

Harvard Observatory is carried on in co-operation with other institutions. Prof. Pickering has also assisted largely in the organisation of amateur astronomers in America, especially for the observation of variable stars, in which thirty observers are now associated. For this work the observatory has furnished suitable charts, and determinations of the magnitudes of nearly 5000 reference stars.

Harvard Circulars Nos. 203 and 204 have also been received. The first includes particulars of asteroids which will attain magnitude 10, or brighter, during 1918, and the second contains a valuable summary of the observed magnitudes of Nova Persei No. 2 from 1902 to the end of last year, together with a list of comparison stars suitable for future determinations.

THE CANADIAN "OBSERVER'S HANDBOOK."—A useful service to its members is rendered by the Royal Astronomical Society of Canada in the annual publication of "The Observer's Handbook." It includes a collection of astronomical data, referring especially to the sun, moon, and planets, arranged very conveniently in the form of a calendar. There is also a special list of occultations, calculated for Ottawa. Tables which vary but little from year to year have been omitted from the present issue.

EPIHEMERIDES OF ALGOL VARIABLES.—In the *Journal des Observateurs*, vol. ii., No. 4, M. Luizet has given a valuable series of tables, from which observers can readily prepare a list of the dates of occurrence during the present year of minima of 123 variables of the Algol type. The epoch of the first minimum occurring in each month is given in the first table, and the length of period, and multiples thereof, in the second. The variables are designated by the notation of André, as well as by that of Argelander.

### THE TRAINING OF THE FRENCH ENGINEER.

IN the *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* for September-October last appears a valuable report of the proceedings of the Society of Civil Engineers of France concerning the training of engineers of the first rank, alike for the special services of the State and for leading positions in industry. Not only is the specialised training required considered in the article, but also the previous preparatory education. The matter arose on the presentation of an important communication from M. Léon Guillet, a member of the society, which was considered at a special session of the society held on November 3, 1916, at which the Minister of Commerce and Industry presided. The communication embraced a comparative study of the subject of technical training as it is pursued in France and abroad, a thoughtful criticism of the existing means and methods of such instruction and the preparation required for it, and an expression of personal views as to the lines upon which in future both preparatory and technical studies should proceed. A special commission was appointed, which sat during five sessions, extending to the end of April, 1917, and took important evidence from professional and other persons engaged in engineering.

An official invitation was received by the society in January, 1917, from the Minister of Commerce and Industry, to formulate proposals for the essential modifications required, in its opinion, to be introduced to ensure the more efficient education and training of professional engineers. These proposals take the form of recommendations relative to reforms in the aims and methods of secondary education, as a preparation for higher

technical schools, in which it is suggested that the classical studies should be lessened, the teaching of modern languages encouraged, and courses in manual exercises introduced. It is also suggested that the plan of instruction should be arranged so as to meet the needs on one hand of those proceeding to higher normal schools, and on the other of those entering the technical high schools.

Great importance is attached to the necessity for the fullest opportunity of laboratory practice in the technical high schools, and for the encouragement not only of a spirit of individual research and inquiry in the students, but also of a more intimate relation between them and the teaching body with less merely *ex cathedra* teaching. It is laid down as essential that the directing and teaching *personnel* of the engineering schools shall be recruited from persons actively associated with industrial conditions, and that the students themselves shall have had the opportunity of work in the factories and of travel-study in the workshops of France and in foreign countries. The vital importance of the economic aspect of industry is insisted upon, and with the view of increasing French influence abroad, every encouragement should be given to foreigners to follow in whole or in part the instruction in the technical high schools, and, finally, it is recommended that so far as possible the native pupils shall be admitted without fee, and assisted, where necessary, by loans without interest. It is suggested that regular military training shall be maintained in these schools, that the time spent in them shall count as two years in the Service, and that the one year of effective service shall consist of six months with the colours and six months in the service of the State or in industries susceptible of contributing to the national defence, or in camp instruction for officers.

Proposals are made for further specialised and advanced instruction of a post-graduate character, and after the manner of the newly founded High School of Electricity, it is suggested that institutions dealing respectively with machinery and iron and steel construction, metallurgy, chemistry, textiles, public works and railways, and naval construction should be established, and short technical courses of a very advanced character dealing with the most recent progress in technical science offered to professional engineers engaged in works. The proposals are further elaborated in a long communication from the vice-president of the society to the Minister of Commerce and Industry which is well worthy of the attention of the engineering profession in this country.

### NEMATODE PESTS.

PROF. WARRINGTON YORKE and Dr. B. Blacklock (in *Annals of Trop. Med. and Parasitology*, vol. xi., No. 2, 1917) have recorded a series of interesting observations on the periodicity of the larvæ of the nematode worm, *Filaria bancrofti* (nocturna), in an Australian who contracted the infection in Queensland. It is well known that during the night the larvæ of this species are concentrated in the cutaneous vessels, while during the day they are present there in small numbers only. The authors estimated the number of larvæ in the cutaneous blood every two hours for a period of twenty-four hours on December 21-22, 1916, and again on January 5-6, 1917. The maximum concentration observed was at midnight, when there were 12,850 larvæ per cubic centimetre. Although the number of larvæ fell to a low level during the daytime they were never absent, the minimum number noted being 50 per c.c. of cutaneous blood. A discussion of the ob-