den and Lusk; *United Kingdom*, Profs. E. H. Starling and T. B. Wood. The conclusions agreed upon by the Commission are summarised in the following paragraphs:—

(1) The Commission has decided to state the weights of the various foods produced in each Allied country in metric tons.

(2) The Commission has decided that it is not desirable to fix a minimum meat ration in view of the fact that no absolute physiological need exists for meat, since the proteins of meat can be replaced by proteins of animal origin, such as those contained in milk, cheese, and eggs, as well as by proteins of vegetable origin. The Commission, on the other hand, resolved to fix a desirable minimum ration of fat. This desirable minimum ration amounts to 75 grams per average man per day. The ration will be made up of (i) fats of vegetable origin and (ii) fats of animal origin. If the amount of fats of vegetable origin is insufficient for this purpose, it may be necessary to maintain a certain stock of animals to furnish a sufficient quantity.

(3) The Commission has established the "man value," *i.e.* the number of average men equivalent to the population of each of the Allied countries. This man value is taken as the basis for calculating the exact amount of food which must be provided for the adequate nourishment of the total population of each country.

(4) The Commission has considered estimates in tons of the home productions of the soil furnished by each Allied country for the year 1918–19. These statistics will serve as a basis for determining the amount of food available for men and for animals respectively in each country.

(5) The Commission recommends that each delegation, in calculating the amount of calories available for men, should assign to men the maximum possible proportion of all cereals except oats.

(6) The Commission is of opinion that a uniform average milling extraction of 85 per cent. for wheat be adopted throughout the Allied countries. It is recognised that this extraction may vary from 80 per cent. in summer to 90 per cent. in winter, and that it can apply to the United States only as regards their internal consumption, and then only in case of scarcity.

(7) The Commission recognises that the methods adopted for reserving the maximum possible proportion of the cereal production for the use of man may vary in each country. Man should always take precedence over animals in the allocation of food by the Governments. If this principle be accepted, the Commission is of opinion that in the fixing of prices it is the prices of animal products which should be limited rather than those of such vegetable products of the soil as may serve equally well for feeding men and animals.

Thus the production of veal, pork, and poultry at the expense of food available for man should be discouraged, and this is best achieved by fixing a price for those animal products which will make it unprofitable for the producer to feed the animals on cereals.

(8) The Commission reserves for its next meeting the task of examining the figures which will enable it to determine the calorie value of the home production of each of the Allied countries during the year 1918–19. The determination of this figure compared with the needs in calories of the population of each country will enable the Commission to deduce either the amount of imports necessary for the maintenance of the population or the exportable surplus, as the case may be.

(9) The Commission is of opinion that in all the Allied countries any propaganda having for its object the encouragement of food production and of economy in the use of food should be organised and directed by men of science well acquainted with these subjects.

THE NEW STAR IN AQUILA.

CONTINUED observations appear to indicate that the new star in Aquila is following the normal course of such objects, as exemplified especially by Nova Persei (1901) and Nova Geminorum (1912). The increase of brightness from about magnitude 0·9 at the time of discovery on June 8 to a brightness equal to, or greater than, that of Vega (0·1 m.) on June 9 was succeeded by a steady decline, so that on June 16 the star was reduced to about second magnitude. Nova Persei showed a closely similar rate of fading, from near magnitude 0 on February 23 to magnitude 2 on March 2, and if this precedent be followed, Nova Aquilæ may be expected to reach the third magnitude about June 21, and the fourth magnitude about ten days later. Small oscillations, however, may possibly accompany the general decline.

The spectrum of the nova also appears to have followed the expected sequence of changes, so far as can be gathered from the brief reports presented at the meeting of the Royal Astronomical Society on June 14 by the Astronomer Royal, Mr. Harold Thomson, and Prof. Fowler on the visible spectrum, and by Prof. Newall, Father Cortie, and the Rev. T. E. R. Phillips on the photographic spectrum. The spectroscopic observations may be conveniently summarised by comparison with previous novæ, as discussed by Sir Norman Lockyer in a memoir on the phenomena of new stars published by the Solar Physics Committee in 1914. It is there shown that there are four distinct stages in the history of a nova as revealed by its spectrum: (1) A stage of short duration in which the spectrum is continuous, or continuous with dark lines, occurring during the rise to maximum brightness. (2) The bright-line, or "typical nova," stage, where the outstanding feature is a spectrum crossed by broad bright bands, many of which are accompanied by absorption bands on their more refrangible edges; the brightest lines are those of hydrogen, but enhanced lines of iron are also prominent. (3) A stage marked by the presence of a bright band of unknown origin about λ 4640, which is sometimes the brightest in the whole spectrum. (4) The nebular stage, characterised by the bright lines of gaseous nebulæ, of which 5007 and 4959 are the brightest in the visible spectrum.

The first stage was shown in Nova Aquilæ by observations immediately after the discovery, and in observations by Prof. Newall and Mr. Thomson on June 9. It is especially fortunate that the latter part of this transient stage was caught by Father Cortie in a photograph taken at Stonyhurst on June 10, in which dark lines, somewhat resembling those of Procyon, are the chief feature in the blue and violet parts of the spectrum, although bright lines in the visible spectrum were noted on the same evening by other observers.

The second, or "typical nova," stage had become well developed by June 11, as shown by

both the visual and photographic observations. The Cambridge photographs of June 13 are particularly valuable in having α Cygni as a comparison spectrum, thereby confirming Sir Norman Lockyer's conclusion that many of the enhanced lines which are so prominent in this star are reproduced as bright lines in the spectra of novæ. Later observations communicated to us by Prof. Fowler show that this stage continued up to June 16, when his last observations were made. The bright C and F lines of hydrogen, and the enhanced lines of iron $\lambda\lambda$ 517, 502, and 492, have remained the most conspicuous features of the visible spectrum since bright lines appeared, and the diminishing luminosity of the star has been accompanied by a marked reduction in the intensity of the continuous spectrum.

On June 12 it was found that the bright fringe on the red side of the dark band about λ 589 had become a definite bright band, having a narrow dark line near its red edge, the whole group being probably identical with that shown in photographs of Nova Persei taken at the Yerkes and Lick Observatories, which clearly proved that the narrow line was sodium D. Revised estimates of the two bright lines between C and D suggested identity with lines about λ 615 and λ 625 shown in the Yerkes photographs of Nova Persei, and a fainter line was noted about λ 641. Two vague brightenings were also observed between F and G. On June 13 the dark band about D was much reduced in intensity, while that about λ 560 had become considerably stronger. On June 15 and 16 the principal change was the reduced intensity of the continuous spectrum and the consequent greater clearness of the bright lines between 517 and D. If the nova progresses at the same rate as Nova Persei, the third stage may possibly be entered upon about the end of the first week in July.

With reference to the probable distance of the nova, direct determinations of the parallax will necessarily occupy a considerable time. The circumstance that nearly all novæ have occurred in the Milky Way, however, furnishes strong evidence that these objects are actually situated in the Milky Way, and, therefore, at distances of the order of, say, 3000 light-years.

THE NEW SYSTEM OF TIME-KEEPING AT SEA.

AN article in NATURE for April 25 described the new system of time-keeping at sea which was adopted last year by the British, French, and Italian Admiralties. The Board of Trade has now published a memorandum on the subject, with a coloured chart, adapted from a similar one prepared by the "Service hydrographique de la marine française." Reference may also be made to useful explanatory articles by M. J. Renaud in "Annuaire du Bureau des Longitudes, 1918," and in *L'Astronomie* for April, 1918.

The chart illustrates the international time system both by land and sea. The countries and States that have adopted it are coloured either red or blue, red denoting Greenwich time, or time differing from it by an even number of hours, while blue denotes a difference of an odd number of hours. A few countries (India, South Australia, Venezuela) use time differing from Greenwich time by an odd number of half-hours; these are coloured violet on the chart. The remaining countries are coloured yellow. Inspection of the chart shows what great progress the international time system has already made. The whole of Europe except Russia, almost the whole of Africa, Japan, Australia, North America, Peru, and Brazil have adopted it. It is not improbable that its adoption by ships may lead to still further extension of it on land.

It is much to be regretted that the Board of Trade uses the term "zones" to denote the regions that keep the same time. The use of this term ought to be confined to the designation of belts parallel to the equator, not at right angles to it. It is much better to employ the term "fuseau," which the French have adopted, unless a suitable English name can be devised.

Inspection of the chart shows that the boundaries of the "fuseaux" on land do not strictly follow the theoretical meridians; they frequently deviate to some political boundary not far away, in order to keep the same time throughout a country or State. It is obviously convenient for a ship while in territorial waters to keep the time observed on the adjacent coast; local tide tables, etc., would be given in this time. But when on the high seas it should change its clocks at the nearest convenient moment to the time of entering the new "fuseau" (say, at the nearest change of watch).

It is important to note that the change of system is wholly in the direction of greater simplicity. Hitherto there have been two entirely distinct sets of timepieces on board: the chronometers, used in navigating the ship, which keep Greenwich time; and the ship's clocks, used for the ordinary purposes of daily life; these have usually kept local apparent time, being set about noon on each day, sometimes twice a day if the ship was travelling very rapidly. For the future all clocks on ships in all parts of the world ought to show the same minute as the gate-clock at Greenwich, the difference being in the hours only.

The French and English have adopted different modes of numbering the "fuseaux." Both agree to call the Greenwich "fuseau" (extending from $7\frac{1}{2}°$ W. to $7\frac{1}{2}°$ E.) zero; the French number the "fuseaux" to the east of this +1, +2, +3, in succession, up to +23 for the "fuseau" just west of the zero one. These numbers give the correction to apply to Greenwich time to obtain ship's time. The English system uses two series of numbers, each from 1 to 12, negative to the east, and positive to the west, thus giving the correction to apply to ship's time to obtain Greenwich time. It matters little which is done, provided the system is understood. It is recommended that the "fuseau"-number be always displayed on the