THE NAUTICAL DEPARTMENT OF THE PHILIPPINE SCHOOL OF ARTS AND TRADES.

W. W. MARQUARDT, Superintendent, Philippine School of Arts and Trades.

THE nautical department of the Philippine School of Arts and Trades will be established at the beginning of the coming school year. The courses in navigation will be taught by experienced officers from the Bureaus of Navigation and Customs. Closely allied academic subjects will be taught by members of the faculty of the Philippine School of Arts and Trades. The beginning class will be limited to 40 students. Entrance requirements in brief, are as follows: The completion of the intermediate course, good character, sound body, and an agreement signed by the parent that the applicant for admission will complete the course and will take up seamanship as a vocation. All applicants must be between 16 and 21 years of age.

For the first two years of the course, the classes will be held in the Philippine School of Arts and Trades. During the last eighteen months the schooling will consist of practical training on board interisland vessels. An agreement has been entered into between the Government and the Shipowners' Association as follows:

The Government agrees to offer a course in navigation in the Philippine School of Arts and Trades which will be sufficiently thorough to enable young men, after further practical experience, to qualify as ships' officers. The Government also agrees to use its best efforts to stimulate enthusiasm for this course and to select, at the beginning of each school year, of the candidates presenting themselves, not more than forty to take said course.

The Shipowners' Association agrees to furnish facilities including food and quarters upon interisland boats for practical training to students in this course at the rate of one student per vessel during the vacation period, if requested by the Government, and for at least eighteen months after the course has been completed. It also agrees that these boys will be given every opportunity to acquire practical knowledge regarding the maintenance and navigation of ships, and to this end agrees that students, upon reporting to the ship, will be assigned to duty as apprentices. The time of said apprentices will be spent at such duties as the masters of the ships may direct. Before reporting on shipboard students who have completed the course will sign articles agreeing to serve as apprentices for the above period of eighteen months and during such period will receive in addition to food and quarters an allowance of fifteen pesos a month.

The Shipowners' Association also agrees to use its best efforts to find permanent employment at suitable remuneration for students who have completed the course of study in the school and their apprenticeship on steamers.

With the exception of the academic subjects, the texts of the International Correspondence School will be made the basis for all classroom instruction. These texts are described by the publishers in the following manner:

The mathematical subjects contain only such matter as will be useful to the student in his subsequent studies and in his career as a practical navigator. He is led, step by step, from simple operations in arithmetic to the solution of problems in spherical trigonometry.

The texts on elements of navigation, deviation and compass compensation, chart, lead, and log, piloting, and dead reckoning contain detailed explanations of all methods properly belonging to navigation by dead reckoning, beginning with definitions of latitude and longitude and gradually taking up the various methods and instruments used in fixing a ship's position at sea without the aid of astronomical observations.

The important subject of deviation and compass compensation is explained in an exhaustive treatment of 50 printed pages, illustrated with numerous cuts and colored diagrams. Special stress has been laid upon how to convert a compass course into true course, and conversely; and how to allow properly for all errors affecting the course run by a ship. All standard types of instruments used in the navigation of a ship are carefully explained, as is also chart work and the construction of Mercatorial charts.

In the text on "piloting" the student will find explained all principal methods employed in fixing the position of a ship when navigating in sight of land. In this text is included also a description of submarine signaling. The different methods of sailing are explained in the text on "dead reckoning." Numerous solutions are given, showing how latitude and longitude are found by each method. Under the heading of "day's work" are given several cases worked out in detail, showing plainly the actual work performed in fixing a ship's position by dead reckoning. The text on "nautical astronomy" gives full explanations of the principles underlying the methods on which a ship is navigated by the aid of celestial bodies. It explains the systems of coördinates of the celestial sphere and the apparent position and elements of objects used in celestial navigation. The sextant, its errors, adjustment, and use are fully explained

and profusely illustrated, as are also the different corrections that have to be applied to an altitude measured in an artificial or on the sea horizon. Careful attention has been given to the different kinds of time and the relation of one interval of time to another. The same may be said of the astronomical elements found in the Nautical Almanac and the determination of the meridian passage of celestial bodies.

In the text on "latitude" will be found all standard methods of determining latitude by observation of celestial bodies. Each method is illustrated by one or more examples worked out in minute detail. Longitude and Azimuth explains in detail how the longitude of a ship is fixed by observing the hour angle of a celestial body and how the deviation of the compass is determined at sea by azimuth observations. In Sumner's Method a detailed graphic description is given of the fixing of a ship's position at sea by astronomical crossbearings. Ocean meteorology deals with the most important subjects coming under that heading. It contains information relating to weather, the use of the barometer, and the law of storms. Descriptions and charts of the principal oceanic currents are given, including wind charts, showing the prevailing wind directions for certain times of the year. The subjects of tides and tidal currents are fully treated, and considerable space is devoted to suggestions relative to the handling of vessels in heavy weather. International Rules and Signals contains the revised rules for preventing collisions at sea, a thorough description of the international code system and other important signals, the United States Life-Saving Service, and suggestions for procedure in case of accidents at sea. Nautical Tables contains all tables necessary for ocean navigation. This course makes up a complete course of instruction for the practical navigator.

A bulletin containing the announcement of the opening of this department is being printed for distribution to each division. It outlines the nature of the work of marine officers, the opportunities offered for advancement in this vocation, and the course to be given. Blanks for physical and medical examinations, and for the agreement between the parent of the student and the Government of the Philippine Islands will be furnished upon application to any division superintendent.