Commander W. F. Fairbairn, R.N.R.

*Direction Finder.*—P. B. McAuliffe, Esq., Port Wireless Inspector.

*Boxing Instructor.*—Fali Billimoria, Esq., (Bantam-Weight) Champion of Western India, Mody Belt Holder and Featherweight Champion of All-India.

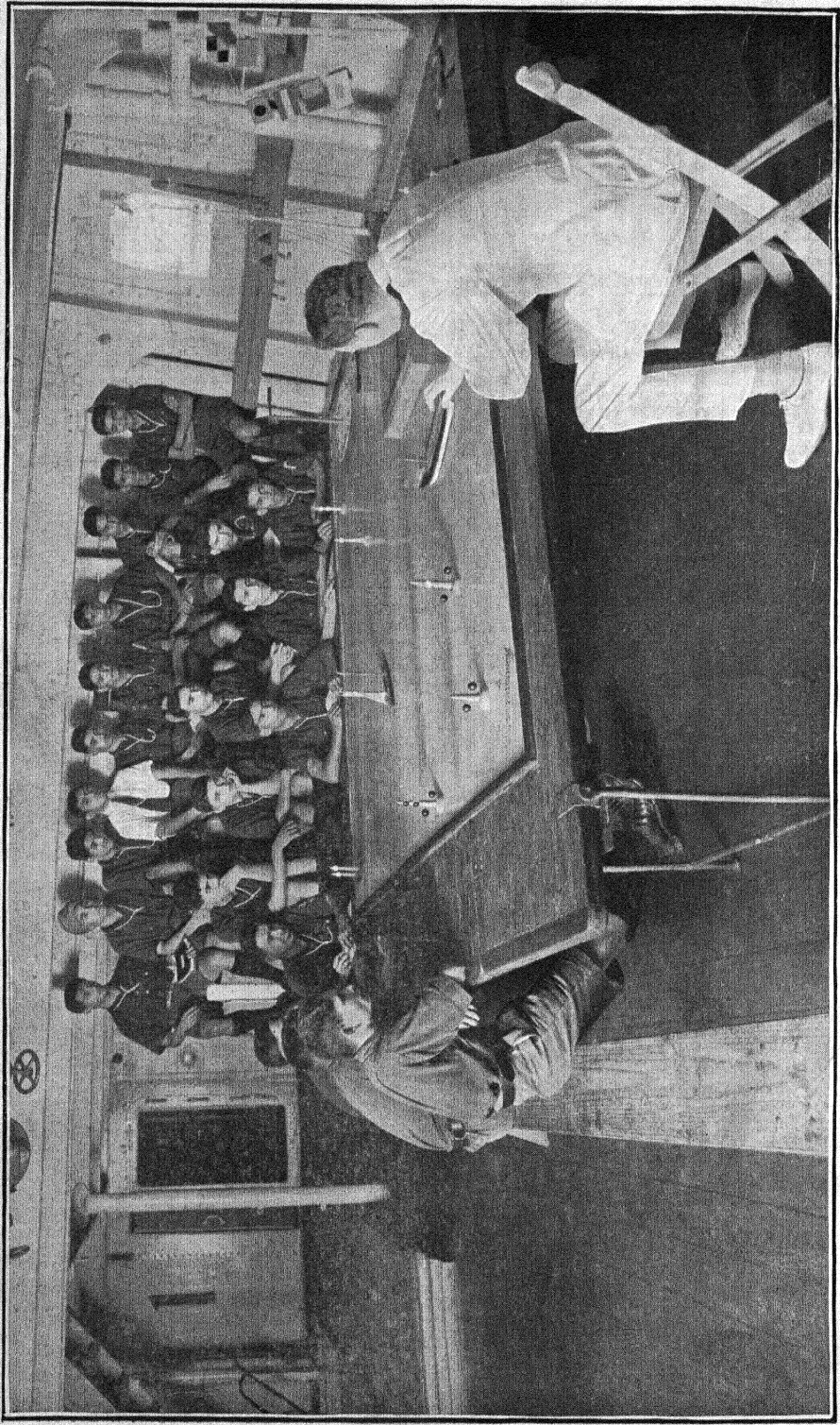
**1. Aims and objects of the "Dufferin".**—To obtain suitable candidates from among British Indian Subjects or Subjects of a Ruling Prince in India for the Indian Mercantile Marine and to train these in such a way that they may with confidence be expected to follow the sea as a career, and be fit in all respects to hold their own as good and efficient officers.

To attain this result, it is necessary :—

- (i) To bring each cadet up to an educational standard which will enable him to continue his own education at sea and so pass the necessary Government Examinations for Second Mate, Mate and Master.
- (ii) To bring each cadet to an educational standard so that should he elect not to follow the sea, his education on board will stand him in good stead, whatever profession he desires to follow.
- (iii) To give all cadets a training to fit them to take their place as Officers and face with fortitude and endurance the hardships inseparable from life at sea, such an end to be attained by the actual life on board the ship, by manual work, by strict discipline and by causing them, as far as possible, to take responsibility in minor matters whilst yet boys.
- (iv) To give all cadets a social training which will enable them to move in confidence in any society without embarrassment either to themselves or to others.
- (v) Through the supervision and example of a carefully selected staff to imbue all cadets with a sense of loyalty, patriotism, manliness, devotion to duty and self-sacrificing spirit of service, together with a healthiness of mind and body such as will render them true and useful servants and citizens of India and the Empire.

**Discipline.**—Very strict discipline is maintained on board the ship, as the mind of every boy must be imbued with the idea that the sea is an arduous and trying life, involving great responsibilities, and is devoid of many of the comforts and amenities of a life on shore. This idea must be cheerfully accepted by the boys if they are to become efficient and capable sea officers. Cadets will be required to live on the training ship, and will be subject to the discipline of the ship's officers and of the teaching staff.





At Seamanship Instruction.

**Qualifications necessary for an Executive Officer in the Mercantile Marine.**—To qualify as a ship's officer it is necessary to obtain certificates of competency under the regulations in force in India relating to the examinations of Masters and Mates in the Mercantile Marine. Certificates for foreign-going steamships are granted to second Mates at the minimum age of 20 after a minimum *sea service* of four years in foreign-going ships or six years in home-trade ships.

After passing for a second Mate it is necessary to serve a further period at sea as an officer in order to pass for Mate and then for Master. The examination for Master may be taken at the minimum age of 23 years after a minimum sea service of 6 years in foreign-going ships or 9 years in home-trade ships. Certain portions of such sea service must be as "officer-in-charge" of a watch in accordance with the detailed rules in force.

On obtaining a Master's certificate an Officer is qualified to take command of a vessel in the Mercantile Marine. Examination for certificates of competency are held at the larger sea ports in the United Kingdom, at Bombay and Calcutta in India, and also at Singapore and Hong-kong.

To qualify to sit for the examination of second Mate, four years' sea time is necessary. The possession of a passing out certificate in the Training Ship DUFFERIN will be recognised by the Board of Trade as equivalent to one year's sea service, thus reducing to THREE years the preliminary time at sea prior to being able to sit for the first certificate of competency. At the same time the training on the DUFFERIN ensures a first class education, a grounding in the theoretical side of the profession, and a sea sense which will assist the boy to determine whether a career at sea is the profession he intends to follow.

**Service as an Apprentice after leaving the "Dufferin."**—The three years are usually spent as an apprentice, during which time the boy learns the practical side of his profession.

**Facilities for Apprenticeship.**—The following shipping companies have agreed to accept as apprentices youths who have completed the course of the Training Ship, and the Government of India consider that apprentices who give satisfaction should be able to obtain employment on the ships belonging to these and other companies:—

- (1) P. & O. S. N. Co.'s India-China Steamers.
- (2) British India Steam Navigation Co.
- (3) Scindia Steam Navigation Co.
- (4) Asiatic Steam Navigation Co.
- (5) The Nourse Line.
- (6) The Mogul Line.
- (7) The Burma Oil Co., Ltd.
- (8) Messrs. Cowasji Dinshaw Bros., Aden.
- (9) Bombay Steam Navigation Co. (Home-Trade).

**Pay and Prospects of an Officer in the Mercantile Marine.**—Most Shipping Companies require a premium prior to signing an Indenture for three years'

**apprenticeship.** Such a premium may amount to any sum such as Rs. 700 and in some cases is refunded on satisfactory completion of the period of apprenticeship. Cost of uniform and equipment necessary prior to going to sea approximates Rs. 500.

During the apprenticeship the boys receive free board and lodging on their ships and in many companies they receive pay as well. Such pay varies from about Rs. 10 to Rs. 35 per mensem depending on the service the apprentice has had and the rules of the particular company.

After completing his term of service as an apprentice and passing for a second mate's certificate the pay of an officer at the present time is anywhere between, approximately, Rs. 150 per mensem as a Junior Officer just joining a Shipping Company, steadily rising step by step as he receives promotion through the ranks of fourth, third and second mate and finally Chief Officer. The pay of a Senior Chief Officer may be written down as between Rs. 450 to Rs. 500 per mensem and it may take anywhere between six and in some cases 15 years before attaining the rank of Chief Officer. When command is attained the pay is better and varies according to the length of service, class of ship, and rules of the particular Shipping Company.

The usual pay of a Master is between Rs. 500 and Rs. 1,000 per mensem and it takes in most cases between 15 and 20 years to attain command.

Some Companies have a provident fund or pension rules.

In addition to the usual appointments as Ship's Officers, there are appointments under the various Port Trusts and Port Commissioners in India which are open to those qualified for a Mercantile Career. For appointments as Pilots and Harbour Masters at Bombay, Rangoon, Madras, and Karachi and also as Harbour Masters at Calcutta, sea-faring experience is necessary.

In the appointment to the Bengal Pilot Service preference will be given to candidates who have passed through the DUFFERIN in accordance with Rules and Regulations for that Service, published in Appendix IV.

There are also pilot services at Chittagong, Bassein, Aden, Akyab, and Moulmein open to those with Masters' certificates for foreign-going ships.

**Length of Course in DUFFERIN.**—The full course in the training ship lasts for 3 years. Each year is divided into 2 terms.

First term January 15th to May 31st.

Second term September 1st to December 15th.

The actual date of the commencement and the completion of each term is liable to slight alteration, depending on the day of the week.

**Classes.**—The classes are named as follows :—

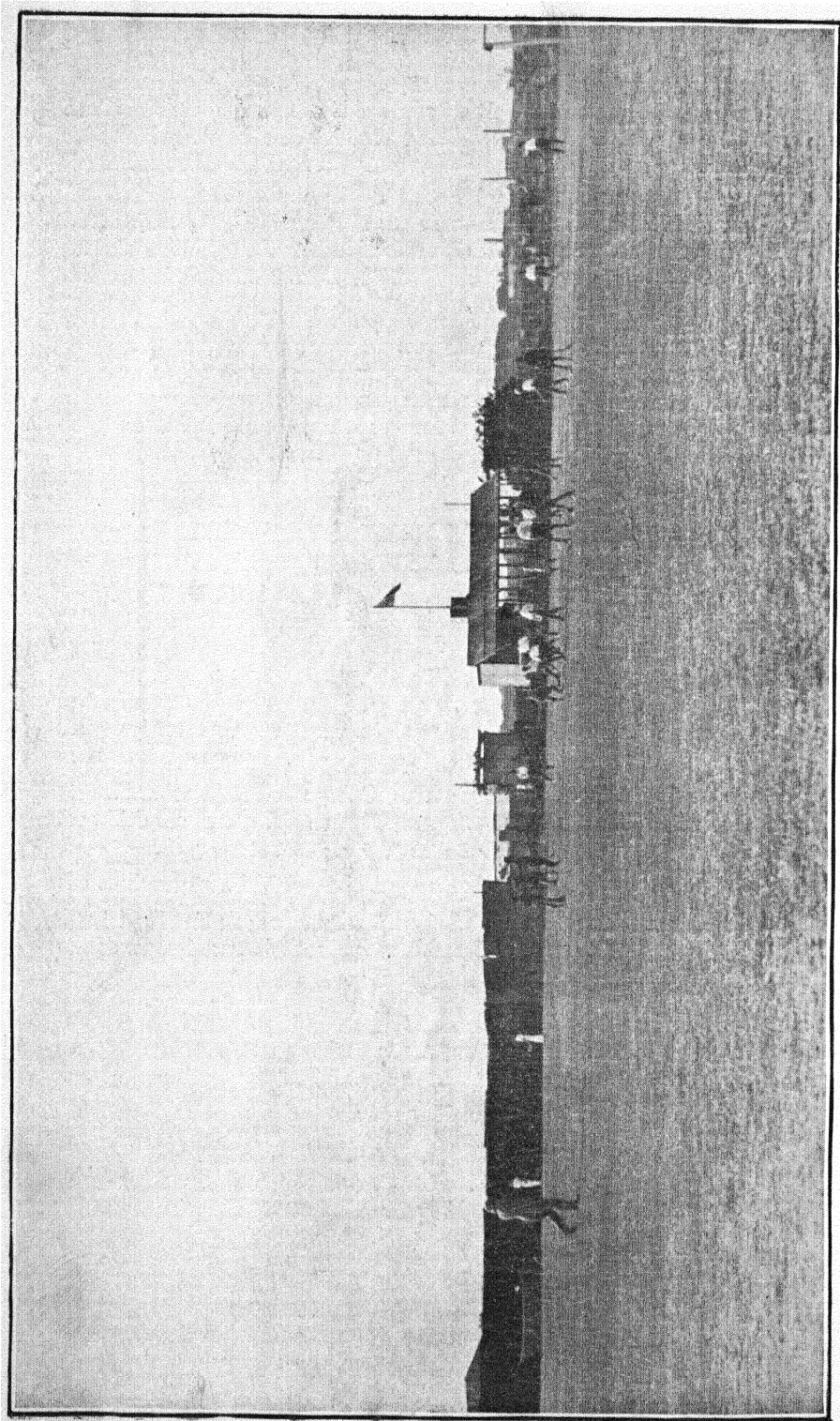
Junior, 1st year.

Remove, 2nd year.

Nautical, 3rd year.

Cadets who are found to be very backward may be required to remain an extra term in any particular class, but in no case will the total training be reduced to less than three years.





I. M. M. T. S. Dufferin Playing Fields.

**Term Report.**—Examinations are held every term. Progress reports will be forwarded to parents each term.

**Holidays.**—The Christmas Holidays are from December 15th to January 15th.

Ten days holidays will be granted at Easter.

The Long Leave is from June 1st to September 1st.

Cadets will not be allowed to remain on the Training ship during the Long Leave and parents must make their own arrangements for the journey to and from Bombay.

Up-country Cadets may be allowed to stay on board the ship during Christmas holidays, on payment of one month's fees and extras.

Cadets residing in Bombay or whose parents care to make arrangements for their sons to proceed to the homes of friends, may leave the ship during the 10 days holidays at Easter, but no refund of fees will be made for this period. A camp is usually arranged for these 10 days.

**Fees.**—The fees are Rs. 50 per mensem, payable in advance for each term.

The first term's fees payable before the 15th January, amounts to Rs. 225 ; the second term's fees payable before 1st September, amount to Rs. 175.

These fees include board, lodging, tuition, and medical attendance as below :—

- (1) Any sickness or injury treated by Ship's Medical Officer on board will be free of hospital cost.
- (2) When in case of necessity or emergency the cadets in their own interest are sent ashore for hospital treatment the charges levied by the hospitals will be met to the extent of Re. 1/10 per day by Government during term time only and any balance exceeding that amount will be borne by the parents or guardians.
- (3) Full hospital charges will be levied on the Parents or Guardians should a cadet be detained in hospital during vacation time.
- (4) The balance of charges under para. 2 usually amount to Re. 1/6 per day at present.
- (5) The full charges under para. 3 at present amount to Rs. 3 per day.

**Extra.**—Parents are required to forward to the Captain-Superintendent, at the commencement of each term, on receipt of an account, a sum calculated at the rate of Rs. 10 per month. This charge is for cadets' necessary personal expenses as follows :—

Pocket money at the rate of Re. 1 per week.

Laundry at Rs. 3/8 per month.

Use of textbooks and stationery at Rs. 2 per month.

Urgent necessary expenditure will be met and charged in the account but ordinary replacements will be ordered on the Cadet's behalf and the bill sent to the parents direct. (See foot note on Appendix V—Cadets' Equipment.)

There is no objection to the Cadet receiving Extra pocket money in moderation but in such cases it is advisable that the money be sent direct to the Captain-Superintendent, who will credit it to the boy's account and issue it to the Cadet at his discretion.

A fee of ten rupees will be charged for entry to the qualifying examination. If they are successful in the examination and are invited for selection parents will have to send their sons to Bombay to appear before the Selection Board at their cost. See conditions of entry.

#### **Concession on Railways.**

Cadets in the DUFFERIN have been granted the concession of being able to travel 1st class on payment of 2nd class fare or 2nd class on payment of half second class fare on production of a certificate signed by the Captain-Superintendent, when travelling to and from their homes and ship at the end and beginning of the term.

This concession has been granted in all Railways except :—

- (1) DARJEELING-HIMAYALAN.
- (2) DEHRI-ROHTAS LIGHT.
- (3) GONDAL.
- (4) MCLEOD & COY.'S LIGHT.
- (5) UDAIPUR-CHITORGARH.

**Remittance.**—Parents and guardians are requested to send remittances as far as possible by crossed cheque ; when money is sent in notes by Insured and Registered post, a letter stating the object for which the money is sent must accompany same.

When money is sent by M. O. great care must be taken to insert the object for which the money is sent in the coupon at the bottom right-hand corner.

**Uniform.**—Cadets on joining the Training Ship must be supplied with the equipment as laid down in Appendix V.

The list is not exhaustive and is issued as a guide, and represents the minimum uniform, clothes and equipment necessary.

All clothes and kit must be legibly marked with the number of the cadet.

In the interest of the parents and to secure uniformity, those articles in list A and B will be provided at the parents' expense to the cadet on joining, by the Ship's authorities.

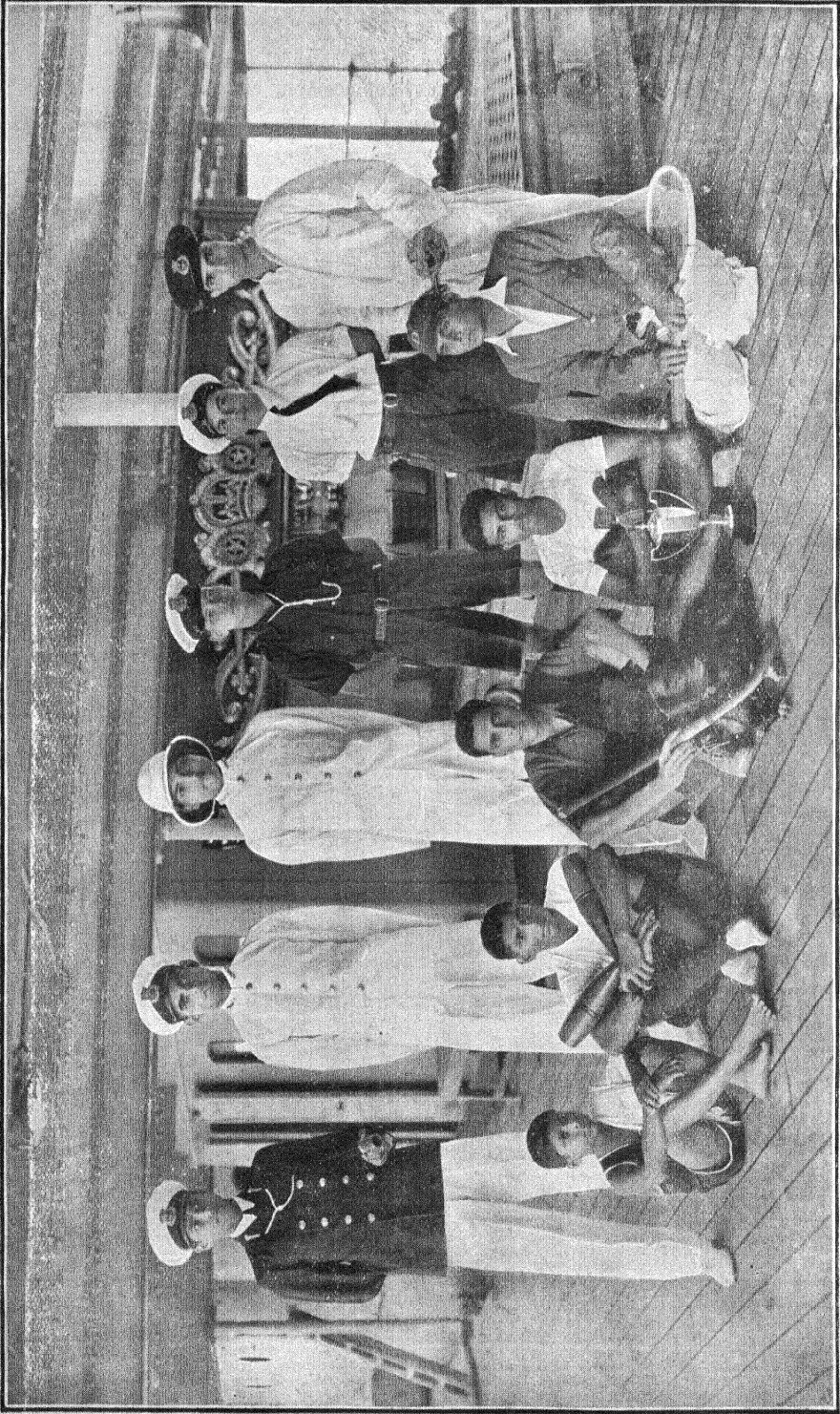
Cadets will be obliged to wear uniform throughout the term.

Parents or guardians will be charged the exact cost of the uniform supplied.

A deposit of Rs. 145 will be charged in advance to cover the cost of equipment, *vide* lists A and B.

Parents are expected to see that a Cadet is provided with the minimum equipment. If during the boy's period of training he is short of equipment the Captain-Superintendent reserves the right of purchasing the same through the Ship's Tailor on behalf of the Cadet, and all articles supplied by the Ship's Tailor are inspected before issue to the Cadet.





Types of uniform.

A durzi is employed on the ship to repair clothes as necessary, and the cost of actual work done and of necessary replacement will be charged in the term's bill.

**General Education.**—Instruction on the Training Ship will be given in English, Geography, History, Arithmetic, Algebra, Geometry, Trigonometry, Science, Mechanics, Meteorology, Navigation, Nautical Astronomy, Seamanship and Magnetism. A final examination will be held before the course on the Training Ship is complete.

The training on the ship provides an education not inferior to that obtainable at educational establishments on land, so that those, who finally do not elect for a career at sea, will find that their time has not been wasted.

The Syndicates of the Universities of Bombay, Nagpur, Andhra, Annamalai, Aligarh and Madras have recognised the DUFFERIN Final Examination as equivalent to the Matriculation or the High School Examination on obtaining the requisite quota of marks.

The Syndicate of the University of Calcutta grant admission of a student who has passed the Final Examination on the DUFFERIN into the first year Class of a College affiliated to that University provided the candidate passes in one of the Vernaculars mentioned in Section 9(4) of Chapter XXX of the Regulations before proceeding to the Intermediate Examination of that University.

The University of Patna have granted permission to a Cadet of the DUFFERIN who passes the Final Examination of the Ship to join the First Year Class of colleges admitted to the University, provided that he satisfies the conditions of regulations 8(4) of Chapter XXVIII of the Patna University Regulations. The Universities of Mysore, Rangoon, Osmania and Punjab too have granted equal recognition subject to certain conditions.

The Government of India have accepted the recommendation of the Governing Body that a Cadet in possession of the final passing out certificate of the DUFFERIN should be eligible to appear at the examination for admission to the Royal Military Academy, Woolwich, Royal Military College, Sandhurst, The Royal Air Force Cadet College, Cranwell, and further he is eligible to sit for the Marine Engineering State Scholarship Examination, provided he is otherwise eligible.

**Diet.**—All cadets on the Training Ship will be required to be members of a joint mess similar to those on ships in the Mercantile Marine. The dietary is on a liberal scale. The officers and schoolmasters partake of some of their own meals in the cadets messroom, thus ensuring proper arrangements and enforcing table manners. Vegetarian diet is provided for vegetarians, but all food is cooked by the ship's cooks and partaken of in a common mess, no deviation from this rule being permitted except in the case of sickness.

**Sickness.**—The DUFFERIN is equipped with a hospital and an isolation ward and there is a resident Assistant Surgeon on board. In case of illness the parents or guardians will be informed at once by telegram should the cadet be otherwise than temporarily indisposed.

**Religious Instruction.**—The Cadets fall in separately according to their different denominations for prayer twice a day, Mahommedan boys being allowed to say their own prayers at their own special times. Time is also given to various denominations for their own religious instruction, under Officers or Masters who profess the same religion.

**Physical Instruction and Games.**—Great attention is paid to physical drill, which is practised every morning under competent instructors. Playing Fields have been provided ashore, which they visit at least four times a week, hockey, football and tennis being taught and played. Deck games, such as Deck cricket, tennis, and hockey are also encouraged.

All cadets are taught boxing under competent supervision.

A gymnasium and indoor recreation room are provided.

**Work Shop, Photographic Dark Room.**—The Training Ship is equipped with a Workshop, Carpenter's shop, Forge and a Dark Room for photography purposes for the use of the Cadets.

**Visitors and Shore Leave.**—Parents, guardians and personal friends of the Cadets may visit them on board on one Sunday every month. A launch will leave the Mazagaon Pier at 2-30 P.M. and the Ship at 5-30 P.M. for the convenience of the visitors.

On another Sunday of each month Cadets may visit their parents or guardians or any friend in Bombay *regarding whom the Captain-Superintendent has been notified*. Cadets will land at Mazagaon Pier at 9-15 A.M. on these days and must return to the Pier at 8-00 P.M. sharp.

Cadets will wear uniform when ashore.

When ashore, Cadets are on their honour not to visit any places or friends not approved of by their parents or guardians or by the friends of the Parents in Bombay.

Any abuse of shore leave by the Cadet or late arrival of the Cadet at the Pier when returning from leave will be severely dealt with.

**Notice to Leave.**—A term's notice to leave shall be given to the Captain-Superintendent of the intention to withdraw the Cadet, or in lieu a full term's fees will be charged.

**Correspondence.**—All correspondence should be addressed to the *Captain-Superintendent*, and not by name.

The registered address of the ship is—

TELEGRAMS.

“Dufferin, Bombay.”

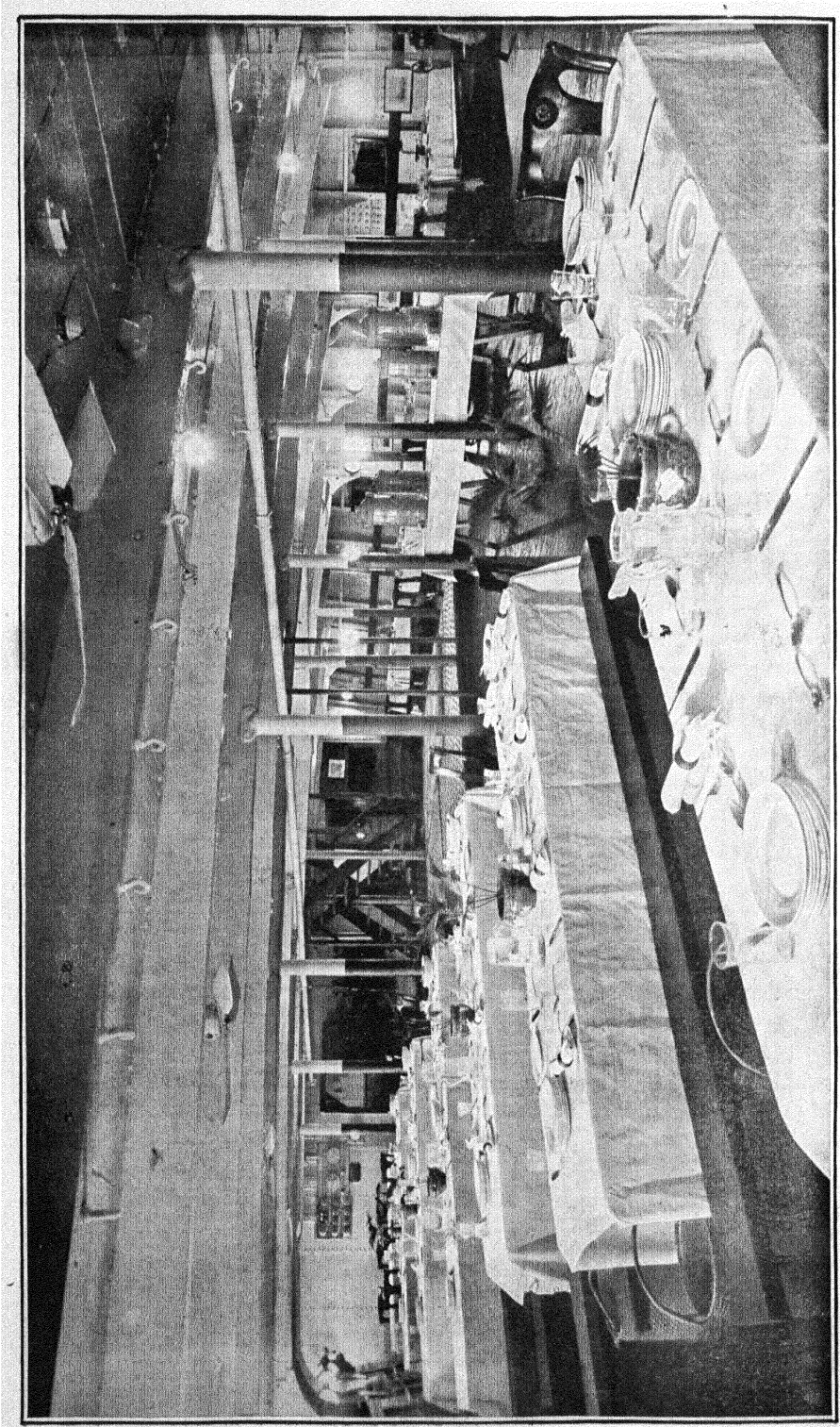
I. M. M. T. S. “Dufferin”,

Mazagaon Pier,

Bombay, 10.

As the ship is lying  $1\frac{1}{2}$  nautical miles from the Pier and as Bunder boats are not easily obtainable, parents from up-country, coming to Bombay on a





Cadets' Mess Room.

visit are advised to communicate with the Captain-Superintendent beforehand. Bunder boats are always obtainable from Prince's Dock about two miles distant.

**Canteen.**—A canteen is provided for the use of the Cadets, where soft drinks, note paper, boot polish, pencils, chocolates, sweets and other sundries are sold at reasonable prices.

**Method of Entry and Necessary Qualifications.**—Candidates must be British subjects, whose parents are domiciled in India, or subjects of a Ruling Prince in India, and must be between the ages of thirteen years eight months and sixteen years on January 15th of the year of entry into the DUFFERIN.

They will be required to pass a qualifying examination in Arithmetic, Algebra, Geometry, English, History, Geography and General Knowledge set on the syllabus of the fourth standard at an Anglo-Vernacular School, see Appendix III. This examination will be held about the 1st of November simultaneously at Bombay, Calcutta, Lahore, Lucknow, Patna, Madras, Delhi, Rangoon and Karachi. Candidates who pass the qualifying examination will be required to come to Bombay at their own cost for an interview with the Selection Board and to undergo an eyesight test for vision and colour blindness, also a medical examination. These tests and the selection will ordinarily take place about the 10th of January. The total number of entries in each year is limited to 33, of which six are reserved for holders of scholarships.

The Governing Body retain the right of determining the number of qualified candidates who shall come to Bombay for selection. To avoid disappointment, parents should arrange to have their boys medically examined and their eyesight tested prior to entering them for the qualifying examination. Certificates of fitness from a Government medical officer, not below the rank of an Assistant Surgeon, must accompany their application. Such certificates will in no way entitle the applicant to exemption from the further medical examination or eyesight test in Bombay. Appendix II gives the standard of the latter test. Neither the Governing Body nor the Government of India will be responsible or liable for any expenses or losses whatsoever incurred by the parents and guardians of the candidates invited to come to Bombay for interview and selection irrespective of their final admission or otherwise.

**Application for Entry.**—Application for entry must be made on the perforated form on page 47 and must be posted to—

The Secretary to the Governing Body,

I. M. M. T. S. "Dufferin",

Mazagaon Pier,

Bombay, 10,

together with a Government currency Note of Rs. 10 (examination fee which will not be refunded), so as to reach that office not later than the 1st October each year. The following certificates must accompany the application form.

**EYE-SIGHT.**—The attention of all parents and guardians is invited to the memorandum on the question of eye-sight published on the first page of the Prospectus.

Candidates who delay their applications till the last few days do so at their own risk.

- (1) Birth certificate or other satisfactory evidence of age. (Horoscopes and Extracts from Birth Registers in vernacular must be accompanied by a certified English rendering of its contents.)
- (2) Medical certificate, including certificate for eyesight, by a Government medical officer not below the rank of Assistant Surgeon.
- (3) Certificate of good character from two respectable persons (other than relations of the applicant).
- (4) A certificate as given on the reverse of the application form that they are British subjects or subjects of a ruling Prince in India, and that their parents are domiciled in India. (Signed by a J. P. or a Magistrate.)

The Secretary to the Governing Body will, on receipt of such applications, inform the parents or guardians of the time and date of the qualifying examination, and will forward a pass which the applicant must produce to the officer conducting the examination. Parents may expect to be informed, about the end of November of the results of the examination and the date on which successful candidates will be interviewed in Bombay, which will be about 10th of January. Successful candidates join on January 15th.

**Age Limit.**—No concession on account of age can be granted. No candidate who has passed his 16th Birthday on January 15th of the year of entry to the Ship will be admitted.

**Scholarships.**—Six scholarships, each of the value of a remission of half fees, *viz.*, Rs. 25 per month have been granted by the Government of India. These are tenable for three years, provided that the boy makes satisfactory progress. The object of these scholarships is to assist those parents or guardians, who are not in a position to pay the full fees, to send their boys to the Training Ship.

When applying for the Government Scholarship, the application must be made on the pink form only attached at the end of the Prospectus, duly signed on the reverse as required.

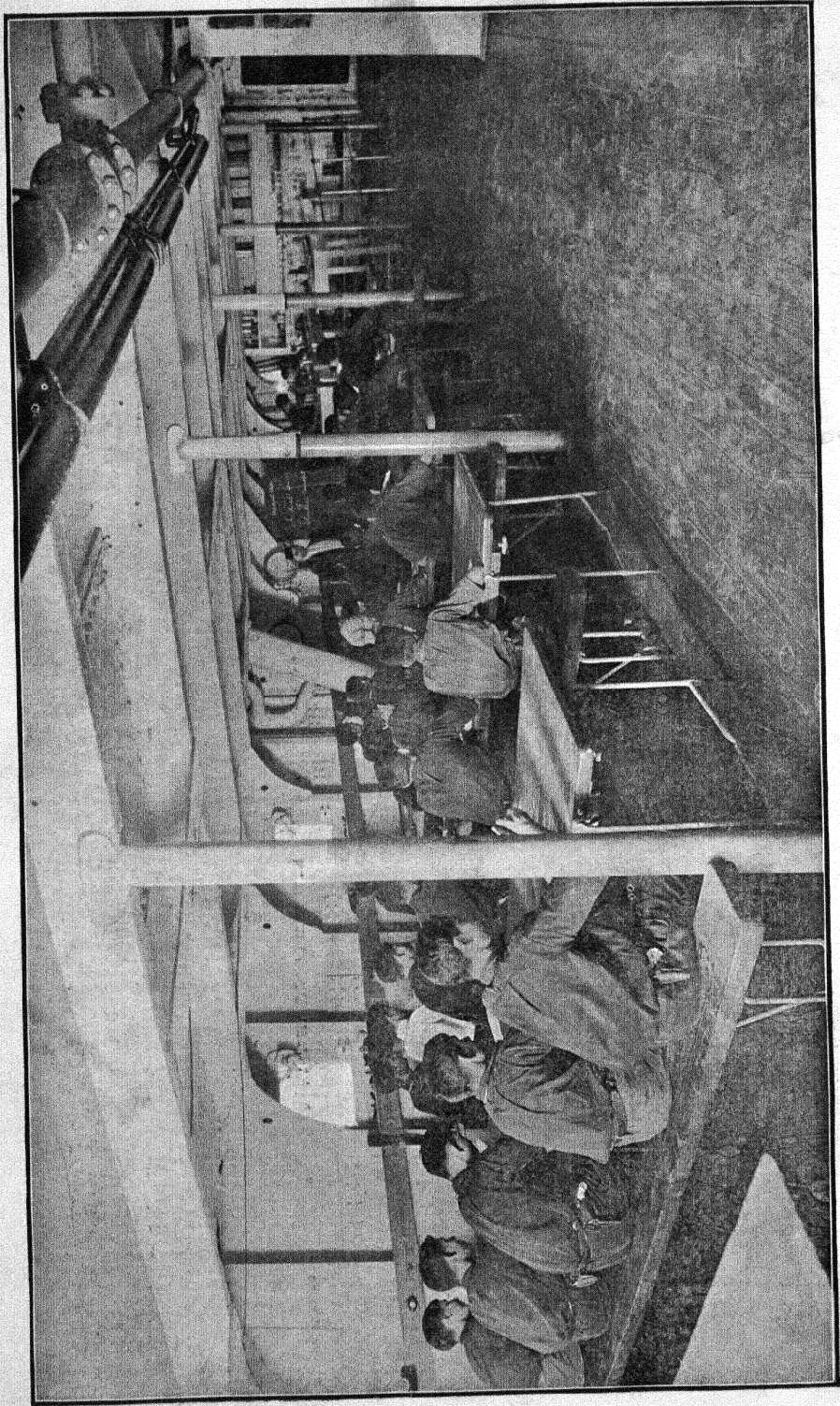
Parents who apply for a scholarship must be in a position to pay the balance of the fees, and provide the necessary uniform and equipment and the minimum extras, as set out in the prospectus.

The examination will be the same and held at the same time and place or places as that for ordinary entry. If they pass the boys must come to Bombay for selection and for passing the required medical examination and eyesight test.

Parents or guardians applying for a scholarship will be required to declare their income.

An application for Scholarship does not in any way influence the chances of selection for a candidate who is invited for interview. The fact that any





Cadets in School.

scholarship is granted to the cadet does not absolve the parents or guardians from the responsibility of paying the full fees and extras to the Government in advance, as they fall due, at the beginning of each term, except in the case of Government Scholarship where half fees are paid with full extras for the term in advance.

The Governing Body will reserve the right of rejecting any application for a scholarship without assigning a reason.

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**Scindia Steam Navigation Company's " Scholarships "**

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*Rules for the Scholarships offered by the Scindia Steam Navigation Company, Limited, to the Cadets of the Indian Mercantile Marine Training Ship " Dufferin ".*

1. One Scholarship of the value of Rs. 200 per year tenable on board for three years including the first year will be granted at the end of every year to the Cadet who stands 1st in the first year's examination.

2. Two Scholarships of the value of Rs. 400 each tenable for a period of three years, two years of which shall be while the Cadet is on board the Training Ship and the 3rd year shall be while the Cadet is serving an apprenticeship on a steamer of the Company, will be granted every year on condition that the Cadet holding the scholarship and his parents for him undertake by agreement that the Cadet shall join the Company as apprentice on completion of the training and shall, after obtaining a certificate of competency for second mate serve the company in such capacity as the Company shall determine for at least a period of five years on the then existing Company's scale of pay and shall conform to the Company's other terms and conditions of service. The Company will select the Cadets eligible for these scholarships from those who have been on board the Training Ship for a period of one year and have applied for them.

3. One Scholarship of the value of Rs. 200 per year, tenable on board for three years, will be given every year to the Cadet who without help of such a scholarship may not be in a position to pay the full fees of the Training ship. The Cadet will be selected by the Company from those who will apply for this Scholarship.

4. The continuance of each of the scholarships mentioned above is subject to the yearly satisfactory report of the Captain-Superintendent as regards the character and progress of the holder of the Scholarship on the ship.

For Scindia Steam N. Co., Ltd.,

(Sd.) NAROTAM MORARJEE & CO.,

*Agents.*

*Dated 23rd January 1928.*

**Rules governing the grant of Port Trust Scholarship to Cadets of the J. M. M. T. S. "Dufferin."**

(1) The scholarships will be awarded each year at the annual prize-giving to two cadets of the I. M. M. T. S. "Dufferin" who have completed the full course on board the "Dufferin" to the satisfaction of the Captain-Superintendent and who have obtained an "Extra Certificate" at the passing out examination; *provided however that any Cadet who is a son or dependent of a Port Trust employee or ex-employee, and who has obtained a 1st Class Certificate at the passing out examination, may be awarded a scholarship by the Special Sub-Committee mentioned in para. 2 if so recommended by the Captain-Superintendent.*

(2) The choice of the Cadet for the award shall be made by a Special Sub-Committee of the Governing Body consisting of the following:—

- (a) The Chairman,
- (b) The Member representing the Bombay Port Trust,
- (c) One other Member,
- (d) The Captain Superintendent,

provided that should either the Chairman or the Member representing the Bombay Port Trust be unable to sit they may be replaced by other Members of the Governing Body appointed at a General Meeting prior to the date of the Prize-giving.

(3) The Scholarship will be tenable for a period of three years from the 1st January following the Prize-giving at which they are awarded, provided that the holder continues to follow a sea career and obtains satisfactory reports from his employers.

(4) The value of the scholarship, *viz.*, Rs. 100 per mensem, shall be payable to each Cadet holding the scholarship during its currency on or after the first day of each month, and will be paid by the Chief Accountant of the Bombay Port Trust on receipt of a bill duly signed by the Cadet, and supported by a certificate of good conduct during the preceding month from the Master of the Ship in which he is serving, or from his employers.

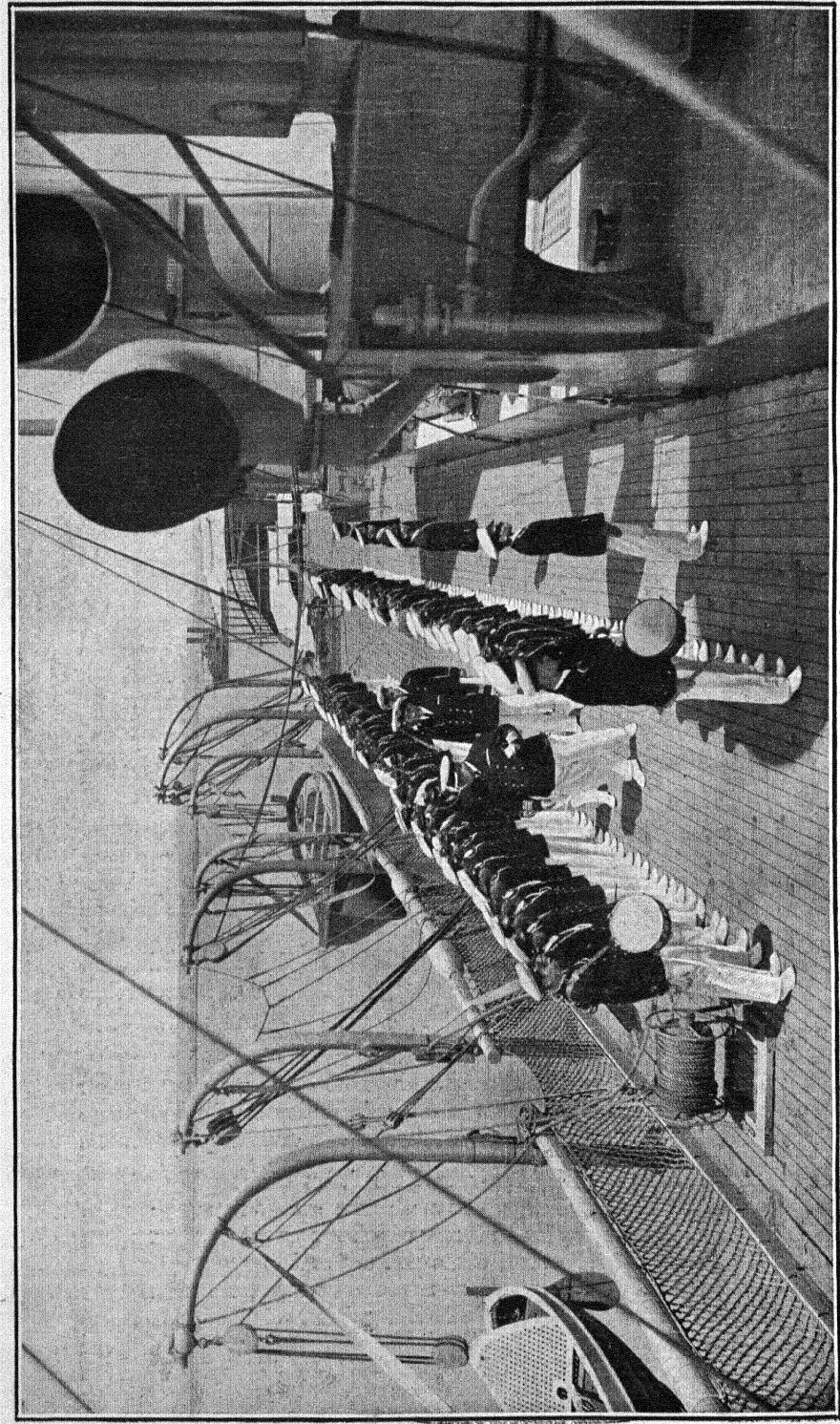
(5) In the event of a holder of the scholarship being for any reason unable to claim the amount to which he is entitled the amount shall be placed to his credit and may be paid to him at any time within one year of the date on presentation of the claim as prescribed in Rule 4.

(6) In the event of the holder of the scholarship failing without good reason to claim the payment to which he is entitled within one year of the due date, the amount will lapse to the Trustees.

(7) In the event of a holder of the scholarship dying, the scholarship shall be terminated with effect from the date of his death.

(8) In the event of the holder of the scholarship failing to continue to follow a sea career or to produce the certificate of good conduct prescribed in Rule 4, the scholarship shall be cancelled.





Sunday Divisions.

(9) The Trustees will assist Holders of the scholarship to obtain apprenticeships with a Shipping Company and will continue the payment of Rs. 100 per mensem during periods of unemployment due to causes over which the holder has no control provided that should the holder be unable through ill-health to serve at sea, payment may be suspended during the period he is incapacitated for such service.

(10) The grant of these scholarships does not imply any promise of eventual employment under the Bombay Port Trust but applicants for entrance vacancies in the Bombay Pilot Service who have held these scholarships will be given preference of selection subject to compliance with the conditions of appointment.

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**Rules for grant of scholarships by the Karachi Port Trust for training in the I. M. M. T. S. "Dufferin".**

The trustees of the Port of Karachi have instituted two annual scholarships of the value of Rs. 360 each, tenable for three years, for the training of Indian boys in the Indian Mercantile Marine Training ship "DUFFERIN" stationed at Bombay.

The scholarships are open :—

- (a) One to the son of a Karachi Port Trust employee,
- (b) One to a boy who has been a resident in the Province of Sind for a period of not less than 10 years, preference being invariably given to a Sindhi,

who may be successful at the qualifying examination of the Governing Board of the "DUFFERIN" and selected as a Cadet by the Board. Applications will only be considered after a candidate has been selected by the Board, proof of which should accompany the application.

The awarding of the scholarships will be entirely at the discretion of the Board of Trustees. In the event of there being no applicant for one or the other of the two scholarships, both scholarships may be awarded to boys of the same class, *i.e.*, both scholarships may be awarded to sons of Port Trust employees or to two boys who have been residents in the Province of Sind as in (b) above. In special cases, where there are no applicants for the scholarships satisfying the conditions of clause (b), the Board may relax the condition as regards the period of ten years' continuous residence in the Province of Sind provided the applicants in such cases are Sindhis.

The scholarships will be payable in quarterly instalments in arrears by the Chief Accountant, Karachi Port Trust, on a bill from the Cadet/parent or guardian countersigned by the Captain-Superintendent of the "DUFFERIN" and they will only be paid on the Captain-Superintendent's certificate of the boy's satisfactory progress.

Parents or guardians who apply for the scholarships must be in a position to pay the balance of the fees payable for training on the vessel, provide the

necessary uniform and equipment, and the minimum extras set out in the Prospectus of the "DUFFERIN". Applicants for scholarship (b) must, therefore, produce satisfactory proof that they are in a position to defray these expenses and also that the boy has been a resident in the Province of Sind for not less than 10 years, and if he is a Sindhi or not.

No restriction will be placed on the boys passing out on the Board's scholarships as to their future employment, but preference will be given to them should there be any vacancies in the Port Trust service which they may be qualified to fill.

**Karachi Municipality Scholarships.**—The Karachi Municipality grant two scholarships, which are open to the sons of citizens of Karachi who have been residents of Karachi for a period of not less than ten years

Applications will be considered only after a candidate has been selected by the Governing Body, proof of which should accompany the application. Applications for admission to the Training Ship should be made direct to the Captain-Superintendent, I. M. M. T. S. "DUFFERIN", Bombay, so as to reach him before 15th October.

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### MADRAS UNIVERSITY SCHOLARSHIPS.

The Madras University grants two scholarships of the value of Rs. 60 per mensem. The following is the latest notification No. A25692, dated 8th December 1932.

#### UNIVERSITY OF MADRAS.

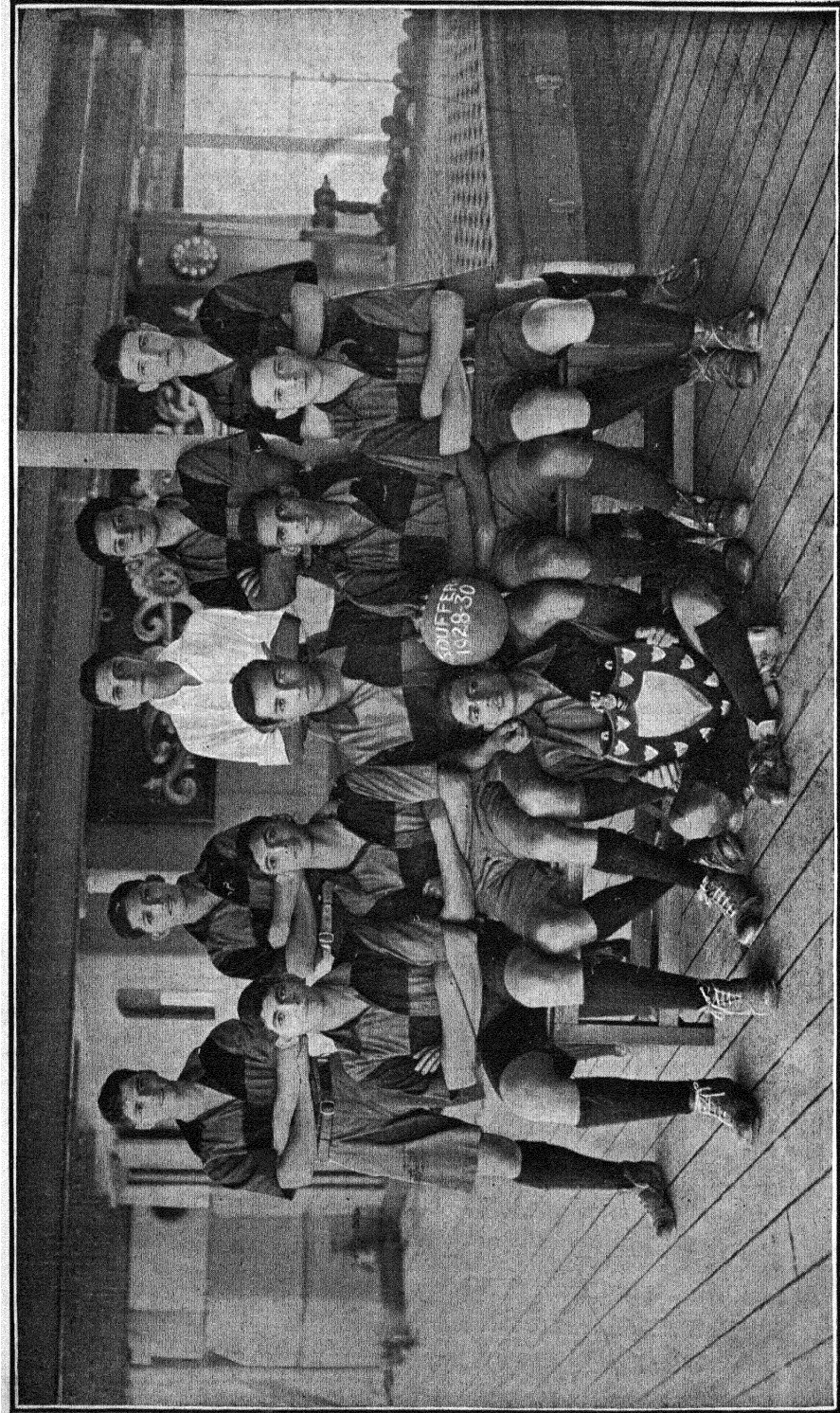
##### NOTIFICATION.

Applications for a Scholarship of the monthly value of Rs. 60, tenable for a period of three years from the date of commencement of training in January 1933, to be awarded by the University for training in Navigation in the Mercantile Marine Training Ship "Dufferin", are invited from candidates. Application should be made in the prescribed form available in the Office of the Registrar, and should reach the Registrar on or before the 31st January, 1933.

The Scholarship is awardable only to students domiciled within the territorial jurisdiction of the Madras University, who are desirous of following a career in the Mercantile Marine, but on account of financial difficulties cannot afford the expenditure required for the training.

According to the existing Laws, the Scholarship shall be awarded only to candidates who have been declared eligible for admission to a course of study in this University, and who pass the Qualifying Examination for admission and acceptance into the Mercantile Marine Training Ship "Dufferin". There is, however, a proposal to amend the Laws with a view to make all candidates, who qualify for training in the Training Ship eligible for the Scholarship, irrespective of the fact they are declared eligible for admission to a University Course of study.





The Football XI, 1930.

Applicants must be between 14 and 16 years of age on the 15th January of the year of commencement of training, must be of sound constitution and of Indian domicile, and must produce evidence of age and domicile and of the need for financial assistance as mentioned in paragraph two above. Candidates belonging to sea-faring communities will be preferred.

The award will be made in April, 1933 ; but the selected candidate will receive the Scholarship from the date of commencement of training.

SENATE HOUSE,  
MADRAS.

*Sd.*

*Registrar.*

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**Patuck's Scholarship.**—Three scholarships to the value of Rs. 300 per annum and Rs 300 on completion of training open to Parsee Cadets who are otherwise eligible have been given privately. Applications should be made in the first instance to the Captain-Superintendent.

**Private Scholarships.**—All bills for Scholarships, except those granted by the Government of India must be prepared by the Parents or Guardians and sent to the ship for counter-signature. The grant of any such scholarship in no way releases the Parents or Guardians from the responsibility of payment of full fees required by the Government of India and all Extras.

## PRIZES.

### VICEROY'S GOLD MEDAL.

His Excellency the Viceroy has been graciously pleased to grant a Gold Medal to the Cadets of the "DUFFERIN". The medal is awarded to the Boy who shows the qualities likely to make the finest sailor ;

“ these consist of cheerful submission to superiors, self-respect and independence of character, kindness and protection to the weak, readiness to forgive offences, desire to conciliate the differences of others, and above all fearless devotion to duty and unflinching truthfulness.”

**Regulations for award are.**—The Medal will be open to boys who have been two years on board the ship and have received not less than half the total number of marks at the previous Term Examination. The Commander after conferring with the Head Master and the Chief Officer shall select not less than three nor more than five of the boys whom he considers to possess the qualities for which the prize is given. He shall then submit these names to the boys who have been assembled for the purpose in the School and each boy who has been on board six months previous to the time of distribution, shall then and there vote for one of the boys so selected.

The boy who obtains the highest number of votes shall receive the Medal.

### Sextant.

Presented annually by the Governing Body to the Cadet who stands second in the competition for His Excellency the Viceroy's Gold Medal.

**The Chairman's Prize.**

Presented by Vice Admiral Sir Humphry T. Walwyn, K.C.S.I., C.B., D.S.O., for Theoretical Seamanship.

**The Masefield Prize.**

Presented by John Masefield, Esqr., for Practical Seamanship.

**The Digby-Beste Gold Medal.**

Presented by Maulvi Abdul Kasem, Esqr., M.L.A., for General Proficiency.

**The Sawyer Prize.**

Presented by H. H. Sawyer, Esqr., for the most efficient Cadet-Captain—to be retained by the winner.

**English Essay.**

Presented by the Oxford University Press (Indian Branch).

**The Doctor Raja Reddiar Prize.**

Presented by Raja S. Ramanatha Reddiar, Esqr., LL.D., for "The Rule of the Road".

**The Marconi Prize.**

Presented by the International Marine Communication Company, Limited, for Morse and Knowledge of Direction Finder.

**The Sir John Biles Prize.**

Presented by Sir John Biles for Naval Architecture.

**Engineering Prize.**

Presented for the best Paper in Elementary Engineering, provided the boy has shown practical aptitude in this subject.

**The Meteorology Prize.**

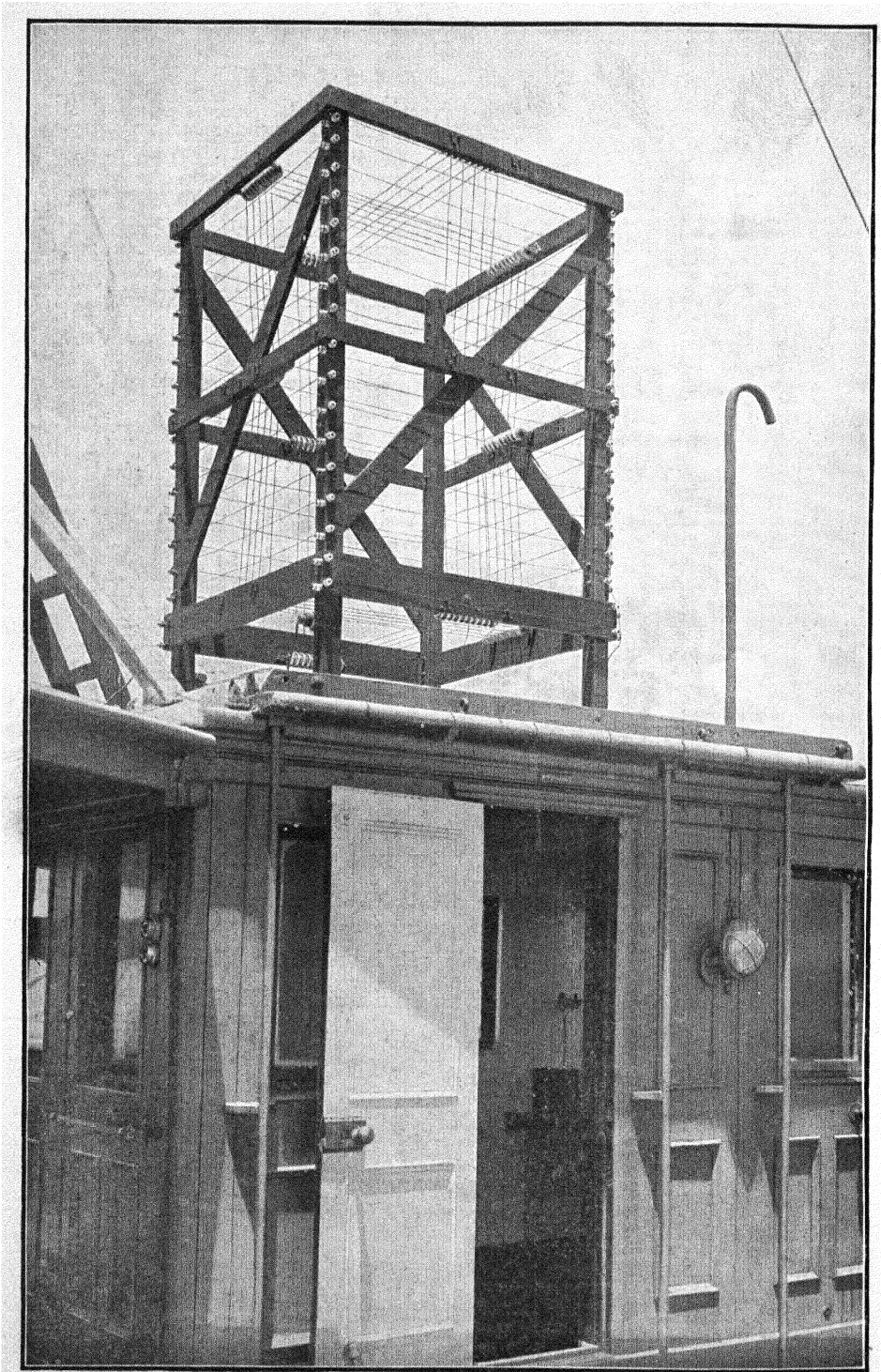
Presented by the Indian Meteorology Department for Meteorology.

In addition to the above special awards, four Prizes are given to each class as follows :—

- (1) First in all Subjects.
- (2) Second in all Subjects.
- (3) Best Progress.
- (4) Mathematics, Navigation, and Trigonometry.

Many other trophies have been presented to the Ship for Boxing, Boat-racing, Signalling, Football and Sports.





**The Direction Finder.**

## Curriculum of three years course on I.M.M.T.S. "Dufferin".

### English Curriculum.

A large proportion of the First Year is devoted to intensive instruction in English to enable the Cadets to derive the greatest possible value from the Course, which is largely technical and conducted entirely through the medium of English.

#### *First Year.*

Writing from dictation, reproduction of short stories from memory, study of English text books, commercial English and letter-writing, English grammar, the reading of approved English authors, debates on selected subjects, the meaning of various phrases and abbreviations, frequent practice in conversational and idiomatic English, the cultivation of a good English accent and Essay writing.

#### *Second Year.*

As above in increasing difficulty.

#### *Third Year.*

As above, but at a more advanced stage.

### History Curriculum.

#### *First Year.*

History of India :—

- (1) Ancient India—Elementary Knowledge of such topics as the Vedic Age, the Epic Age, the expansion of Hindu power, Buddha, the Maurya and the Gupta Dynasties the Buddhistic Age and the Puranic Age.
- (2) The Moghul Period.
- (3) The Mahratta Period.

History of the British Empire :—

- (1) Various types of colonies, voyages of discovery.
- (2) American Colonies : European settlements in North America. Anglo-French struggle. Conquest of Canada : effect of mercantile system on American Colonists ; War of Independence.

#### *Second Year.*

History of India : British Period up to 1857.

History of the British Empire ; Australasia. Early discoveries ; Tasman ; Dampier ; Cook ; Development of N. S. Wales and growth of other Colonies ; Australian Federation Act of 1900, Government of Australia ; New Zealand.

Canada ; Quebec Act, Ontario settled, Canada Act of 1791, Expansion to West, Reunion Act, B. N. America Act, Government of Canada, Senate *Coandammons*, modern development, C. P. Railway.

*Third Year.*

History of India ; British Period 1857 to 1900. Present Administration of India. Elementary knowledge of——.

The Secretary of State and his Council.

The Viceroy and Governor General. His Executive Council.

The Central Legislature.

The Provincial Governments. Provincial Legislative Councils.

Maintenance of Internal Order ; the Magistracy and Police.

The Administration of Justice. Chief sources of Revenue and Heads of Expenditure—Central and Provincial.

The Indian States.

History of the British Empire ; South Africa-Dutch settlements, British Occupation ; Boer trek, Transvaal Republic, Natal, First Boer War, etc., to 1909. Remaining British Possessions.

Effects of Peace Treaty, 1919, Mandated areas.

**Geography Curriculum.**

*First Year.*

The solar system ; the earth and its motions ; seasons ; latitude and longitude ; time ; the moon ; eclipses ; tides. The atmosphere ; temperature ; atmospheric pressure ; winds ; climate.

Oceans, their depths, movements, and currents ; effects of ocean currents on climate and commerce.

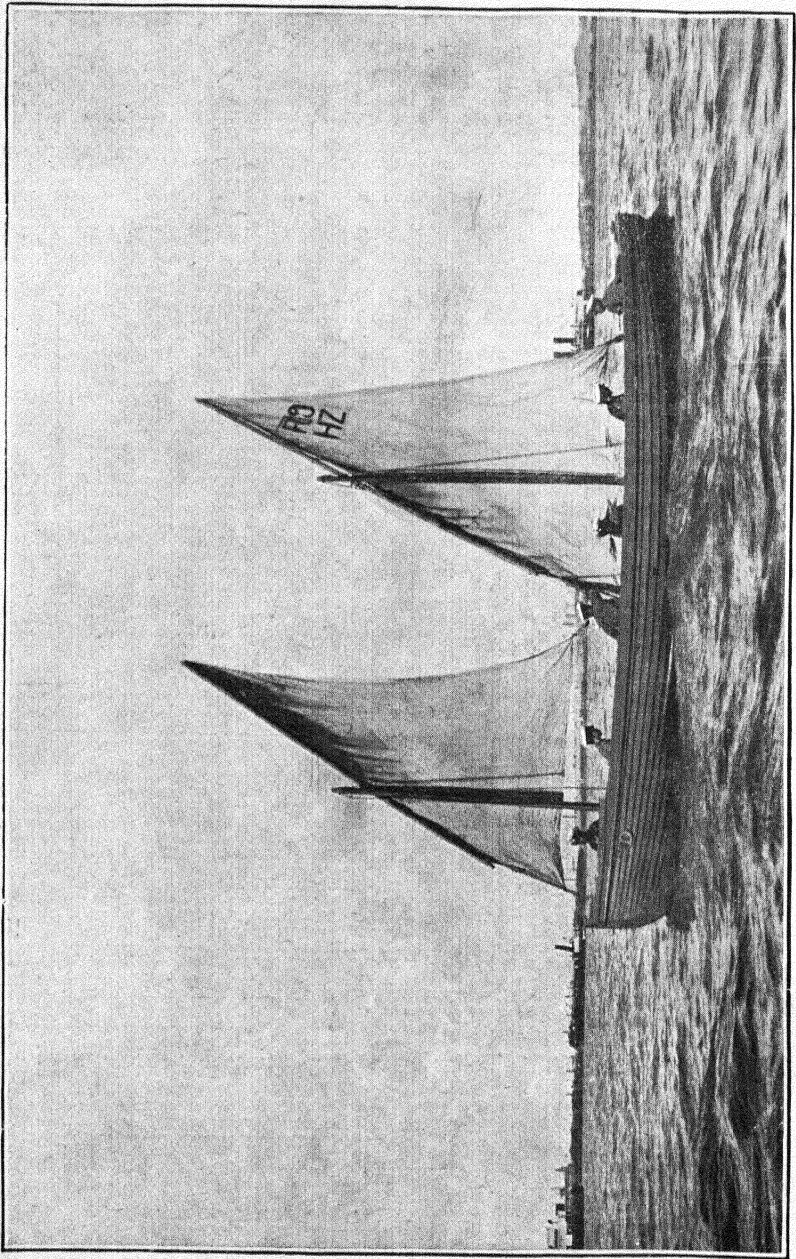
*Second Year.*

Rivers and their action ; snow and ice ; mountains and volcanoes ; coral reefs ; ocean floors. Map study and projections. Climatic zones ; vegetation ; occupations of man.

Transport by land and sea. Economic development of the British Empire.

India : boundaries, physical divisions, soil, rivers, irrigation, population, vegetable and mineral products, industries, trade. Regional geography of India.





Sailing.

*Third Year.*

The British Isles, minerals, manufactures, ports, and climate. Canada, United States, West Indies, Mexico, South America, Africa, Australia, Europe, Persia, Western Asia, Indo-China, and the East Indies. Outlines of their geography regarding capitals, ports, trade, etc.

General revision.

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**Arithmetic Curriculum.***First Year.*

Revision of weights and measures, the four simple rules, reduction, compound rules, practice, unitary method without fractions, areas and volumes without fractions, prime numbers, H. C. F. and L. C. M., Roots by prime factors

Fractions, decimals, squares, square root, reciprocal tables, unitary method with fractions, Metric System.

*Second Year.*

Ratio and proportion, harder areas and volumes problems, percentages, profit and loss, approximations.

Revision of work previously done.

*Third Year.*

Simple interest, compound interest, stocks and shares, the circle, the cylinder.

Further revision.

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**Algebra Curriculum.***First Year.*

Revision of the use of letters, generalised arithmetic (not fractions), squares, square roots, H. C. F., L. C. M., brackets, unitary method, negative numbers, simple equations and problems thereon. Fractions, factors, theory of indices and logarithms.

*Second Year.*

Graphical work, simultaneous equations and problems thereon, quadratics and problems thereon, simultaneous quadratics, revision of previous work.

*Third Year.*

Literal equations, graphical solution of quadratics, harder fractions and equations, harder multiplication and division, identities, general revision.

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**Geometry Curriculum.***First Year.*

Revision of elementary work including—

Construction of an angle equal to a given angle, bisection of angles, arcs and straight lines, construction of perpendiculars to a straight line from points in and without it, construction of parallels to a given straight line, construction of triangles, division of straight lines into a number of equal parts.

Relation of angles at a point made by straight lines, properties of triangles of parallel lines and of a parallelogram.

Solid, surface, measurement of straight lines, angles of a triangle and polygon.

*Second Year.*

Tests for congruence, ambiguous case, similar triangles and drawing to scale, isosceles triangle, inequalities, parallelograms and congruence.

Intercept theorems and constructions, Pythagoras' theorem, the sine, cosine and tangent of an acute angle.

Area of rectangle, parallelogram, triangle, trapezium. Area constructions, symmetrical properties of circle, angle properties of circle; tests for concyclic points, equality of area, tangent properties, construction of tangents, mensuration of circle, construction of circles from various data, regular polygons.

*Third Year.*

Geometrical representation of identities, segments of a straight line, extensions of Pythagoras' theorem, Apollonius' theorem, the rectangle contained by segments of a chord of a circle, meaning of a locus, use of loci in construction, theorems on loci.

Meaning of Ratio, proportional division of lines, the bisector of an angle of a triangle, tests for similarity, mean proportional, properties of the circle, areas of similar figures, constructions depending on similarity.

Solid geometry; prism and cylinder, pyramid, cone, inclination of line and plane, and plane to plane, sphere elementary plan and elevation.

**Mechanics Curriculum.**

*First Year.*

Velocity, uniform and variable. Relative velocity, composition and resolution of velocities, questions on river and current sailing.

Acceleration and retardation. Graphical representation of variable velocity; gravity and acceleration due to gravity.

Weight and mass, and the difference between them; spring balance, common balance.

Force and how it generally acts. Newton's First Law of Motion. Inertia, momentum.

Lever, mechanical advantage, capstan, wheel and axle.

*Second Year.*

Newton's Second Law of Motion; connection between poundal and the weight of a pound; dyne. Newton's Third Law of Motion. Friction, dynamical and statical.

Parallelogram of Forces; its application to sailing ships. Triangle and polygon of forces. Composition and Resolution of forces.





Physical Drill.

Work. Definition. The dynamical or absolute unit of work. The gravitation unit of work. Energy, potential and kinetic. Power, definition ; horse-power.

Pulleys, first and second systems, mechanical advantage. The screw inclined plane, wedge.

Moments of force, positive and negative moments. Composition and resolution of forces in parallel directions.

Centre of gravity, equilibrium of a heavy body about a fixed point, stable, unstable, and natural equilibrium.

*Third Year.*

Simpson's Rule. Longitudinal inclinations. Trim and change of trim, moment to change trim 1 inch.

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**Science Curriculum.**

*First Year.*

General properties of matter. Differences between solids, liquids, and gases. Boyle's Law. Specific Gravity. Heat a form of energy, difference between quantity of heat and temperature, thermometry, effects of heat. Specific heat. Hygrometry, dew-point. Conduction, convection, and radiation.

Theory of Light. Reflection and refraction, light reflected from a plane mirror, refraction in a prism. The telescope, periscope, sextant.

Sound, its nature and propagation, reflection of sound waves, siren, echo.

*Second Year.*

Magnetism. Lodestone. Properties of a magnet, different methods of preparing a magnet attraction and repulsion.

The Barometer, marine and aneroid, fiducial temperature, centibar readings.

Electricity (frictional), electroscope, attraction, repulsion, induction power of points. Electric Potential, electric discharge. Conductors and non-conductors, condensers. Current electricity, simple cells. Electric current, voltmeters, ammeters, galvanometer, resistancæ. Simple dynamos, electric bells, telephone.

*Third Year.*

General revision of whole Course.

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**Trigonometry Curriculum.**

*1st Year.*

The trigonometrical Ratios. Proofs of simple formulæ. Simple identities ; Solution of rightangled and oblique plane triangles ; Properties of a sphere ; Solution of rightangled spherical triangles.

*2nd Year.*

Solution of rightangled plane triangles by traverse table; Trigonometrical ratios of supplementary and complementary angles; Solution of oblique spherical triangles by Haversine and Tangent Formulæ; Solution of quadrantal triangles; Harder identities and proofs of formulæ.

*3rd Year.*

Harder problems, etc., including Great Circle and Composite Great Circle Sailing.

**Navigation.***2nd Year.*

The Earth; The Celestial Sphere; Time; Correction of Courses; Dead reckoning by Traverse Tables; Plumb Line Sailings; Correction of Altitudes for Sun, Moon, Stars or Planets; Finding the Compass error by calculation and tables; Positive Line; Meridian altitude and Longitude methods; Sextant practical use of error and adjustants; Azimuth mirror, use of, Tides; Construction of a Mercators Chart; Chart abbreviated and chart datum; Plotting courses and bearings; Fixing position by Celestial and Terrestrial Positive Lines.

**Navigation Curriculum.***3rd Year.*

Meridian Passages; Theory of Position Lines derived from celestial observation; Position Line; Intercept method; Polarise and *Ex-Meridian*; Determine Position of ships from two positive lines with run between; Determine position of ships by simultaneous altitudes; Stereographic projection of celestial concave; Practical use of Star globe and star atlas; Finding the set and drift of a current on the chart; Fixing D/R position of ship, making due allowance for set and drift of current; Finding course to steer making due allowance for set and drift of current; Fixing position of W/T positive lines; Fixing position by vertical angle and positive line; Fixing D/R position by line of something; also positive line and standing; Use of Gnomonic Chart; How to correct a chart. Notices to Mariners; Use of Admiralty Tide tables including reduction to soundings.

**Magnetism Curriculum.***3rd Year.*

Magnets; The Magnetic Field; The Earth as a Magnet; Isocinical Lines; Lines of Variation; Effects of Magnetic Forces in a Ship on the Compass; Magnetic Coefficients; Magnetic Compensators; Compass adjustments with use of Deviascope; Construction of a Deviation Curve and Table of Errors.

**Meteorology Curriculum.***2nd Year.*

Composition of Atmosphere; Atmospheric Pressure; Motion and distribution of the Atmosphere; Effects of Rotation of the Earth; Buys Ballott Law; Beaufort Scale; Cyclonic and Anticyclonic Circulation; Permanent Winds; Periodic Winds; Clouds; Meteorological Conditions.

*3rd Year.*

Barometric Gradient ; Law of Storms ; Currents ; Weather Charts ;  
Wireless Weather Reports. Synoptic Meteorology.

**Naval Architecture.***2nd Year.*

Glossary of Terms ; Principal parts of a ship ; Gravity and Buoyancy ;  
Flotation and Stability ; Stresses and Strains ; Materials used in Ship Build-  
ing ; Various types of Keels, Frames, Beams and Shell Plating ; Various types  
of ships.

*3rd Year.*

Further Glossary of Terms ; Tonnage ; Use of Survey Societies Register ;  
Ship Construction ; Ship Launching ; Displacement and Draught ; Effects  
of Loading ; Stability Calculation.

**Elementary Engineering Curriculum.***2nd Year.*

Elementary Electrical Terms ; Measurements, and Appliances ; •Prin-  
ciple of Internal Combustion Engine ; Principal Parts of Internal Combustion  
Engine, Boilers ; Fuels ; Forms of Propulsion ; The Steam Engine ;  
Uses of Machinery on board a ship.

*3rd Year.*

Construction of Boilers ; Further description of Steam Reciprocating  
Engine ; Turbines ; Crude Oil Engines ; System of Pipe Lines in a ship ;  
Auxiliary Machinery ; Refrigerating Machinery ; Condensers ; Problems in  
Marine Engineering.

## Seamanship Curriculum.

### *1st Year.*

Going Aloft ; Boat Pulling ; Bends and Hitches ; Splicing light rope ; Sewing, bunting and Canvas ; Care of Uniform and Clothing ; Boxing the Compass ; Elementary Rule of the Road ; Strength of Ropes and Wires ; Advantages of, and Power gained by Tackles.

### *2nd Year.*

Boat Sailing Splicing (advanced) ; Elementary carpentry and bench work ; Rigging of Steamships ; Progressive Knowledge of the Rule of the Road ; Instruments and Machinery used on board the ship ; Life Boat Drill including Knowledge of Equipment, hoisting, lowering, etc.

### *3rd Year.*

Practice in Machine Shop and Smithy ; Elementary Electrical Work ; Anchors and Cables ; Parallelogram of Forces, as applied to Steamships ; Effect of Screw Race ; Tending Ship at Anchor ; Rule of the Road.

## First Aid Lectures.

### *First.*

Outlines and Principles of First Aid ; Description and structure of Human Body ; General description of Heart and Blood Vessels ; Circulation of the Blood

### *Second.*

Wounds and Hæmorrhages ; Special and Internal Hæmorrhages ; Situation of Main Arteries ; Compression of Arteries ; Pressure Points.

### *Third.*

Fractures causes, Signs and Symptomns ; The Triangular Bandage, its application to the various parts of the body.

### *Fourth.*

Individual Fractures, Signs and Treatment : Dislocations, Sprains and Strains, Symptoms and Treatment ; Practical treatment of Fractures.

### *Fifth.*

Respiration, Natural and Artificial ; Asphyxia ; The Nervous System ; Insensibility ; Practice Artificial Respiration.

### *Sixth.*

*Miscellaneous Injuries ; Poisons.*—In the fifth term of training Special Classes are arranged and Cadets are examined by the St. John Ambulance Association.

**Routine.**

- 05-50 Call Chief Cadet Captain, and Bugler. *Saturday.*—No School work, the ship is cleaned and manual Work done by the Cadets.
- 06-00 Reveille. Make beds. One Watch Aloft. Away Bazaar Boat. *Sunday.*—Division and Captain Rounds at 10-30.
- 06-15 Fall-in. 5 minutes for Prayers. Every Sunday each Cadet during the course of the day is obliged to write home.
- 06-20 Clean Ship.
- 07-20 P. T. Exercises.
- 07-30 Bath and Change. Manual Party commence.
- 07-40 Prep.
- 08-00 Colours.
- 08-20 Manual Party Bath and Change. On religious holidays, facilities are granted to land Cadets for their religious duties as necessary.
- 08-30 Clean Orlop Deck.
- 08-45 Breakfast.
- 09-30 Divisions and Inspection—Band.
- 09-45 Cadets to School.
- 11-15 Recreation. *Saturday.*—Mornings 6-40 A.M. evolutions.
- 11-30 Cadets to School.
- 13-00 Dinner.
- 14-00 Cadets to school.
- 16-00 One Watch land for games alternately. Remainder not on duty, go out Boat-Sailing, Gymnasium, Boxing, general recreation. *Wednesdays, Saturdays, and Sundays* of the month as many Cadets as possible land for games.
- 17-30 Watch on board bathe and change. During the Summer months, the period of work 18-45 to 19-45 is done before 17-00 the recreation period being timed correspondingly late.
- 17-45 Signals.
- 18-00 Shore Party bathe and change.
- 18-10 Evening Quarters
- 18-20 Supper.
- 18-45 Prep. or Lecture.
- 19-45 Recreation. Canteen opens.
- 20-15 First Post.
- 20-45 Fall-in. 5 minutes silence for Prayer. *Boat Routine.*—From Mazagaon Pier to Ship ; 07-00, 09-00, 12-30, 17-00, 20-30.
- 20-55 Turn in.
- 21-00 Rounds. From Ship to Mazagaon Pier 06-15, 08-40, 12-15, 16-30, 20-00.
- 21-15 Last Post and Lights out.

Cadets in Nautical Form may remain up till 2145.

**APPENDIX I.**  
‘SPECIMEN MENU.’

MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.	SUNDAY.
CHOTA HAZRI— 06-00 Coffee and Biscuits.	Coffee and Biscuits.	Coffee and Biscuits.	Coffee and Biscuits.	Coffee and Biscuits.	Coffee and Biscuits.	Coffee and Biscuits.
08-45 BREAKFAST— Liver and Potatoes *Dhall Pan Cakes.	Porridge. Bread and Butter. Fruit. Tea.	Fish Cakes. *Purries. Bread and Butter. Fruit. Tea.	Fried Liver and Onions, and Purries. Bread and Butter. Fruit. Tea.	Oatmeal. Bread and Butter. Fruit. Tea.	Eggs Sandwiches, *Tomatoes Sandwiches. Fruit. Tea.	Buttered Eggs. *Dhall and Potatoes. Bread and Butter. Fruit. Tea.
13-00 DINNER— Onion Soup Mutton Pie and Vegetables. *Vegetable Pie Blancmange with Treacle.	Scotch Broth. Mixed Vegetable. Curry and Rice. ... Bread and Butter. Pudding.	Pea Soup. Irish Stew. *Delhi Stew. Queen Pudding.	Lisbon Soup. Dhall, Curry and Rice. Ice Cream.	Hotch Potch Soup. Fish Cakes and Vegetables. *Vegetables Sauces. Fruit Jelly.	Pea Soup. Mutton Cutlets and Vegetables. *Dhall Kubab. Ice Cream.	Jardiniere Soup. Roast Mutton and Vegetable. *Curry Puffs. Vermicelli pudding.
18-20 SUPPER— Omelette and Potatoes. *Vegetables Cutlets. Bread and Butter. Jam. Tea.	Mutton Cutlets and Vegetables. *Dhall Cutlets. Bread and Butter. Treacle. Tea.	Croquettes and Vegetables. *Vegetables Patties. Bread and Butter. Jam. Tea.	Devilled Mutton and Vegetable. *Vegetable Kubab. Bread and Butter. Treacle. Tea.	Chicken Cutlets and Vegetable. *Vegetable Mornie. Bread and Butter. Jam. Tea.	American Hash and Vegetable. *Delhi Stew. Bread and Butter. Treacle. Tea.	Scotch Mince and Vegetable. *Dhall Cutlets. Bread and Butter. Jam. Tea.
20-15 MILK 4 oz.	MILK 4 oz.	MILK 4 oz.	MILK 4 oz.	MILK 4 oz.	MILK 4 oz.	MILK 4 oz.

\*Denotes Vegetarian food.

## APPENDIX II.

## EXTRACT OF REGULATION REGARDING EYE-SIGHT TEST.

## I.—Letter Tests.

1. *Letter test to be passed first.*—The first test which the candidate is required to undergo is the letter test and until he has passed this test he must not be allowed to proceed further with the Examination.

2. *Apparatus used.*—The letter test to be used for all candidates is that conducted on Snellen's principle by means of sheets of letters.

3. *Object of the test.*—The object of the letter test is to determine whether the candidate can reach a sufficient standard of visual acuteness, or in other words, to find out whether his eyesight is good or bad.

4. *Standard of vision required.*—Every candidate for a first class certificate of competency will be required to possess normal vision.

“Normal vision” is defined, for the purpose of these regulations, as ability to read correctly nine out of the twelve letters in the sixth line and eight of the fifteen letters in the seventh line of a test sheet placed in a good light at a distance of 16 feet from the eye.

The candidate will have to pass using either eye separately and both eyes together.

5. *Spectacles not allowed.*—During the examination in the letter test candidates must not be allowed to use spectacles or glasses of any kind, or any other artificial aid to vision.

6. *Method of testing.*—The test sheets should be hung on the wall, *in a good light but not in direct sunlight*, at a height of five or six feet from the ground. The candidate should be placed at a distance of exactly 16 feet from the sheets, and exactly opposite them. This distance should be carefully measured, and should never in any circumstances be varied.

One of the sheets should then be exposed, and the candidate should be asked to read the letters on each sheet, beginning at the top and going downwards. Any mistake which he makes should be carefully noted. If then it is found that he has read correctly at least nine letters in the sixth line and eight letters in the seventh line of a sheet, the candidate may be considered to have normal vision.

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**N.B.**—Candidates are also examined for colour blindness and this examination is held by means of a lantern showing red, green and white (with large and small apertures) in a dark room.

**Candidates must clearly distinguish between red, green and white.**

## APPENDIX III.

I. M. M. T. S. "DUFFERIN".

**Syllabus of the Qualifying Examination.**

*Arithmetic.*—Compound rules, simple and compound proportion. Simple interest, compound interest, decimal fractions (without recurring decimals), Practice. Simple examples in profit and loss. Metric system (linear). Percentages. Square measure. Square root.

*Algebra.*—Generalised arithmetic. Substitution. Easy addition, subtraction, multiplication, division. Use of brackets. Simple equations.

*Geometry.*—Use of drawing instruments (a ruler graduated in inches and tenths, and in centimetres and millimetres ; a set square ; a protractor ; a pair of compasses). Measurement of length and of angles of arcs. Simple and easy exercises in paper folding. Names and definitions of plane figures. (Applicants should bring their own instruments.)

*English.*—Simple grammar including parsing. Conversion of poetry into prose order. Analysis of simple sentences. Rendering in the pupil's own words of easy narratives read out to him. Writing to dictation.

*History.*—A very general outline of the history of India and of England to the present time (as in Marsden's "Easy Lessons in History published by Macmillan's").

*Geography.*—The world : climatic regions, distribution of vegetation.

The British Isles, France, Germany, Italy, the United States, and Japan.—The study to include only coast, relief, climate, agriculture, broad divisions, the most important towns, people and their occupations.

India.—Important natural and manufactured products ; exports, imports and the principal countries with which trade is carried on.

General.—Heating and cooling of land and water ; heating of air ; land and sea breezes ; climate by distance from the ocean ; oceanic and continental climates.

Observation of the constellations (the Great Bear, the Little Bear, Orion, the Bull).

Learning to read a barometer. Drawing the true north and south line by observing the Pole Star and by the Mariner's Compass ; filling in particulars in an outline map of India.

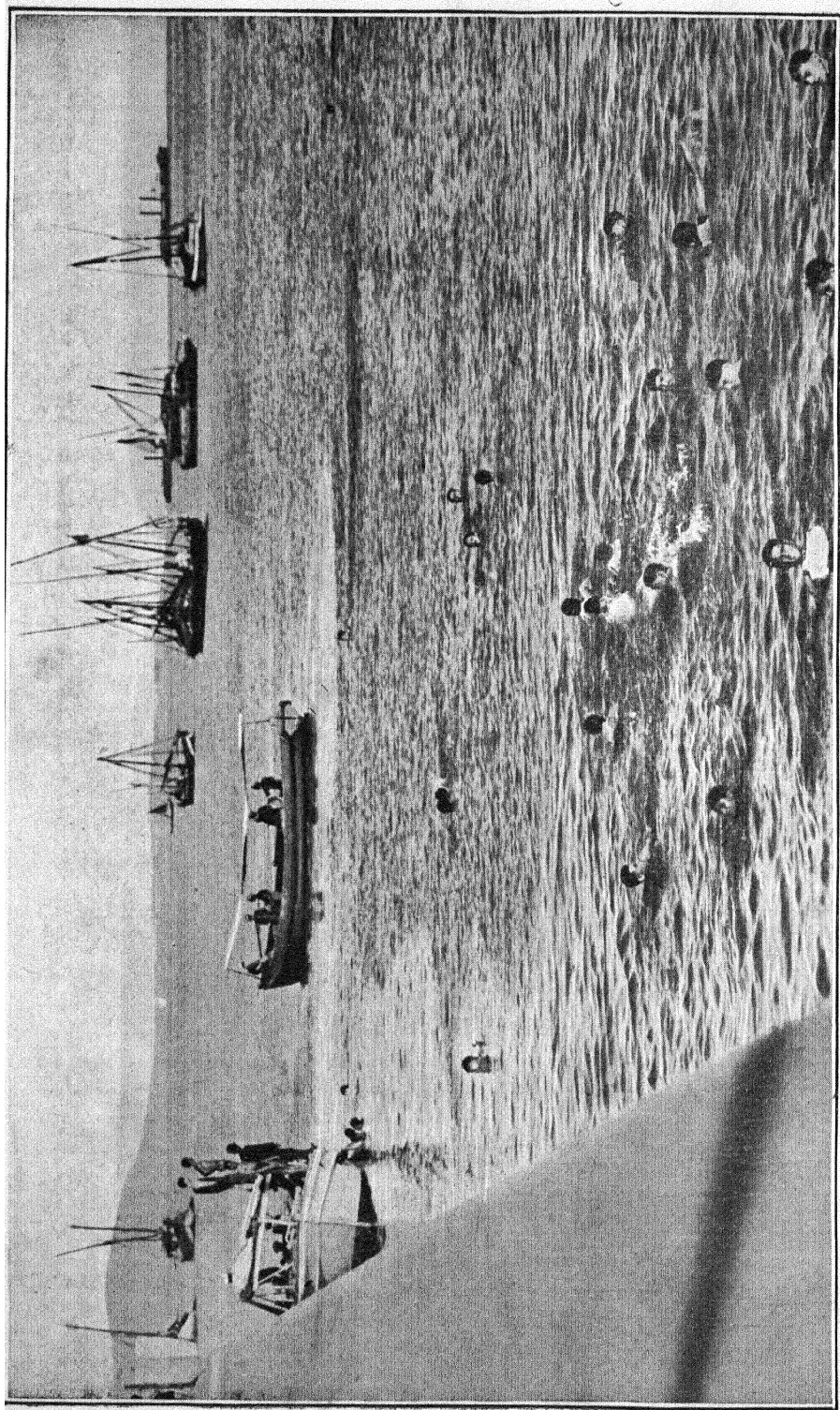
*General Knowledge.*—A paper will be set to test the general knowledge of the candidates.

(*N.B.*—General knowledge cannot be acquired from a Text Book, and no such book can be recommended. Candidates should keep their eyes and ears open, make themselves acquainted with current world-wide events as reported in the Press, and develop their intelligence ; as would-be sailors they should cultivate such elementary knowledge of the sea as can be obtained from Newspaper advertisements and story books of adventure.)

*N.B.*—*Qualifying Examination papers.*—Question Papers set in 1931 and 1932 are given in the Appendix No. IV. Question Papers for the Examinations previous to those are not available.

*N.B.*—All answers are to be written in English.





Sea bathing.

## SPECIMEN PAPERS FOR

Qualifying Examination prior to Selection for admission to the I. M. M. T. S.  
"Dufferin".

(PAPERS SET IN 1931.)

FIRST DAY.

MONDAY, 2ND NOVEMBER 1931.

[11 A. M. TO 2 P. M.]

## ARITHMETIC AND ALGEBRA.

*N.B.*—The time should be equally divided between the two parts of the paper.

## PART I.

(*Arithmetic.*)

1. (a) The population of a town is 12,175 and is 25 per cent. more than it was five years ago : what was it then ?

(b) Find to the nearest anna the Compound Interest on Rs. 5,340 for 2 years, at 5 per cent. for the first year and 4 per cent. for the second year.

2. (a) If 8 men would take 75 days to finish a piece of work, how many men would finish it in 40 days ?

(b) A sack of potatoes weighs 178 lb.; if 6 such sacks cost £2-4-6, what will be the cost of 44 lb.?

3. Find the cost of 5 cwt. 3 qrs. 21 lb. at £15-0-0 per ton.

4. The walls of a room 21 feet long, 15 feet 9 inches wide, and 11 feet 8 inches high are painted at a cost of £9-12-6. Find the cost per square foot, and also the cost of painting the ceiling.

5. A gramophone with 5 records costs £7 : the same gramophone with 20 records costs £9. How much should be paid for the gramophone with 50 records ?

## PART II.

(*Algebra.*)

1. (a) Write down three consecutive numbers of which  $n$  is the greatest.

(b) The sum of three numbers is 96. One of them is  $x$  and another is  $y$ . What is the third number ?

(c) What number is less than 40 by  $a$  ?

(d) A horse eats  $x$  bushels a week. How many days will it take him to eat 76 bushels ? In how many days will  $y$  horses eat the same amount ?

2. (a) Multiply together  $3x^2 - 2x + 4$  and  $2x + 5$ .

(b) Divide the sum of  $2x - 7 - 3x^2$ ,  $5x^2 + 1 - 3x$ , and  $7 - 4x + 2x^2$  by  $4x - 1$ .

3. (a) Simplify by removing brackets

$$6 - 2 \left\{ x - 3 - (x + 4) + 3(x - 2) \right\}.$$

(b) When  $a = 1$ ,  $b = 2$ ,  $c = 0$ , find the value of

$$4 \left[ a - 2(b - c) - \{ a - (b - 2) \} \right].$$

4. Solve the following equations :—

$$(a) \frac{1}{5}(x - 5) + \frac{1}{3}(x - 3) = \frac{1}{12}(5x - 3).$$

$$(b) \frac{3x - 5}{4} - \frac{7x + 9}{16} + \frac{8x + 19}{8} + 8\frac{1}{2} = 0.$$

5. In a village of 151 persons, there are 17 more women than men and 30 more children than women : how many men, women and children are there ?

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MONDAY, 2ND NOVEMBER 1931.

[3 P. M. TO 5 P. M.]

ENGLISH GRAMMAR.

1. Finish the following by using suitable words :—

(a) When you reach home.....

(b) The train having started.. ..

(c) Seeing that you are ready.....

(d) At sunset.....

(e) Although you blame me.....

2. Write short sentences, one for each, containing the words :—

(a) current, (b) currant, (c) course, (d) coarse, (e) whether, (f) weather,  
(g) lose, (h) loose, (i) bear, (j) bare.

3. Analyse the following sentences :—

(a) A *beggar*, passing through Bengal, having arrived in Calcutta, *calmly entered* the Town Hall by mistake, thinking *it* to be an inn.

(b) Has your master taught you mathematics for a long time ?

(c) Not a single house was in sight anywhere on the *wide* plain.

4. Parse the words italicised in Question 3.

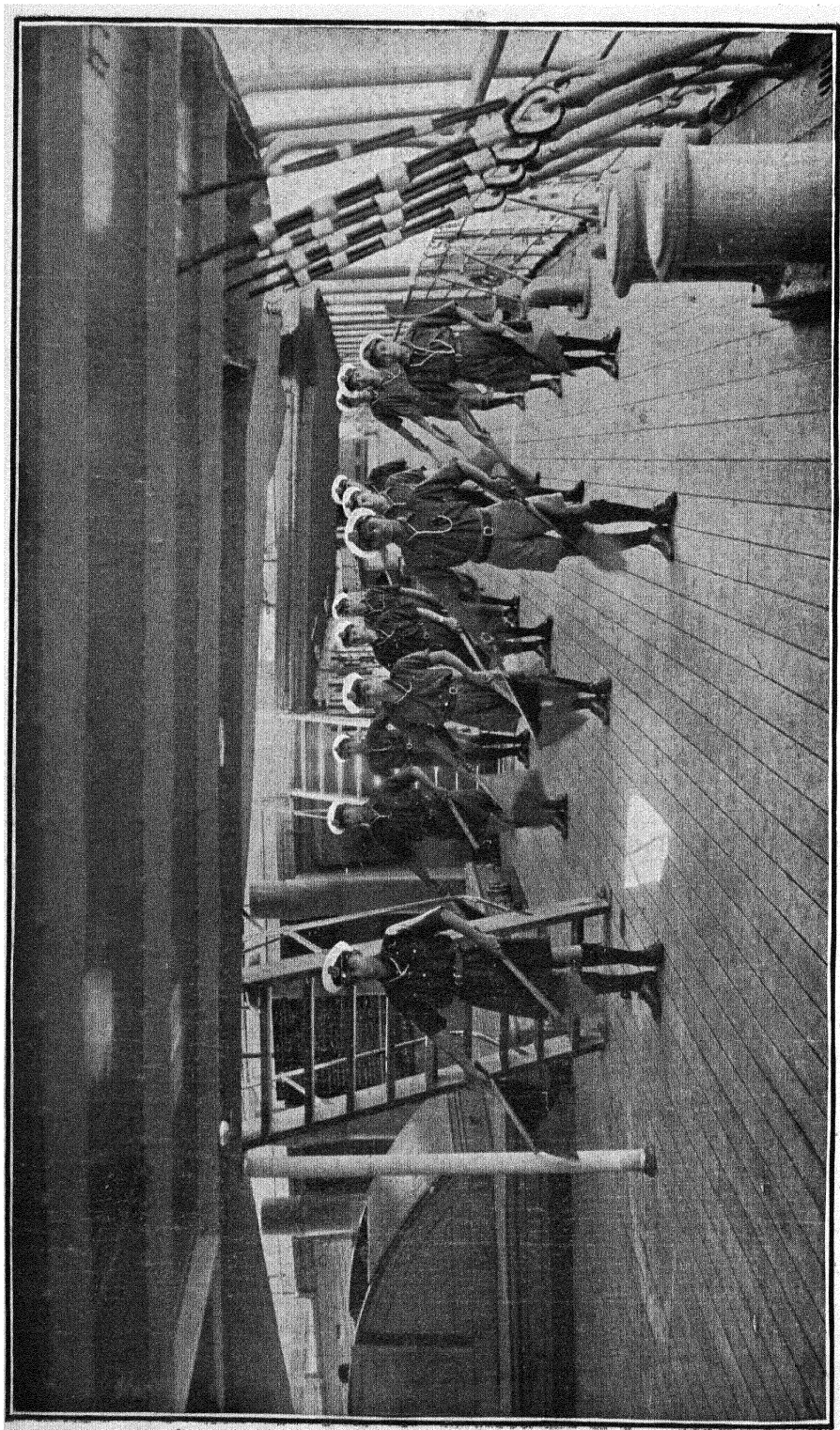
5. Rewrite the following, filling in the blanks with suitable prepositions. Underline the words you put in.

(a) I went——my bother——a river which was full——fish ;  
we took a boat and rowed——the stream——the oppo-  
site bank.

(b) He was astonished —— the sight —— so much suffering.

(c) The boy who stood——the magistrate was accused ——throw-  
ing stones——his neighbours, but was acquitted——the  
charge brought——him.





Signalling.

6. Write down the actual words used by James in the following :—

- (a) James asked me how long I was going to stay.
- (b) James told me that he was leaving next day to stay with his uncle.
- (c) James said that he would meet me next day at the wharf where the ship was lying.
- (d) James ordered the driver to take him to the station as quickly as he could.

7. Write a letter to the Captain Superintendent, applying for admission to the I. M. M. T. S. • *Dufferin*.

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SECOND DAY.

TUESDAY, 3RD NOVEMBER 1931.

[ 11 A. P. TO 1 P. M.]

GEOMETRY.

1. Straight lines  $AX$ ,  $BX$ ,  $CX$ ,  $DX$ ,  $EX$ , meet at a point  $X$  in a straight line  $KL$ , making with the latter angles of 45, 60, 90, 120 and 160 degrees, respectively. Shew these angles by drawing a figure. Name an acute angle a right angle, and an obtuse angle. How many degrees are there in the angle  $BXD$  ?

2. Construct a triangle  $ABC$ , having given that  $AB$  is 6 cm.,  $AC$  is 4 cm., and the angle  $BAC$  is 36 degrees. Measure the side  $BC$  and the angle  $ACB$ .

3. Draw a scalene triangle  $ABC$ , an isosceles triangle  $DEF$ , an equilateral triangle  $GHI$ , a trapezium  $KLMN$ , a rhombus  $OPQR$ , an acute-angled triangle  $STV$ , and a parallelogram  $WXYZ$ .

4. (a) Construct a circle of radius 1·8 inches. Divide it by a straight line into two equal parts. What is this line called ? What is its length ? Cut off an arc by a line 2 inches long. What is this line called ?

(b) Your desk is 10 yards from the Examiner's chair. A book is hidden in a place 4 yards from your desk and 8 yards from the Examiner's chair. Shew by a figure where you would look for the book.

5. (a) Through how many degrees does the minute-hand of a clock pass (i) between 12 o'clock and 1 o'clock, (ii) in 20 minutes ? Through how many degrees does the hour-hand pass in 4 hours ?

(b) You go for a walk in a south-easterly direction, and then turn south ; you then walk north-west for a time, and then take a road which leads north-east. Through how many degrees have you turned altogether ?

TUESDAY, 3RD NOVEMBER 1931.

[1 P. M. TO 2 P. M.]

GENERAL KNOWLEDGE.

*N. B.*—Answer any four of the following questions.

1. How can you tell the difference between a star and a planet ?  
Name five planets and three groups of stars.
2. How are the following obtained or manufactured :—  
Paper, glass, tea, rubber, quinine ?
3. How is it that an iron ship is able to float in water ?  
Is it easier to float in salt water or fresh water ? Why ?
4. State briefly what you know of Sir J. C. Bose ; Ramsay Macdonald ; Nelson ; Wellington ; Rabindranath Tagore.
5. In what parts of the world do you find the following :—  
The lion, ostrich, reindeer, giraffe, kangaroo, zebra, polar bear ?
6. How long does the mail take to go to England ? What Company's steamers carry this mail ? From what port and on what day do the mails leave India ? Name the ports at which the mail steamers call.  
How long does the Air Mail take to go from India to England ? Name the day of the week and the place from which it leaves India.
7. Name five famous sailors in the history of the world who made great voyages. Where did they go to ?
8. What do you know of any one of the following :—  
(a) A recent mountain-climbing expedition.  
(b) The attempt of the *Nautilus* to reach the North Pole.  
(c) The saving of the sailors from the sunken *Poseidon*.
9. Give a very brief account of any two disasters in the year 1931, in which a great number of lives were lost.

TUESDAY, 3RD NOVEMBER 1931.

[3 P.M. TO 5 P.M.]

HISTORY AND GEOGRAPHY.

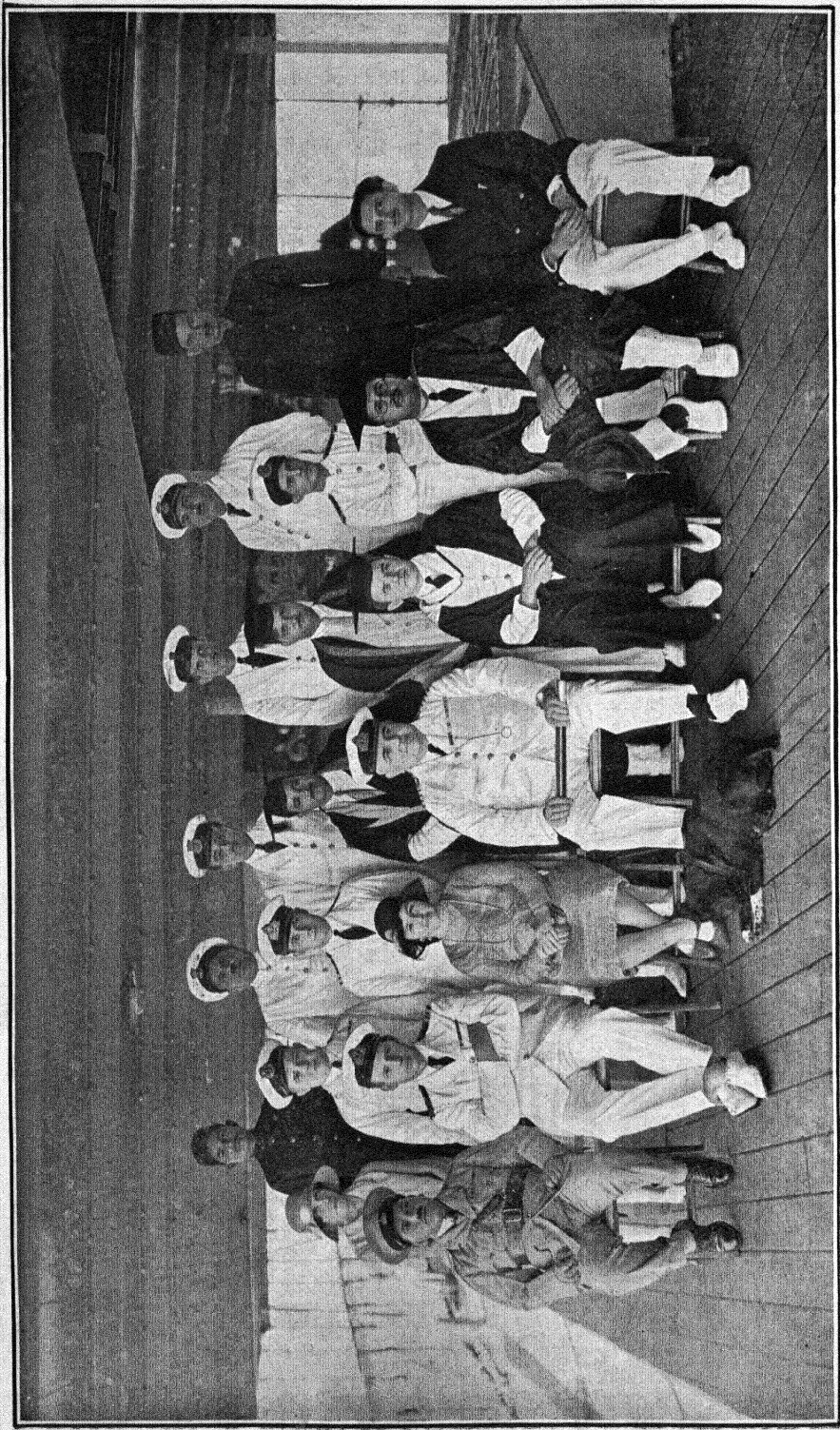
*N.B.*—Answer any four questions in each part. The time should be equally divided between the two parts.

PART I.

(History.)

1. Write a short life of Babar, and describe briefly his character.
2. Describe how the Sikh religion was founded. How did the earlier Moghul Kings treat the Sikhs ? How were they treated by Aurangzeb ?





Captain Superintendent & Staff.

3. Give an account of the steps taken by Lord Dalhousie to make India happier, more prosperous, and more enlightened.

4. Write short notes on (a) Pitt's India Bill ; (b) The Permanent Settlement of Bengal ; (c) Dupleix ; (d) The Peswas.

5. What were the causes of the fighting between the English and the Spaniards in the reign of Elizabeth ? How was the Armada prevented from landing troops in England ?

6. Write a short life of George Stephenson. How has his work helped to make India more prosperous ?

## PART II.

### (Geography.)

1. Write a brief description of the climate of (a) Bombay, (b) Simla, (c) Delhi, with regard to rainfall, summer temperature, and winter temperature. Why do the climates of these places differ from each other ?

2. In what countries are the following towns situated and why are they important :—(a) Birmingham ; (b) Marseilles ; (c) Chicago ; (d) Hamburg ; (e) Milan ; (f) Lisbon ?

3. (a) Where are the following found in India :—

Coal ; iron ; salt ; gold ?

(b) What is the chief occupation of the people of India ?

(c) Why does (1) Bombay export raw cotton and cotton goods ?

(2) Calcutta export raw and manufactured jute, and tea ?

(3) Madras export leather ?

4. Draw a sketch map of India, shewing the Western Ghats, the Himalayas, the Satpura and Vindhya Ranges, the Ganges, Indus, and Godavari Rivers, and the Sind Desert.

What parts of India have the heaviest rainfall ? What part gets considerable rain in the cold weather ?

5. Draw a simple figure to represent the Mariner's Compass, putting in the points N ; N.E. ; E. ; S.E. ; S. ; S.W. ; W. ; N.W.

Does the needle always point to the true North ? Give reasons for your answer.

6. What is a Barometer ? Account for the barometer falling when rain is approaching. Draw a simple illustration of a barometer, and from this figure explain how to read the barometer.

TUESDAY, 3RD NOVEMBER 1931.

[5 P.M. TO 5-45 P.M.]

## ENGLISH COMPOSITION.

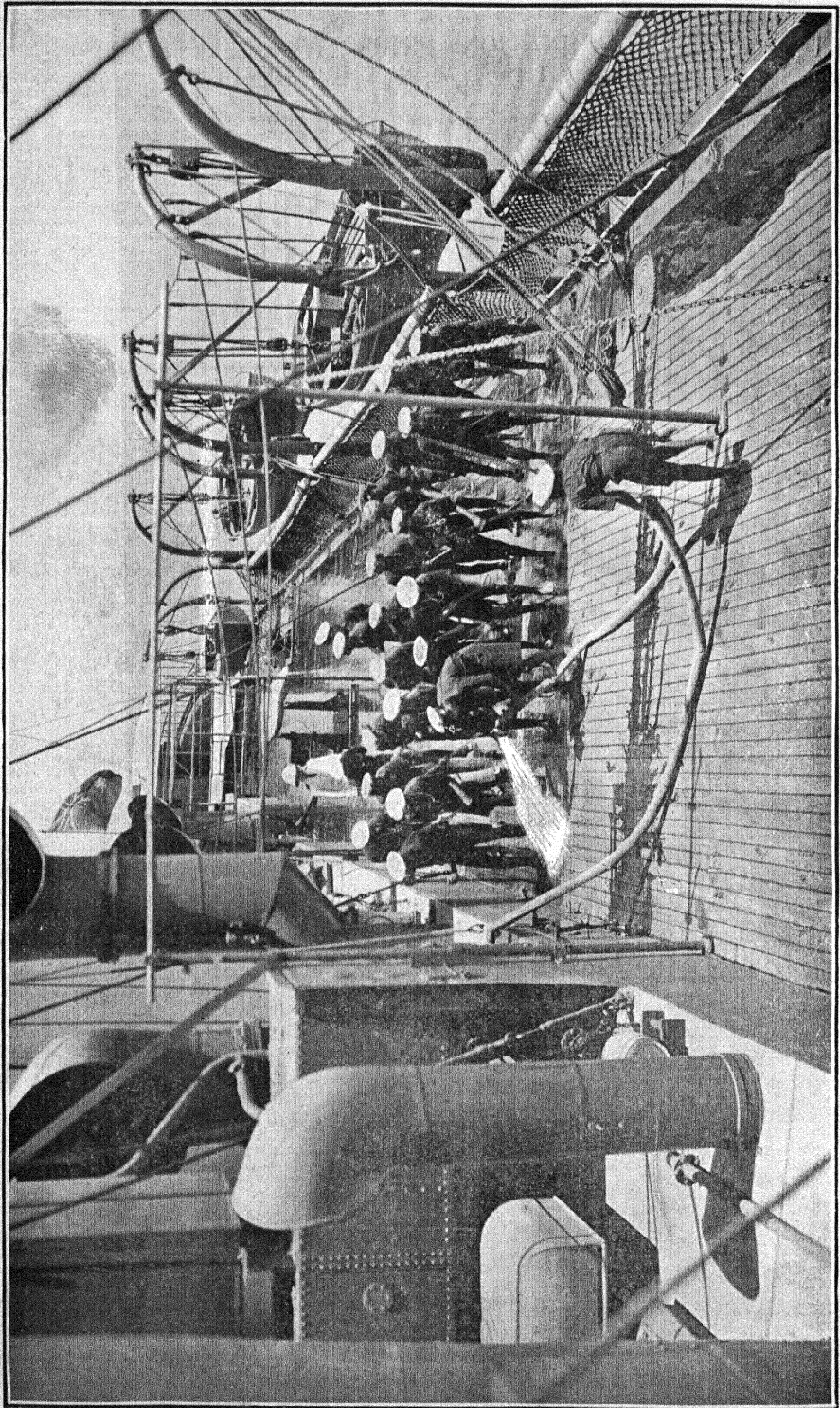
**N.B.**—The story should first be read aloud slowly to the candidates, and again a second time at an ordinary reading pace. Candidates are not permitted to write or take notes during these readings. They will reproduce the story from memory, in their own words, after the second reading.

Many years ago, in the reign of Akbar, a rich merchant, who had sold his merchandise, was passing through a town in the north of India, when he lost a leather bag which contained a thousand rupees and a small snake made of gold. As he intended to present this snake to his wife, he was very upset at its loss and spent the whole day looking for it. On the following day he went to the town-crier, and asked him to proclaim, by beat of drum, that he would give a reward of one hundred rupees to the person who would bring back the bag to him.

In the meantime the bag had been found by a poor man, who had long been out of work and whose family were almost starving. When he opened the bag and saw the great riches inside it, he was very tempted to take it home as the thousand rupees would keep him and his family in comfort for several years. But he fought against his evil thoughts, and when he heard that the bag had been lost by the merchant, he took it back to him.

Now the merchant was a wicked man, and did not want to give the promised reward. He opened the bag and declared that it had contained fifteen hundred rupees and two golden snakes. He accused the poor man of having stolen five hundred rupees and one of the golden snakes, and so refused to reward him. After they had quarrelled about the matter for some time, the poor man went to a judge and made a complaint to him. The judge said: "The merchant is a rich man and a man of honour, and I am sure that he is speaking the truth. But as the bag which he lost contained two snakes, this must be a different bag and does not belong to him. As the bag has no owner, it will be kept for the Emperor, until we discover to whom it belongs. But this poor man who found it has a right to be rewarded. I will order the clerk to open the bag and to pay one hundred rupees out of it to the finder".





Washing Decks.

**QUALIFYING EXAMINATION PRIOR TO SELECTION FOR  
ADMISSION TO THE I. M. M. T. S. " DUFFERIN ".**

MONDAY, 31<sup>ST</sup> OCTOBER 1932.

[11 A.M. TO 2 P.M.]

ARITHMETIC AND ALGEBRA.

*N.B.*—The time should be equally divided between the two parts of the paper.

PART I.

(*Arithmetic*).

1. An open cistern, made of zinc, is 3 feet deep, 10 feet long, and 8 feet wide. Find (i) how many cubic feet of water it will hold ; (ii) how many square feet of zinc are used in making the tank. Also find the weight of the water in pounds, given that 1 cubic foot of water weighs 1000 ounces.

2. (a) 13·5 pounds of honey can be bought for £1·25. What would be the cost of 62·75 pounds ?

(b) Simplify

$$\frac{3\frac{2}{9}}{3\frac{1}{2} + \frac{7}{9} \times \frac{1}{3}} + \frac{2\frac{1}{12} - \frac{11}{15}}{4\frac{2}{3} - 1\frac{4}{5}}$$

3. A dealer buys two pictures from an artist at £135 and £90, and sells them again at a profit of 20 per cent. and 25 per cent. respectively on the purchase price. Find his percentage of profit on the whole transaction.

4. (a) What sum of money will bring in £65-10-0 in simple interest in 3 years at  $3\frac{1}{2}$  per cent. per annum ?

(b) What sum of money at compound interest will amount to Rs. 650 at the end of the first year and Rs. 676 at the end of the second year ?

5. A contractor undertakes to finish a piece of work in 30 days and employs 16 men upon it. After 12 days only one-quarter of the work is done. How many additional men must he employ in order to carry out the work in the given time ?

PART II.

(*Algebra*.)

1. (a) If one book can be bought for  $X$  annas, how many can be bought for  $Y$  rupees ?

(b) The area of a room is  $X$  square feet, and its length is  $Y$  feet ; what is its width ?

(c) The sum of two numbers is  $A + B$ ; one of them is  $A - B$ ; what is the other?

(d) A train travels at the rate of  $X$  miles per hour; how many yards does it travel in a minute?

2. (a) Find the sum of  $a^2 - bc - 2ac$ ,  $b^2 + ac - a^2$ ,  $c^2 - 3ac - 4bc$ ,  $ab + ac + bc$ .

(b) Divide  $10(x^2 - 2ax) - 3(ax - 4a^2)$  by  $2x - 3a$ .

3. (a) There are  $k^2 + 4d^2 - 2kd$  boys in a school and  $k^4 + 16d^4 + 4k^2d^2$  oranges have to be distributed among them. How many oranges does each boy get, if  $k = 2$  and  $d = 1$ ?

(b) Express the following in their simplest form:—

(i)  $2a - 3b - (4a - 6b) + (-2a + 5b)$ .

(ii)  $2x - [5y - \{9x - (10y - 4x)\}]$ .

4. Solve the following equations:—

(a)  $8x + 5(x + 7) + 9(2x + 23) - 3(x + 6) = 0$ .

(b)  $\frac{1}{6}(2x - 3) + \frac{3x - 8}{11} = \frac{1}{33}(4x + 15) + \frac{1}{2}$ .

5. The ages of two men differ by 10 years, and 15 years ago the elder was just twice as old as the younger: find the present ages of the men.

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MONDAY, 31ST OCTOBER 1932.

[3 P.M. TO 5 P.M.]

ENGLISH GRAMMAR.

1. (a) Give the plural forms of the following words:—Navy, abbey, mouse, wolf, hero, factory, alley, passer-by, manservant, footman.

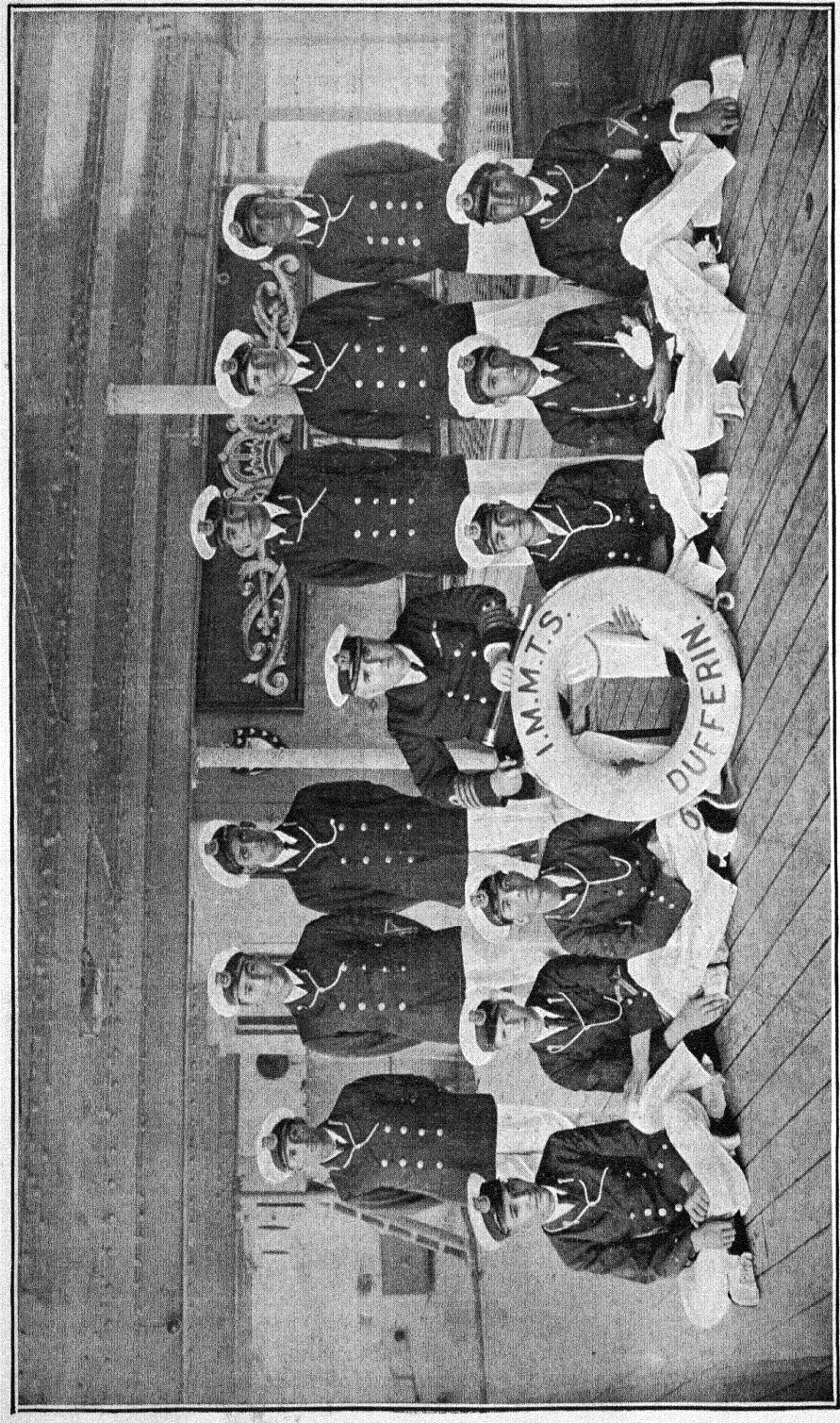
(b) Write down the feminine form of Hero, landlord, author, actor, master, duke, emperor, tiger, nephew, horse.

2. (a) Rewrite the following in the Past Tense in the plural:—(i) I compel myself to do my duty, (ii) He orders her to state what she prefers, (iii) She enters the room and bars the window.

(b) Replace the words italicised by a single word giving the same meaning:—(i) They spoke *in a merry manner*, (ii) He lived *in a happy way*, (iii) The beggar said he was *without a penny*, (iv) The judge was *without mercy*, (v) The boy answered *in a shy manner*.

3. Rewrite the following passage in Indirect Speech, beginning with "John told me that he had heard . . . . .":—I have heard that my friend is trying to enter the "Dufferin". He will first have to sit for an examination, and if he passes he will then go to Bombay for an interview. If he is successful, he will undergo a course on the ship which will last for three years. I hope





Cadet Captains.

he will pass, as he is very keen on going to sea . If you want to see him, I shall arrange for you to do so to-morrow.

4. Analyse the following sentences :—

(a) *William* of Normandy was surnamed “ the Conqueror ” after his conquest of England.

(b) The projecting gables completely *shaded* the open doorways on *summer* evenings.

(c) Have you *carefully* answered all the questions *in* the examination paper ?

5. Parse the words italicised in question 4, viz. William, shaded, summer, carefully, in.

6. Combine the following sentences into one sentence :—

(a) They rode off. They left the ordinary road. They made their way by wild paths. They were well acquainted with these.

(b) The dog could not enter the kennel. The hole was too small. It had been made for a smaller animal. The purchaser had not widened it.

7. Rewrite the following poem in simple prose, in your own words, so as to bring out its meaning clearly :—

(1) Home they brought her warrior dead ;  
 She nor swooned nor uttered cry ;  
 All her maidens watching said,  
 “ She must weep or she will die.”

(2) Then they praised him soft and low,  
 Praised him worthy to be loved,  
 Truest friend and noblest foe ;  
 Yet she neither spoke nor moved.

(3) Stole a maiden from her place,  
 Lightly to the warrior stepped,  
 Took the face-cloth from his face ;  
 Yet she neither moved nor wept.

(4) Rose a nurse of ninety years,  
 Set his child upon her knee ;  
 Like summer tempest came her tears,—  
 “ Sweet my child, I live for thee.”

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TUESDAY, 1ST NOVEMBER 1932.

[11 A.M. TO 1 P.M.].

### GEOMETRY.

1. (a) Draw a triangle of any size. Measure and write down the lengths of the sides in centimetres, and the measurements of the angles in degrees.

(b) Construct a triangle, given that  $AB$  is 3 inches,  $BC$  is 2 inches, and the angle at  $B$  is 60 degrees.

2. Draw two parallel straight lines  $AB$  and  $CD$ , and another straight line  $EFGH$  to cut them at  $F$  and  $G$ . Name two pairs of equal angles of different types, and two pairs of angles, of different types, whose sum is equal to two right angles.

What names are given to (a) the straight line  $EFGH$ , (b) the angles  $AFG$  and  $FGD$ , (c) the angle  $EFB$ , (d) the angle  $FGD$ ?

3. From a lighthouse  $L$  two ships  $A$  and  $B$  are observed in directions South East, and 20 degrees west of South respectively. The ship  $A$  is 5 miles from the lighthouse. The ship  $B$  is observed South-West of  $A$ . How far is the ship  $B$  from the lighthouse and from the ship  $A$ ?

Draw a figure, scale 1 centimetre equals 1 mile, showing the positions of the lighthouse and of the ships.

4. Write out a definition of each of the following, and draw a figure to represent it :—

a circle, a hypotenuse, a median, a scalene triangle, a polygon.

5. (a) Describe a circle, and in it draw a chord, a radius, and a diameter. Name them by means of letters.

Name a major arc, a minor arc, a semicircle, a major segment, and a minor segment.

(b) Describe a circle of radius 5 centimetres, and in it inscribe a square  $ABCD$ . Prove that the sides of the figure  $ABCD$  are equal.

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TUESDAY, 1ST NOVEMBER 1932.

[1 P.M. TO 2 P.M.]

GENERAL KNOWLEDGE.

1. What is there absurd in the following :—

(a) A soldier, writing home to his mother, said : " I am writing this letter with a sword in one hand and a pistol in the other."

(b) Three men laughed : then they suddenly stopped as the eyes of each met the eyes of the others across the table.

(c) The moon is more useful than the sun, for it gives us light in the night, when we really need it, while the sun gives us light in the day, when we do not need it.

2. (a) On your way home by train, at a place 200 miles from home, you lose your ticket and all your money. How would you get home ?

(b) The doors and windows of your room, which is 20 feet from the ground, are locked and you cannot find the keys. Your house catches fire. How would you get out of your room ?

3. Answer *one* of the following questions, *A* or *B* or *C* :—

- (A) Describe very briefly any two great shipping disasters that have occurred in 1932.
- (B) Name six members of the Indian Cricket Team, and give a short account of how they got on in England.
- (C) (i) Between what countries has there been war this year ?  
 (ii) What country has had its form of government changed recently ?  
 (iii) What great flying feat has been performed by a woman within the last six months ?  
 (iv) What great scientific experiment has been successfully accomplished lately ?

4. Answer *one* of the following questions, *A* or *B* or *C* :—

- (A) What is the great point of difference between—  
 (i) an aeroplane and an airship ?  
 (ii) a motor car engine and a steam engine ?  
 (iii) a rifle and a smooth bore gun ?

Why does a bicycle wheel spin round much more easily than a bullock cart wheel ?

(B) What is :—

- (i) the temperature of the human body in good health ?  
 (ii) the population of India ?  
 (iii) the height of the highest mountain in the world ?  
 (iv) the longest river in India ?  
 (v) the finest building in India ?  
 (vi) the name of the instrument which measures temperature ?  
 (vii) the name of the instrument which measures air pressure ?

(C) Name ten each of :—

- (i) the wild animals of India.  
 (ii) the wild birds of India.  
 (iii) the trees of India.

TUESDAY, 1ST NOVEMBER 1932.

[3 P.M. TO 5 P.M.]

### HISTORY AND GEOGRAPHY.

*N.B.*— Answer any four questions in each part.

The time should be equally divided between the two parts.

#### PART I.

(History.)

1. Describe very briefly the reign of Shah Jehan, stating (a) how he made his throne safe, (b) how he reigned, whether well or badly, (c) what conquests

were made in his reign, (d) what British trading posts were established, (e) what happened in the last years of his life, (f) what great buildings were built by him.

2. How did Hyder Ali make himself so powerful? How did he become ruler of Mysore? How was he kept in check? Describe his method of warfare.

3. Lord Dalhousie did a great deal to make India richer and happier than it had been before. Write a short account of how he did this, describing four ways in which the country advanced while he was Viceroy.

4. Name the four races of men who made themselves masters of England one after the other; name the chief king of each. Show how they settled down together and formed one nation. Where did the last of these four races come from? Why was it a bad thing for England that the Plantagenet Kings claimed to be kings of France?

5. What did Charles I do to make the people of England angry by his bad rule? What was Cromwell like as a commander? Give a brief account of his "Ironsides". How did Cromwell's rule make England greater?

6. Write a short account of any three of the following:—

Napoleon; Sir Robert Walpole; John Milton; Sir, Francis Drake; William Caxton; Robert Bruce.

## PART II.

### (Geography.)

1. (a) What is meant by "Land and sea breezes"? How are they caused?

(b) What is the difference between an Oceanic and a Continental climate? What is the reason for this difference?

2. Name (a) five great manufacturing towns (not sea-ports) in the British Isles, and state what they manufacture.

(b) five great coal fields of Great Britain, and describe approximately their position.

3. *Either* (a) Write a brief account of Japan, with regard to its surface, climate, chief towns, and the main occupations of the people. From what great disadvantage does Japan suffer?

*Or*

(b) Name two great mountain ranges, three important rivers, four great ports, and five great lakes in the United States of America.

What are the chief agricultural products of the U. S. A., and in what parts approximately are they grown?

4. What is the most fertile part of India? Which part of it gets most rain? Why is this? Why has it such a large number of rivers? Why are these rivers always well supplied with water? What are the chief crops produced?

5. By moving to different parts of India a person can find all the different kinds of climate that exist in the world. Shew briefly that this is so.

6. Draw a diagram of each of the following constellations, shewing the positions of the chief stars in each :--

(a) the Great Bear, (b) the Bull, (c) Orion, (d) the Little Bear.

Mark the position of the Pole Star.

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TUESDAY, 1ST NOVEMBER 1932.

[5 P.M. TO 5-45 P.M.]

ENGLISH COMPOSITION.

*N.B.*—The story should be read slowly, and again a second time at an ordinary reading pace. Candidates are not permitted to write or take notes during this reading. They will reproduce the story from memory in their own words, after the second reading.

Among the passengers in a ship bound for the West Indies was a little girl, the daughter of a rich American merchant. One day, while she was looking down into the water, a sudden movement of the ship caused her to fall over the side of the vessel into the sea. A sailor named Brown, when he saw what had happened, dived into the water to rescue her, and after swimming several strokes caught hold of her dress and began to drag her back to safety. Suddenly he noticed a huge shark making straight towards him. The ship's crew fired several shots at the shark, but without effect. The monster, opening its frightful jaws, was just about to seize its prey when Brown's son, a boy of about twelve years named John, threw himself into the water. Diving like a fish, he slipped under the shark, and stuck his knife into its body.

Being thus suddenly attacked, and enraged by the wound, the shark left the track of the father, and turned against the son who stabbed it repeatedly with his weapon. The poor boy had little chance against such a terrible creature, and his only hope of safety was to get away as quickly as possible. Several ropes were quickly thrown out from the deck of the ship, and Brown and his son each succeeded in seizing one. Soon they were dragged out of the water, and already cries of joy were heard: "Here they are, they are saved!" But, alas! they were not all saved. The shark, seeing its prey about to escape, made a furious spring, and jumping up out of the water, tore in halves the body of the unhappy boy, while he was still hanging a foot or two above the water. Part of poor John's quivering and lifeless body was hauled up on deck, while the rest was devoured by the shark. But John had not sacrificed his life in vain, for his father and the little girl were saved, and recovered from their fearful experience.

## APPENDIX IV.

## Bengal Pilot Service.

## RULES FOR THE APPOINTMENT OF CANDIDATES TO THE BENGAL PILOT SERVICE.

Appointments to the Bengal Pilot Service are made on behalf of the Government of India by the Government of Bengal in India and by the High Commissioner for India in England. Appointments are made by the High Commissioner only when the Government of Bengal have been unable to make suitable appointments in India.

*A.—Appointments by the Government of Bengal.*

1. Appointments made by the Government of Bengal are ordinarily limited to natives of India. For the purpose of this rule, a native of India means any person domiciled in British India and born of parents habitually resident in India and not established there for temporary purposes only.

2. Candidates must not be more than 22 years of age.

3. Every candidate shall be in possession of a certificate of competency as 2nd Mate (foreign-going). Preference will be given to candidates who have passed through the Indian Mercantile Marine Training Ship "DUFFERIN".

4. Every candidate must produce :—

(i) if he is under 21 years of age, a declaration of domicile in writing by the parent or guardian of the applicant, attested by not less than two responsible persons, and if he is 21 years of age or over a declaration in writing by the applicant himself, attested by not less than two responsible persons ;

(ii) satisfactory evidence to show that he is not over 22 years of age ;

(iii) satisfactory evidence to show that he is of a good moral character.

5. Selected candidates, before being appointed, shall undergo a medical examination before the Medical Board at Calcutta.

*B.—Appointments by the High Commissioner for India.*

(i) Candidates must not be more than 22 years of age.

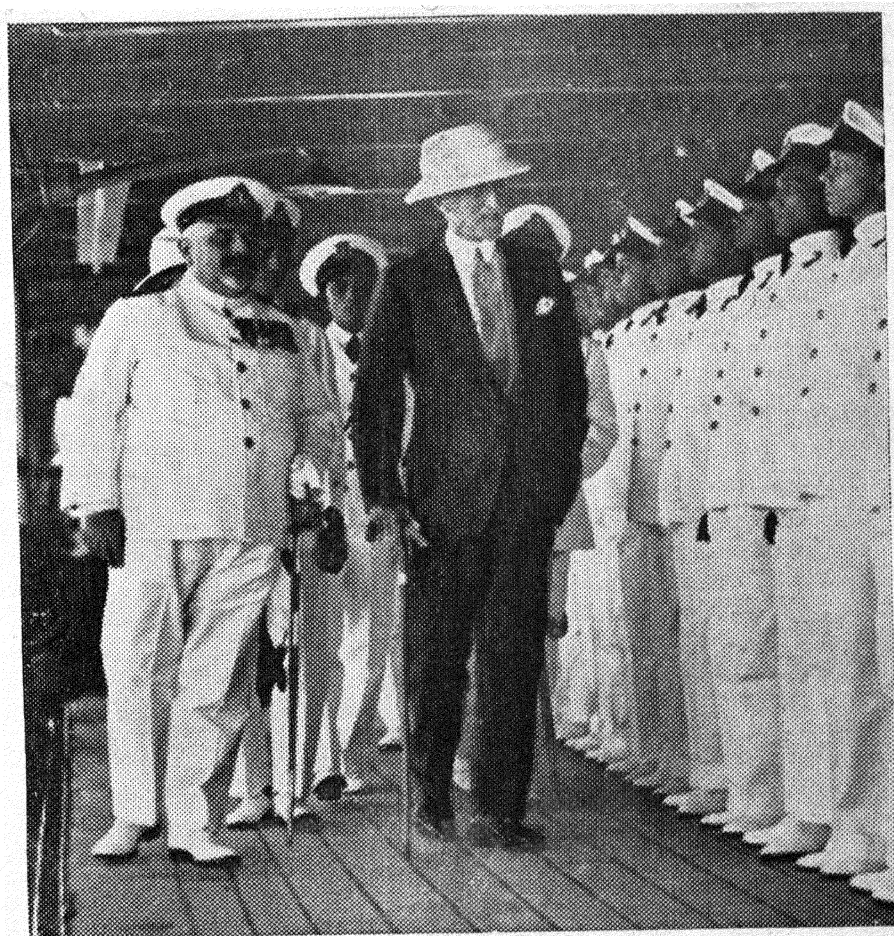
(ii) Every candidate shall be in possession of a certificate of competency as 2nd Mate (foreign-going). Preference will be given to candidates who have passed through one of the Training ships "WORCESTER" and "CONWAY" or through the Pangbourne Nautical College, followed by a course in a sea-going training ship or in the Royal Naval Reserve.

(iii) Every candidate must produce satisfactory evidence to show that :—

(1) he is not over 22 years of age, and

(2) he is of good moral character.

(iv) Selected candidates before being appointed shall undergo a medical examination before the Medical Board at the India Office.



Lord Willingdon inspecting the Cadets.



**APPENDIX V.****CADET'S EQUIPMENT.***List (a).*

To be purchased on joining Ship's Authorised Tailor—Cost Rs. 115 (Approximate) :—

- 1 Coat. Blue Serge—double breasted (Uniform).
- 3 Tunics. White drill—single breasted (Uniform).
- 3 Trousers. White drill—non turn up.
- 2 Caps uniform—patent peack—moire band and badge.
- 3 Cap covers—marcella.
- 6 Uniform buttons, large.
- 4 Uniform buttons, small.
- 4 Shirts Dungree Blue (Uniform).
- 4 Shorts Dungree Blue.
- 2 Shorts Black for games.
- 2 Pairs of black shoes.
- 1 Pair white canvas shoes (no toe caps).
- 6 Pairs black stockings (woollen).
- 2 Pairs Games stockings.
- 4 Pairs socks black (cotton).
- 1 Sun Helmet. Service pattern (Optional).
- 2 Boiler Suits.
- 1 Working Coat.
- 1 Bathing Costume.

*List (b).*

Obtainable through Ship's Canteen approximate cost on joining Rs. 30 :—

- 1 Bathing Slip.
- 2 Lanyards.
- 2 Blazer badges.
- 1 Belt, leather.
- 1 Tooth brush, paste and Soap.
- 1 Pair of Flashes.
- 1 Tie, Black.
- 1 Clasp knife.
- 1 Copy Norie's Tables.

*List (c).*

To be arranged for privately, but these articles are also purchaseable through the Ship's Tailor at an approximate cost of Rs. 60 :—

- 1 Pair Football boots.
- 1 Pair Canvas rubber shoes
- 1 Pair braces.
- 4 Vests cotton.
- 8 Shirts white tennis.
- 4 Sleeping suits.
- 8 Handkerchiefs, white.
- 4 Pillow Cases.
- 4 Napkins.
- 4 Sheets.
- 4 Towels.

**Notes** :—1. At the commencement of the 2nd term 1st year the Cadet will require as his own personal property.

- 1 Nichol's Seamanship ..... Rs. 11/0 and at the beginning of the 2nd Year, one Admiralty Manual Rs. 4/8/0.

These books will be supplied by the ship and charged in advance in the bills sent at the end of the first year.

- 2. It is found by experience that the total annual replacement of above equipment through wear and tear amount to about Rs. 40 approximately. Where necessary such replacements will be made through the ship's suppliers and their bills, duly approved by Captain-Superintendent, will be sent to the Parents for direct payments during the term.







