

Warnes (Common Commodities and Industries Series).—*John Wiley and Sons, Inc. (New York), and Chapman and Hall, Ltd.*—Mechanical Drawing, J. S. Reid.

MISCELLANEOUS.

Oxford University Press.—The Bantu and the Semi-Bantu Languages: A Comparative Study, Sir Harry H. Johnston; Slavic Europe: A Selected Bibliography in the Western European Languages, R. J. Kerner; World Power and Revolution, E. Huntington; Some South Indian Villages, by a number of Indian Students, the first volume of Economic Studies, edited by Prof. G. Slater, illustrated.

METEOROLOGY DURING AND AFTER THE WAR.¹

DURING the past four years and a half of hostilities meteorology has, like many other branches of knowledge, been utilised in naval and military operations to a far greater extent than ever before. Consequently, there are now a large number of officers in the Services who have had practical experience of the value of meteorological information when it has been prepared from sufficient data, and by men who have been thoroughly trained in the subject. It is, therefore, highly desirable that full advantage should be taken of the experience which has been gained during the war in order to meet, as adequately as possible, those demands which will be made upon meteorology in the general reconstruction which is now beginning.

In some ways the conditions which prevailed during hostilities were favourable to advances in the subject. Special facilities were given for the rapid transmission of reports; kite-balloons could furnish series of observations at various heights; aeroplanes were available to observe the temperature in successive layers of the atmosphere up to 12,000 ft. or 14,000 ft.; the velocity and direction of air-currents up to even 25,000 ft. were determined by the bursting of shells fired at high angles; pilot-balloons at perhaps a hundred stations were observed four or more times daily. In these and other ways a vast store of information has been amassed which has already been utilised, but remains available for much more detailed study in the immediate future; and not the least difficult problem will be to reduce the mass of information to a manageable and orderly arrangement.

There were in 1914 in this country the State Meteorological Service (the Meteorological Office) and a Naval Meteorological Service, which had been formed in 1913 to meet the needs of the Royal Naval Air Service. Besides these, a private institution, the British Rainfall Organisation, collected and discussed observations of the rainfall of the British Isles and studied all questions connected with rainfall; also two scientific societies—the Royal Meteorological Society and the Scottish Meteorological Society—specially devoted themselves to the advancement of meteorological science. It will be seen, therefore, that only the State service could provide a career for anyone desiring to take up meteorology as a profession, and as the staff of this service was comparatively small, it is scarcely surprising that the great majority of meteorologists were amateurs in the sense that they studied the subject from their interest in it, outside their ordinary occupations.

In the Meteorological Office the policy for some years had been to bring in men who had had a thorough scientific education at a university and to encourage them to devote it to the study of the many problems which meteorology had to offer. This was

¹ From a paper read before the Royal Society of Arts on January 22 by Col. H. G. Lyons, F.R.S., Acting Director of the Meteorological Office.

a great advance from the empirical treatment of the subject, and has been amply justified by the success obtained when this policy has been tested under the conditions of active service.

For the general public current meteorology was mainly represented by the daily forecasts and the weather summaries which appeared in the Press, and the cases in which these failed to describe accurately the weather in the reader's immediate locality usually impressed him more than their general accuracy as tersely worded descriptions of conditions which were likely to prevail over an extended area, such as south-eastern England, but those who had only been brought into contact with meteorology in this superficial way on the outbreak of hostilities soon found that the weather affected their preparations and their operations at every turn. It was scarcely to be expected in these circumstances that all Staff officers would at once realise what information trained meteorologists could provide, or to what extent their reports and warnings could be relied upon in practice.

In the course of the last two decades investigations have been extended from the surface of the earth into the air by means of kites and balloons, and our knowledge of the conditions prevailing up to ten, and even fifteen, miles above the earth's surface has thereby been steadily increased. Self-recording instruments continuously registering the pressure, temperature, and humidity have been carried up through the lower seven miles (11 kilometres), the troposphere—the region in which the temperature falls with increasing height—and far into the stratosphere above it, sometimes to heights of 12½ miles (20 kilometres) or more. In this way the remarkable fact of the differentiation of the atmosphere into the lower troposphere and the overlying stratosphere has been established, and further investigations indicate the great importance of these upper regions of the atmosphere in the solution of many problems relating to the weather.

With the gradual introduction of balloons and aircraft into the Army, and the subsequent formation of the Royal Flying Corps, meteorological establishments were formed at South Farnborough in 1910 and at Upavon in 1913, where the study of the upper air was carried on regularly. In this way, and with the material furnished by the meteorologists of other countries, a very large amount of information had been collected, and to a large extent, discussed and utilised, before the outbreak of war, but this was, for the most part, known and appreciated only by those who were especially interested in the subject, and the bearing of the results obtained had not reached the wide circle of those who were later to become acquainted with them under the exacting conditions of active service.

On the outbreak of hostilities some lines of work had to be abandoned, and new lines taken up at once. Many of the staff of the State service joined the Army in those early days who would have been very profitably employed in the meteorological units which were formed later, or even in the Office itself, where the work became ever increasingly heavy, while the task of replacing those who went on service became constantly more difficult.

On the outbreak of war in August, 1914, meteorologists were at first considerably handicapped by the reduction of their supply of information. Wireless reports from ships ceased; weather telegrams from Germany and Austria were no longer available; and Central Europe became a blank on the working charts of the Meteorological Office. The censorship over all inward and outward telegrams disorganised the supply of meteorological information from Allied and neutral

countries for a while, but this was soon rectified, and daily weather reports could again be prepared, though lacking part of the Continental information. As time went on the need for more and more distant stations was felt, and by 1916 reports were being regularly received from Spitsbergen to the North African coast and Cairo, and from Iceland and the Azores to the Russian stations of Petrograd, Nicholaieff, Sebastopol, and Batum.

The supply of daily weather reports and forecasts to the public was stopped, but their preparation was continued actively in the Meteorological Office, where the telegraphic reports which were collected several times daily reached the number of about one hundred, and the information which they contained was compiled on working charts from which the forecasts were prepared. These were issued to the Admiralty, to various dockyards, to the Grand Fleet, various battle squadrons, submarine flotillas, etc., each of which required reports and forecasts adapted to their special needs. Similarly information was supplied to the Naval Meteorological Service for the Royal Naval Air Service, and to numerous units of the Royal Flying Corps, or the Royal Air Force as it afterwards became.

To provide information for aviators in the early morning or for use in preparing plans for the day's operations, it became necessary to take observations in the early hours of the morning, and 3 a.m. was the hour chosen at first, but this was not found to be early enough, and 1 a.m. was finally adopted, making the observing hours 1 a.m., 7 a.m., 1 p.m., and 6 p.m. Thus a continuous twenty-four-hour forecasting service was established, and has been maintained in operation up to the present time, to prepare forecasts and reports four times daily; and to telegraph the observations taken at selected stations to the Meteorological Section at the British General Headquarters in France, and to other stations that required them, as well as to the Meteorological Service of the French Army, and later to that of the American Expeditionary Force.

Under service conditions something simpler, plainer, and more direct in its presentation of the opinions of the trained meteorologist who prepared it than the ordinary daily weather report with its statistical data was needed. Those who had to make use of the daily weather reports were usually far too busy to wish to study the statistical material before accepting the meteorological opinions which were offered to them. They wanted a direct statement of expert opinion which they could make use of in preparing their own plans of action. The desire for such expert assistance was also shown by many requests that forecasts should be expressed in "perfectly simple and non-technical language." To this very reasonable request it is not so easy to accede as it may seem. Such expressions as "a depression advancing from the westward," "a secondary depression developing over the Channel," "an anticyclone spreading northward," are more than mere statements of fact; they convey to all who are acquainted with meteorology much additional information depending on the weather conditions described, which it would take several paragraphs to state simply and in non-technical language.

So far as meteorological conditions could be set out in plain language, this was done in these special daily weather reports, which were issued in the early morning, before noon, and in the afternoon to all who required them; and these were supplemented by special summaries, one of which dealt with the prevailing and the prospective weather conditions on all fronts where military operations were in progress, and another with the weather conditions in the various sea areas round Europe.

The whole of this information was of a highly confidential character, since Germany and Austria were

cut off from all weather reports from meteorological stations to the westward, except those of neutral countries, Norway and Spain.

We shall doubtless learn eventually to what extent the precautions taken sufficed to prevent information about the weather conditions over the British Isles and to the westward reaching the Central Empires, but at the time we had to depend mainly on negative evidence. It was not difficult to estimate from the working weather-chart what sort of forecast the enemy meteorologists would probably make on the assumption that the information from a wide area to the westward of them was not available, and this was done daily as part of the routine of the Meteorological Office. In the case of attacks by enemy aircraft it was fair to assume that his meteorological service considered the conditions to be reasonably favourable; and this was compared with the estimate of his opinion which had been formed here. Occasionally enemy forecasts were available, and these were compared in the same way. Negative evidence is not conclusive, but the impression that we gained was that little, if any, meteorological information of value was obtained from our area.

Many cases could be cited where operations were undertaken by the enemy which it seemed very unlikely that he would have undertaken had he possessed the information which we had here.

By the spring of 1915 two branches of the Army, the Royal Flying Corps and the Special Brigade, R.E. (Chemical Warfare), had decided that they required the co-operation of trained meteorologists who could explain the meaning and the limits of the forecast, answer questions or give advice, and arrange for fuller or more suitable information being furnished when required.

These demands for the provision of trained meteorologists in France led to the formation of a meteorological section as a unit of the Corps of Royal Engineers which had at first a strength of about four officers and twenty non-commissioned officers, but the establishment was repeatedly increased until, when hostilities ceased, it consisted of thirty-two officers and about two hundred other ranks, and provided sections for duty, not only in France, but also on the Italian and Macedonian fronts, besides a reserve section at home. From a small unit at General Headquarters in France the organisation developed until there was a meteorological unit with each army and one with the Independent Force, R.A.F., these units having their groups of observers and pilot-balloon stations reporting to them. The telegraphic weather reports from the stations in the British Isles, as well as those received from a large number of European stations, were at first thrice daily, and later four times daily, telegraphed from the Meteorological Office in London to the Meteorological Section at General Headquarters in France, in order that weather-maps might be drawn and forecasts prepared there as might be required. This information was supplemented by data which the Meteorological Section collected from its station on the British front, and also from other parts of France through the French Meteorological Services.

In this way on the Western front, and similarly at later dates on the Italian and Macedonian fronts, a network of meteorological stations was built up, which, with the addition of the data and reports furnished by the Meteorological Office, enabled the meteorological officers to supply the information which the different Services required for their special purposes, to issue forecasts and weather warnings, and also, as will be seen later, to increase very materially the accuracy of the work of some of the Services.

The task of providing the personnel for this military unit was no easy one, for, as has been already men-

tioned, the staff of the Meteorological Office was small, and outside it there were very few expert meteorologists who were available. At first three of the senior staff of the Meteorological Office received commissions for duty in France, and afterwards a number of men who had a thoroughly scientific education at a university joined the Meteorological Office for longer or shorter periods of training before being posted to the Meteorological Section, and in this way a high-grade scientific staff was formed and maintained. To a training which included especially mathematics and physics was added as much instruction and practice in advanced meteorology as could be given in the time available, and on the basis of such an education the meteorological aspect of the problems was quickly appreciated.

As time went on the scope and number of such reports and warnings steadily increased until there was a regular and continuous flow of information sent out from meteorological offices to various branches of the Service for them to utilise as best fitted the operations in hand. The Royal Air Force required forecasts of weather for short periods which it could use for its reconnoitring and bombing squadrons; for day operations reports of the wind direction and velocity obtained from pilot-balloon ascents and high-angle shell-bursts were communicated from different altitudes up to 20,000 ft.; for night operations information for lower levels sufficed, and the arrangements had to be modified. For high altitudes a central station could supply information adequately, but when data concerning lower levels became important, where the air turbulence set up by friction with the earth's surface became a material factor, the reports were more effectively supplied by local stations where the special conditions could be more effectively studied. For all this the most rapid means of transmission is essential; for the shorter the forecast period, and the more detailed the forecast in its information, the more rapidly must it be placed at the disposal of the aviator if it is not to mislead him. These reports were largely supplemented by telephone inquiries by those interested, and a precision was demanded which was often very difficult, and sometimes impossible, to attain. Success in answering these inquiries is reached by having as meteorological officers men who have an acquaintance with the physical condition of the region, and also possess such a scientific training that they instinctively proceed from cause to effect, and facts at once fall into their place in their minds. This is very different from the acquired skill of an empirical forecaster, who can never attain the same confidence in his opinion. The work of a meteorological officer who has to advise on the suitability of conditions for long flights, especially on active service, is very responsible, and throws a great strain on him, since he cannot but feel that on his advice great risks may be taken and grave danger encountered. In regions where high plateaux exist near the sea-coast, as in Macedonia, the cold-air currents which stream downwards, by reason of their greater density, to lower levels often attain full-gale velocity, blowing in violent gusts, and constitute an element of serious danger to aviators. The conditions which favour such a phenomenon are known and recognisable, but it may be very difficult to say precisely whether or not the descent of cold air will take this violent form.

In chemical warfare a different set of problems was encountered. Here we are concerned with the movement of air-currents close to the surface of the ground, affected by all its irregularities, diverted this way and that by obstacles, and generally in that state of irregular motion known as turbulence in which eddies form, break up, and re-form, greatly com-

plicating the conditions. At night, too, when the surface wind may die down to a calm and the ground cools under a clear sky, the colder and heavier air streams down from higher ridges into valleys and low ground. Consequently the direction and velocity of air-currents along the front had constantly to be observed and studied in relation to the relief and conditions of each section; so long as the wind was favourable for enemy operations, or even likely to shift into a favourable quarter, observations, reports, and warnings were unceasingly needed.

But, besides the aviators, there are other branches which are vitally interested in the conditions which prevail in the upper air. Projectiles leave the firing-point and traverse a considerable thickness of the atmosphere during their flight, reaching an altitude of about 10,000 ft. for a fifty-second trajectory. In its passage through the air a projectile traverses strata of different temperatures, and consequently of various densities, so that a correction has to be applied to the range-tables. On a winter day, when the temperature at the surface is 3° F., the temperature at 3000 ft., 6000 ft., and 9000 ft. may be 15° F., 16° F., and 12° F. respectively, so that any correction based on the temperature near the ground would be wrong. Also the wind varies considerably, and often irregularly, both in velocity and direction as the ground is left, so that a correction based on mean conditions here will probably be widely different from that which should be used on any particular occasion.

These considerations led to a much wider application of meteorological information to the practical correction of gunnery than had hitherto been employed, and reports of upper-air temperature and of the velocity and direction of the wind at various altitudes were regularly prepared and transmitted from meteorological stations along the various fronts. This increased application of meteorology to ballistics raises many problems of interest and importance, which demand for their solution the co-operation of scientific gunnery and meteorological science of the highest order.

To mention another field, the sound-waves which are recorded in sound-ranging, that wonderful adaptation of the physical instruments of the laboratory to practical use on the field of battle, traverse the lower layers of the atmosphere, and as higher and higher accuracy was aimed at, it became clear that meteorological observation must be made concurrently, and utilised in order to attain the desired precision.

Frequent mention was made during the war of the meteorological efficiency of the enemy's organisation and of the very favourable conditions which he experienced during many of his operations; his superiority in these directions was not infrequently assumed. It is not possible to compare the effectiveness and success of the rival organisations until much more information is available and, in the discussion and investigation of past operations, the various contributing factors have been sorted out and duly weighed. No doubt Germany started with a much larger number of men who had received a scientific training in the subject, for professors of meteorology existed at several universities; the appreciation of the subject and its practical value, too, may have been more general among that nation; but, as a personal opinion, I do not believe that it attained a higher standard than our own. Many apparently did not realise that the occurrence of bad weather during operations did not necessarily mean that the commander and his staff had no information regarding the impending weather changes; but weather is only one of many factors which have to be taken into consideration, and it must often be

that operations planned and prepared must be carried out whatever the weather may be, though a good forecast may at the last moment enable him to judge whether nearer or more distant objectives are likely to be attained.

Free discussions and conjectures on the subject of the enemy's advantages and the necessity for maintaining a strict silence regarding the details of our organisation naturally led many to doubt whether adequate steps had been taken to utilise meteorology to the full. Many offered their services as forecasters of experience, or as having methods which they considered could give highly trustworthy results, but they did not realise that much more was needed than a brief description of general weather conditions. They did not know that a large and somewhat intricate organisation had been found necessary, in which each man played his appointed part, and from the combined results of whose labours the required information was evolved.

There are now four State meteorological services in operation—the Meteorological Office, the Admiralty Meteorological Service, the Meteorological Section, R.E., for the Army, and the Meteorological Service, R.A.F., of the Air Ministry—and the relations and the means for co-operation between these four services will have to be worked out, and a number of considerations taken into account.

So far as the study of the weather and the issue of forecasts is concerned, short-period meteorology, as it may be called—rapidity of transmission of the observations to the Central Office, where they are discussed and compared, and of the forecasts, warnings, etc., which are sent from it—is the first essential, and the needs of aviation have only accentuated this. Observations should be in the Central Office for the forecaster's use not later than one hour after they are taken if he is to get out his reports and warnings early enough to be of effective use to aviators. This will mean a considerable acceleration in the collection and transmission of reports from some parts, for a country's own reports are not enough; those from selected stations in the surrounding countries are needed in order to form a correct view of the changes that are taking place. Wireless telegraphy will assist in meeting such requirements, and each country will soon, it is hoped, send out the meteorological observations taken at some ten to fifteen of its selected stations four times daily at fixed hours. French observations are already being sent out thrice daily from the Eiffel Tower in this manner, but some organisation will be necessary to bring this into operation as a general practice. With foreign reports collected in this way, and special priority for the necessary number of inland reports, forecasts could be got out more quickly, and, consequently, be of far greater utility.

Only a small proportion of the observations which are taken can ever be printed and published, so all working meteorologists must often refer to the voluminous collection of manuscript data which every meteorological service accumulates. Where research into the problems of the atmosphere is to be actively carried on there must be free access to such a collection, as well as to a well-stocked library on the subject.

All these considerations indicate the desirability of a close contact and co-operation between all the meteorological services in a country, so that the whole material may be available to each, that the scientific staff of each may be able to discuss the points which may arise, and that information may be quickly and easily distributed.

Aviation, with its prospect of long-distance communication, has rendered necessary a readjustment

of meteorological relations within the Empire. Canada, South Africa, Australia, New Zealand, India, and Egypt and the Sudan have all their well-equipped meteorological services, which include networks of stations so selected as to represent most suitably the different meteorological conditions prevailing in those regions. In each there is a scientific staff studying the problems that arise or affect the economic life of the country. Except as students of the same science, the interests of each service have been somewhat diverse from the nature of the requirements which each had to meet, but in future we must organise the provision of all information that aviation may require; and since aviators are going to pass from continent to continent and from one country to another, uniformity of some kind must be attained in respect of the assistance that meteorology is to give.

From the organisation necessary for Imperial co-operation to that of international co-operation is but a step, and the same requirements have to be considered; but some additional complications, such as variety of units, have to be reckoned with. But these have been successfully dealt with in the past; and as for many years the international work of meteorological services has paved the way for steady advance in our science, we may look with confidence to even greater progress in the future. The problems that press for early investigation are too numerous to recite, but a few may be mentioned.

The relation of meteorology to gunnery must be continued and the study of the many problems involved carried on by competent men.

The air routes of aerial transport will have to be studied and all the information now available must be sorted out, investigated, and discussed in order that it may be put in the form most suitable for use by airmen. This will demand much additional observing at many places besides the discussion of existing material, but unless this is done as part of a concerted scheme much unnecessary expense will be incurred, and the results will fall far short of what they should be, since all the data must eventually be worked up in connection with that from other places, and if all are not of the same scientific standard they cease to be comparable, and must often be rejected in discussion.

Many of the stations in the Crown Colonies can afford most valuable information in this connection if expert meteorologists are available to carry out the work. An observant traveller in Dahomey has remarked upon the presence of a steady north-easterly current at about 6000 ft. to 7000 ft. over the lower currents of the south-western monsoon of West Africa, and such information, if substantiated and extended, may be of material importance in this region.

While overland observations are numerous, and have been extended by means of *ballons-sondes*, aeroplanes, etc., to very great heights, our knowledge of the atmosphere over the sea is much less complete. By means of ships equipped for the purpose, such observations can be, and have been, made in certain parts, but this line of investigation must be extended if our knowledge is to be adequate.

Besides these more evident needs of aviation there are many problems of great practical importance which merit a closer and more thorough investigation than they have yet received. Among these may be suggested those violent disturbances known as hurricanes and typhoons. Recent theoretical investigations have thrown much light on their nature, and a further study of the evidence which exists should greatly add to our knowledge of them.

Variation of rainfall is always a matter of import-

ance, and in countries where it is barely adequate for agriculture any diminution of it is a serious matter, and such cases call for careful investigation.

The war has given a great impulse to meteorology by showing its possibilities to all, and aviation has made, and is still making, more and more demands upon it for information of every kind. Co-ordination between the services of each country and effective co-operation between the meteorologists in all parts of the Empire are the first essentials for meeting quickly and adequately the demands which will be made.

The "Manual of Meteorology" which Sir Napier Shaw has in hand will be of the greatest value in the work before us, for it will place in the hands of every meteorologist and student of meteorology a masterly treatise on those aspects of our science which he has studied for years, and of which he is the acknowledged exponent.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

BIRMINGHAM.—At the annual meeting of the Court of Governors of the University, held on February 27, the Principal, Sir Oliver Lodge, announced his intention of resigning his post at the end of the present session. He said that, having passed the age-limit of the professorial staff, he wished to make way for a younger and more ambitious man, who would begin his duties with the period of reconstruction. He himself intended to devote the remainder of his life to the study of the æther of space in both its physical and psychical aspects. In seconding a resolution of deep regret, proposed by the Vice-Chancellor, Sir Richard Threlfall spoke in warmly appreciative terms of Sir Oliver Lodge's scientific work, especially in electrolysis, in the electrical deposition of smoke, and in wireless telegraphy, which had been of very great benefit to industry and to the world at large.

Sir Oliver Lodge, who took office nineteen years ago as first Principal of the University, has rendered invaluable service both to the University and to the city, and the close connection between the two which now exists is perhaps the best tribute to his work as head of the former. When the University first came into existence, as the result of the efforts of a very small but far-sighted body of men, it is not too much to say that the great majority of the citizens regarded it as a very unnecessary and entirely useless institution, which for some obscure reason Mr. Joseph Chamberlain considered a subject of vital importance to the city. To-day, however, this attitude has changed, and the University has become an integral part of the civic life of the city. This change, the magnitude and significance of which can be fully appreciated only by those who have witnessed it, is due in a very large measure to the personality and activity of Sir Oliver Lodge. He has not only convinced the public of the material advantage to be derived from having in its midst a centre of scientific teaching and research, but has also unceasingly insisted on the value of the humane studies to the life of the community. He has, in fact, taken a large and honourable share in laying well and truly the foundations of higher education in Birmingham.

CAMBRIDGE.—Dr. J. B. Hurry has offered to increase the value of the Michael Foster research studentship in physiology, founded by him in 1912, and tenable biennially, from a hundred guineas to 200*l*. A gift of three successive sums of 100*l*., to be paid at intervals of six months, has been offered for the assistance of research in the zoological laboratory by a benefactor who desires to remain anonymous.

Mr. W. M. Smart, of Trinity College, has been appointed chief assistant at the observatory.

The professorship of mechanism and applied mechanics, which was held by the late Prof. Bernard Hopkinson, has been formally declared vacant, and candidates are requested to communicate with the Vice-Chancellor on or before Monday, March 17.

LONDON.—The tenth annual report of the Military Education Committee of the University (for the year 1918), which has been presented to the Senate, refers with gratification to the letter from the King in which his Majesty sent an assurance of the interest with which he had learnt that the University of London Officers Training Corps continued "to uphold the record of splendid services which it has rendered in the past." The number of commissions granted to cadets and ex-cadets of the University of London O.T.C., and to other graduates and students recommended by the committee, increased during the year from 4040 to 4413. First commissions in the Army, Navy, or Air Force have been granted to 4101 former cadets. Of these officers 584 have fallen in the war. The number of distinctions gained by former cadets up to the end of 1918 is 1175, including V.C., 4; D.S.O., 39 (including three with a bar); Military Cross, 442 (including three with two bars and twenty-nine with one bar); Croix de Guerre, 21; Médaille Militaire, 1; mentioned in despatches, 480 (mentioned four times, 3; thrice, 16; twice, 56). A roll of war service for the University of London O.T.C. is being prepared, and will be published as soon as possible.

A sum of about 5133*l*. has been accepted by the Senate on the bequest of the late Dr. William Julius Mickle for the establishment, in honour of his great-grandfather, William Julius Mickle, the poet, of an annual fellowship to be awarded to graduates of the University resident in London who have specially distinguished themselves in the advancement of medical art or science.

OXFORD.—On March 4 the preamble of a statute making Greek optional in Responsions passed Congregation by 123 votes to 63. The statute was introduced by Mr. E. Barker, of New College, supported by the Regius professor of Greek, and opposed by the Regius professor of divinity and Mr. E. M. Walker, of Queen's. If the statute passes Convocation in its present form, natural science will be brought into Responsions for the first time, either this subject or mathematics, or a combination of the two, being made compulsory.

UNDER section 28 of the Education Act, 1918, which the Board of Education has now announced will come into operation on April 1, the persons responsible for the conduct of schools and educational institutions in England and Wales are, subject to certain exceptions, required to send to the Board of Education, Victoria and Albert Museum, South Kensington, S.W.7, before July 1, the name and address and a short description of the school or institution. The information is not required from the following schools and educational institutions:—(1) Schools and educational institutions in receipt of grants from the Board of Education or the Board of Agriculture. (2) Elementary schools certified by the Board of Education as efficient. (3) Secondary schools recognised as efficient under the Board's regulations. (4) Universities and university colleges. (5) Poor Law schools and schools certified under Part IV. of the Children Act, 1908. (6) Educational establishments under the administration of the Army Council or of the Admiralty. The responsibility for giving the