added, diatom cultures did not develop, but when to such artificial sea-waters traces (say 1 per cent.) of natural sea-water were added, very good growth occurred. Experiments indicated that probably an organic substance in the natural sea-water stimulated growth, but its composition was still quite unknown. The culture method had also been used to obtain a minimum figure for the number of organisms living in a given volume of natural sea-water, and had shown that, whereas the number obtained in the usual way with the centrifuge was 14,000 per litre for a particular sample, there must actually have been at least 460,000 per litre.

Dr. E. C. Jee directed attention to the necessity for elucidating the movements of the current of dense water which pours out of the Mediterranean and forms an intermediate layer in the deeper waters of the near Atlantic Ocean. It seemed to him likely that the current moves northward, and in certain circumstances comes to the surface within the region of the pelagic fisheries of the British south-western area. It is important to ascertain the influence of this current on the northward migration of planktonic organisms and on the migrations of plankton-feeding fishes, and the investigation of its boundaries would throw light on the salinity variations observed in the surface waters of the English Channel, which are known to exhibit varying degrees of periodicity.

Mr. C. Tate Regan remarked that the study of the ocean was important in many other ways than in relation to fisheries, *e.g.* it was found, during the war, that a knowledge of salinity and currents was of great value in regard to submarine operations and the course of drifting mines. He suggested that work oversea should include the investigation of the seas on the coasts of our colonies; the fauna of the great area within the 100-fathom line that surrounds the Falkland Islands and extends northward to Montevideo is known only from two hauls made by the *Challenger* and five or six by the *Albatross*. In view of the pre-eminence of our Navy, mercantile marine, and fisheries, this country should lead the world in oceanographical research.

Prof. C. A. Kofoid pointed out that the magnitude of oceanographical problems and their diversity necessitate a definite but flexible programme and the co-operation of many investigators, for without such co-operation results must be fragmentary. Standardisation of methods, elimination of unnecessary duplication, and international co-operation are indispensable. He remarked upon the need for a monthly bulletin which should contain a bibliography of the subjects in this field of work together with synopses of the contents of these papers—a work which might well be undertaken by the International Commission for the Investigation of the Sea. He referred briefly to the project for the renewed exploration of the Pacific which is under consideration by a committee of the National Research Council of the United States.

Prof. J. E. Duerden urged that in the organisation of any extensive scheme of research in oceanography, or of a new *Challenger* expedition, the possibility of assistance from, and co-operation with, the various Dominions should be kept in mind. He had no doubt that, upon proper representation being made, the Union of South Africa would take its part, both financially and in *personnel*.

Mr. F. E. Smith, director of scientific research at the Admiralty, stated that his department had considered the question of a new *Challenger* expedition, and was of opinion that such an expedition was required, and he felt sure that the Admiralty would take its share in the organisation thereof.

At the close of the discussion a resolution was unanimously agreed to pointing out the importance of urging the initiation of a national expedition for the exploration of the ocean, and requesting that the council of the British Association should take the necessary steps to impress this need upon his Majesty's Government and the nation. On the following day, at the Committee of Recommendations, this resolution also received vigorous support from other sections, *e.g.* those dealing with chemistry, physics, geology, and geography, in all of which, as well as in zoology, investigations are required which could be undertaken by such an expedition. The General Committee of the Association recommended the Council to appoint an expert committee to prepare a programme of work and to consider the *personnel* and apparatus required. It is the hope of all those who have heard the cogent reasons for the expedition that it may be possible for the Government, in the not distant future, to undertake this great enterprise.

The New Star in Cygnus.

FROM the occasional observations which I have been able to make of the nova in Cygnus, I have formed the impression that the star has followed the normal course for such objects, except that the rise to maximum may have been more prolonged, and the subsequent decline in brightness more rapid, than usual. On August 22, two days after discovery, bright lines were not discernible with a small spectroscope attached to a 3-in. refractor, thus suggesting that the maximum had not then been reached. The star was seen for a short time on August 23, when it had risen to nearly second magnitude, but there was no opportunity of making spectroscopic observations. On August 26 observations were made by Sir Frank Dyson and myself with the 12-in. reflector of the Penylan Observatory, Cardiff, from 10h. to 11h. G.M.T. The star was then very slightly brighter than δ Cygni, but not so bright as γ Cygni, so that its magnitude would be about 2·8. Bright lines were then well developed, Hα being conspicuous, and also the group of four lines in the green assumed to be Hβ, 4924, 5018, and 5169. On August 28, so far as could be observed with a 3-in. telescope (in London), the spectrum showed no marked change, though the star had then fallen to nearly fourth magnitude.

A. FOWLER.

The announcement of the discovery of the new star in Cygnus was received at the Hill Observatory, Sidmouth, on the afternoon of August 21, but the cloudy state of the sky prevented any observation being made on that night. The sky was, however, clear on the night of August 22, and several photographs of its spectrum were secured. The following table sums up the observations taken since that date, and shows the fluctuations in magnitude recorded and the number of photographs of the spectra taken :—

Day.	State of Sky.	Estimated Magnitude.	No. of Spectra obtained.
21	Cloudy	—	—
22	Clear	2·8	4
23	Cloudy	—	—
24	Clear	2·2	3
25	Clear	2·2	5
26	Clear	2·8	4
27	Cloudy	—	—
28	Clear	3·6	3
29	Clear	3·8	4

On the night of August 22 the spectra were all very closely similar to that of α Cygni, the type of star

which presents the most prominent enhanced-line stage. The nova spectra indicate dark hydrogen absorption lines only a little broader than those in α Cygni, and the dark enhanced lines are sharp and well defined, and correspond line for line with those in α Cygni. The only conspicuous bright lines are those at Hγ and at Hβ and to the red side of Hβ. The nova had increased in magnitude by August 24, and all the lines in the spectrum became more diffuse and broader, the bright lines increasing in number towards the violet.

On August 25 the star was estimated to have retained the same magnitude as on August 24. All lines appeared a little more diffuse and the bright lines more conspicuous.

Dimming down to magnitude 2·8 on the night of August 26, the main spectral changes indicated an increase in intensity and width of the bright lines, so much so that the dark hydrogen lines became less broad, owing to the overlapping of the bright components. By August 28 the magnitude of the nova had reduced considerably, but the spectrum exhibited no great changes except that the bright hydrogen components showed signs of splitting up into two parts. On the night of August 29 the fall in magnitude had decreased somewhat, the star being about 3·8. The splitting up of the bright hydrogen components was more pronounced. All photographs exhibit extensive movement in the line of sight.

The foregoing general features illustrate only the most conspicuous changes in the spectrum up to date. The nova seems now to be following the ordinary course of the sequence of phenomena of previous new stars. WILLIAM J. S. LOCKYER.

This object continued to brighten until the night of August 23, when it attained the second magnitude; since that date the decline of lustre has been considerable, and on August 29 I estimated the magnitude as 3·9.

It is probable that in a week's time the star's light will be reduced to the sixth magnitude, in which case it will only be just visible to the naked eye on a clear, dark night.

The astronomical world has been fortunate during the last twenty years in being able to study the phenomena of three bright temporary stars, viz. Anderson's Nova Persei of 1901, Nova Aquilæ of 1918, and the one now visible. W. F. DENNING.

British Agriculture during Great War Periods.

A VERY interesting article by Lord Ernle appears in the June issue of the *Journal of the Ministry of Agriculture*. The subject is "Agriculture during Two Great Wars," and the state of agriculture in Great Britain during the Napoleonic wars is compared and contrasted with that prevailing during the recent struggle.

Shortage of corn was the great fear of our ancestors, and if the home harvests were deficient the deficiency had to be met by supplies from Northern Europe. But, since the climatic conditions of the two regions are practically the same, scarcity at home generally meant scarcity abroad. The weather was of the utmost importance, and everyone watched the skies with great anxiety. Provision for such a deficiency was, therefore, one of the main features of the Corn Laws down to 1815. If home harvests were abundant, then exports were encouraged by a bounty and imports of foreign corn were limited. Foreign corn, with its additional costs of freight and insurance, could rarely have lowered the price of English corn, while during scarcity home consumers benefited from the large corn acreage which was maintained by the export bounty. Between 1801 and 1816 the yearly average of foreign wheat imported was under 600,000 quarters, while in 1821 the imports were only 450,000 quarters. Yet between 1801 and 1821 the number of people supplied with home-grown breadstuffs had risen from 14,000,000 to 20,500,000.

Weather conditions were adverse for the greater part of the Napoleonic wars, yet food was not rationed, neither were prices controlled. The Government probably relied on the high prices to prevent extravagance in the use of a scanty supply. The condition of some of the poor people was improved by increases in wages and by the distribution of privately raised funds. To give relief the Poor Law was invoked, and this was a fatal blunder, the full consequences of which appeared only after the peace. Various other measures were adopted at different times: bread could not be sold until it was twenty-four hours old; the manufacture of spirits and starch was suspended; rice and maize were imported to mix with cornflour; the growth of potatoes was encouraged, and the corn bounties rose continually.

In spite of all this, the war period was a time of great prosperity for landowners and farmers. Enormous sums were spent on the erection of farm buildings, cottages, etc., and on the reclamation and improvement of land. A much higher standard of farming was adopted, and a better class of men was attracted to the land. After the war wages fell, unemployment was rife, and a period of great poverty followed. During the succeeding hundred years the economic importance of agriculture dropped from one-third to one-twentieth in terms of gross national assessment. The breadstuffs grown in 1821 would have supplied double the number of people provided for in 1914, and the agricultural interest, which was paramount in 1814, has now lost the greater part of its political power.

Naturally, these changes have been reflected in the agricultural policy adopted during the recent war. Although the agricultural industry has prospered, its prosperity has been small as compared with the period 1793–1815. The incentive of high gains, which provided the spur for great efforts during the French war, was not allowed to operate fully. During the latter part of the recent war much more was done for the consumers than for the producers, and the great exertions of the farmers in the face of unexampled difficulties were therefore all the more creditable. Fixing a flat maximum price for wheat meant that what was a good price in a good year would be a bad price in a bad year, and the whole loss fell on the farmer. In the French war the poorest consumers were subsidised out of the rates, while in the late war all consumers were subsidised out of the taxes. In all probability the farmer saved the taxpayers about 25,000,000*l.* between the years 1917 and 1919. The farmers experienced further difficulties in the shortage of labour, and to have secured an increased food-supply under these conditions was not only a notable achievement, but also a most valuable contribution to victory.

The labourer was the worst sufferer after the French war, but during the recent war and since the armistice agricultural wages have been increased and the hours of labour have been shortened. It is now universally recognised that the position of agricultural labourers must be improved. If high wages and shorter hours result in greater efficiency, then the industry will prosper; if they do not, then the industry will exist only under conditions which restrict employment. Lord Ernle concludes: "It rests with the men—and their leaders. Unless a new earth is created, there can be no new heaven to inherit."