

gate a plant disease, and late in life he was specially concerned in the establishment of the Imperial College of Agriculture in Trinidad, which he visited on more than one occasion and of which he was chairman. He was also chairman of the Council of the Marine Biological Association, a member of Royal Commissions on the Civil Service, Trinity College, Dublin, and the importation of store cattle and of the departmental inquiry into grouse disease; and he was a trustee of the Hunterian, Tancred, and Beit Foundations. His scientific distinction was recognised by honorary degrees conferred on him by Princeton, Michigan, and Philadelphia, and by being made foreign member of the American Association of Economic Entomologists and of the Helminthological Society of Washington, and honorary member of the Société Zoologique et Malacologique de Belgique. His period of office as Vice-Chancellor of the University of Cambridge, in 1917-1919, was described by the *Times* of Sept. 23, in an interesting account of the invaluable services which he performed for the country, fitly recognised by the award to him of the G.B.E. in 1920. He died at the Master's Lodge of Christ's on Sept. 22.

Few men have had a wider circle of friends than Shipley, whose gifts of sympathy made him

persona grata to all sorts and conditions of men, from cabinet ministers to undergraduates fresh from school. He died full of honours and universally respected as a man who consistently maintained the highest standard of public and private duty, and in the midst of responsibilities which might well have absorbed all his attention, was always ready to give his time to the performance of innumerable acts of kindness.

SIDNEY F. HARMER.

WE regret to announce the following deaths:

M. Emile Hug, *membre titulaire* of the Section of Mineralogy of the Paris Academy of Sciences, professor of geology at the Sorbonne and a past president of the Geological Society of France, on Aug. 28, aged sixty-six years.

Prof. L. R. Lenox, for thirty-five years a member of the faculty of chemistry at Stanford University, on July 25, aged sixty-two years.

Dr. Thomas W. Salmon, medical director of the U.S. National Committee for Mental Hygiene and professor of psychiatry in Columbia University, New York, on Aug. 13, aged fifty-one years.

Prof. Adrian Stokes, Sir William Dunn professor of pathology in the University of London, while with the Rockefeller expedition investigating West African yellow fever, at Lagos on Sept. 19, aged forty years.

News and Views.

MANUFACTURERS in Great Britain have been the targets of much deserved criticism on account of their long neglect of the assistance which systematic chemical and physical research is able to offer them, but in recent years their attitude has implied a growing faith. Doubtless their policy in the past has been conditioned more by the fact that research organisations adequate to the study of many of their problems cost a great deal of money than by any hostility to the idea of progress, although this is probably not universally true; 'small profits and quick returns,' however excellent a maxim, does not stimulate the long view when business is brisk, and cannot afford it during a slump. The realisation, however, that industrial competition does not necessarily exclude scientific co-operation has led to the establishment and profitable operation, with State assistance, of a number of research associations. The youngest member of the family is the Research Association of British Paint, Colour, and Varnish Manufacturers, which was incorporated in September 1926, and the laboratories of which were opened at the first annual general meeting at Teddington on Sept. 21 last.

THE new Association, of which the president is Mr. S. K. Thompson and the director is Dr. L. A. Jordan, comes into existence at an interesting, if difficult, stage in the history of paint and varnish making. The ingredients of the good old varnish, often made by a secret process, find themselves challenged by new materials having unchallengeable protective and decorative qualities; the new materials require careful study in a variety of conditions, and the

relation of the character of the protective film to those of the liquid applied are by no means fully understood. It is now realised that the paint or varnish, as manufactured, is, after all, only an intermediate product; its properties are of interest chiefly so far as—subject to the interference of external conditions such as climate and weather—they govern those of the film. Decoration, as well as protection, also moves with the times. The statement that the United States of America is using wood four times as rapidly as it is growing, or that that country wastes thirty million dollars annually on rust and decay, is adequate enough to support the 'more and better paint' movement, but a generally enhanced appreciation of the decorative value of paint coatings, with its demand for new shades of colour, new surfaces, and new properties, cannot be ignored.

CLEARLY, the wide problems of the paint and varnish industries are beyond the resources of single manufacturers. Co-operation, however, has already made possible the equipment for the new research association of three chemical and physical laboratories, with offices and library, and work is now proceeding on the equipment of a workshop and technical laboratory, so that processes can be tested on a semi-manufacturing scale. Already several specialised pieces of plant and apparatus have been presented or lent to the Association by firms or individuals interested in its work. Whilst the technical side of the work is in its preliminary stages, laboratory research on several important problems is already in active progress. Economies and profits will doubtless accrue to the promoters from many of the investigations

undertaken, but it must be remembered that a single important property such as the durability of paint may eventually be thereby improved in such a way as to confer benefits on the community and on the individual far greater than can be measured by the financial return to the paint and varnish industry itself. Governments seldom fail to receive their due share of abuse, and politicians are but infrequently immune from accusation of their failure to see, much less appreciate, the scientific point of view, yet much may be forgiven a Department of State which has had the wisdom to encourage, with practical assistance, the policy of co-operative scientific and industrial research, and those various groups of business men who, though times have been bad, have had the foresight to translate the policy into effective action.

THE biennial conference of the International Society of Leather Trades' Chemists took place from Sept. 12 to 14 at the Leathersellers' Hall, London, and was attended by the president of the Society, Prof. D. McCordish, the Worshipful Master of the Leathersellers' Company, representatives from British scientific societies and trade organisations, and members of the Society from Great Britain, France, Belgium, Italy, Czecho-Slovakia, Spain, and India. The Conference paid a warm and respectful tribute to the memory of the late Prof. H. R. Procter, the great pioneer of the scientific study of leather manufacture and one of the founders of the Society, and decided in his honour to establish a fund for the endowment of a post-graduate fellowship for research in leather chemistry to be held at the Procter International Research Laboratory at the University of Leeds. The progress of scientific research in the leather industry has constantly been hampered by the difficulty of analysing such complex materials as leather, tanning extracts, and hide, and research in analytical methods inevitably occupies much of the attention of the Society. The methods hitherto recommended by the Society are not trustworthy in their results, and the conference decided to confirm the adoption of the new method for the analysis of tanning materials which was recommended in May last at an international congress of the three societies of leather trades, namely, the International Society, the American Leather Chemists' Association, and the Internationale Vereine der Leder-Industrie Chemiker. This new method has now been adopted by the International and the American societies, and it is believed that the German society is also taking the necessary steps to ensure its adoption by their members.

THE basis of the new method which has been recommended by the International Society of Leather Trades' Chemists for the analysis of tanning materials is the use of a hide powder washed free from mineral salts by means of a very weakly acid solution brought to a pH of 5 to 5.4, i.e. to the iso-electric point of collagen. Such powders contain only a trace of mineral matter and give much more uniform results in the analysis of tanning materials than earlier powders, which contained a variable residuum of

calcium salts. The methods of analysis of vegetable and chrome tanned leather and various materials used in the manufacture of leather were also considered at the recent meeting. It was urgently recommended by the Society that the great amount of damage caused by the warble fly should be brought to the notice of the governments of each country represented. There are several good specifics against the pest, dichlorbenzoyl in vaseline and a suspension of tobacco powder both having proved effective. In Denmark the use of prophylactics had been made compulsory, with the result that the percentage of damaged hides among the indigenous cattle had fallen from 25 to 8. The British Warble Fly Commission, under Prof. Carpenter, abolished warble fly in two years from a small island off the north coast of Ireland. Re-infection of clean areas by imported stock is controlled in Switzerland by the compulsory slaughtering of all imported live cattle within twenty-four hours. In England there are no compulsory measures against warble fly, and live cattle for store purposes enter freely at the ports. It is perhaps not surprising that the percentage of 'warbled' hides among English and Irish cattle is very high.

To the July number of *Electrical Communication*, Mr. Rollo Appledorn contributes a very interesting article on Charles Wheatstone. Wheatstone is best remembered by electricians in connexion with Wheatstone's bridge, which is used in measuring electrical resistance. Yet curiously enough, Wheatstone himself scrupulously assigns this bridge to its first inventor, S. H. Christie. If it is true that a man is known by his friends, then it is sufficient to mention that Wheatstone was the friend of Faraday, Huxley, Brewster, and Tyndall, all of whom did invaluable work in the cause of science and consequently for the benefit of humanity. With the exception of Brewster, none of these had received what can be called systematic education, but all were enthusiastic research workers. Wheatstone, probably more than any other man, developed the practical side of electric telegraphy. No account of a practical electric telegraph was published prior to Cooke's and Wheatstone's patent taken out in 1837. His sine wave model, his kaleidophone, his gas-jet organ, his concertinas, and his polar clock are only a few of his many inventions. His rotating mirror verified Kelvin's prediction that in many cases a Leyden jar spark discharge is oscillatory. His endless patience as an experimenter was proved by the many experiments he made to determine the velocity of an electric discharge through a wire. But as J. B. Dumas said, his memory will live not only by his achievements but also by the recollection of "his rare qualities of heart, the uprightness of his character, and the agreeable charm of his personal demeanour."

ONE of Wheatstone's earliest inventions was an instrument he called "the enchanted lyre." It was suspended from the ceiling by a cord and the music appeared to proceed from a combined "harp, piano-forte, and dulcimer." Wheatstone himself described

it as an application of a general principle for conducting sound. A writer in the *Repository of Arts* for September 1821, when describing this instrument, foreshadows modern broadcasting in a remarkable way. "Who knows but by this means the music of an opera performed at the King's Theatre may ere long be simultaneously enjoyed at Hanover Square Rooms, the City of London Tavern, and even at the Horns Tavern at Kennington, the sound travelling . . . from the main laboratory of harmony in the Haymarket to distant parts of the metropolis . . . perhaps words of speech may be susceptible of the same means of propagation." In this connexion it is interesting to recall that the ancient Greeks believed that Pythagoras could lecture simultaneously in several towns many miles apart.

In the course of the Congress of the Institut International d'Anthropologie, which was held at Amsterdam on Sept. 20-27, it was announced that the Prix Hollandais of the Institut has been awarded to Miss Dorothy A. E. Garrod in recognition of her work in prehistoric archaeology, and especially for her excavation of the cave at the Devil's Tower, Gibraltar, in the course of which she found the second of the two Mousterian Gibraltar skulls, the first having been discovered in 1843. It will be remembered that the site on which Miss Garrod worked was noted by the Abbé Breuil during the War, but excavation necessarily had to be postponed. A preliminary account of the fragments of the skull discovered by Miss Garrod earlier in the summer, which had been reconstructed by Mr. Dudley Buxton, was given at the Oxford meeting of the British Association last year. Miss Garrod returned to the site later in the autumn and cleared the cave to bed-rock, discovering further fragments of the skull. The whole, as now reconstructed, apparently that of a child from eight to ten years old, will be exhibited and described shortly at a meeting of the Royal Anthropological Institute. Miss Garrod is also the author of a valuable survey of the evidence relating to early man from the caves in Britain entitled "The Upper Palaeolithic Age in Britain." We offer our sincere congratulations to Miss Garrod on her well-deserved honour.

Mr. C. F. TALMAN, librarian of the United States Weather Bureau, is writing articles on weather topics every day for Science Service of Washington. These are appearing in the *Boston Transcript* and ten other North American newspapers. The uniquely favourable position of Mr. Talman for work of this kind is evident after a perusal of one of these articles, which gives an account of the library under his charge at Washington. This library contains about 46,000 volumes, and is said to be the largest of its kind in existence; it includes a vast number of books about the weather and climate of all parts of the globe, in addition to all treatises on meteorology that have appeared anywhere in the world, so far as the U. S. Weather Bureau has been able to secure them. With this mine of information immediately to hand, Mr. Talman no doubt has little

difficulty in finding some item of interest for each day of the year; he has, moreover, the gift of being both lucid and entertaining.

The range of subjects dealt with by Mr. Talman in a sample batch of articles received recently, covering the period May 2 to Aug. 18, 1927, occasionally extends into the borderland of meteorology, e.g., "Experiments with Icebergs"—an account of attempts to destroy icebergs with the aid of ignited charges of thermit—"The Dust we Breathe," "Mysterious Sounds that Haunt the Air," "Will o' the Wisp," and so on. Care has been taken to choose, so far as possible, subjects likely to be topical at the time of their publication, which is of necessity a week or so later than the time when they are completed; thus for May 11 an article on "The Traditional Cold Spell in May" was chosen, while several articles on very hot weather, and the best means of avoiding its attendant discomforts, were timed to appear in that portion of July that has the highest mean temperature. It is satisfactory to find no evidence anywhere in the series under review of a sacrifice of accuracy to interest. The articles must stimulate thought and should tend to dispel many absurd illusions about the weather that are still current.

The Registrar-General's Statistical Review, 1926, Tables, Part 2, has recently been issued by H.M. Stationery Office (price 5s.). Among the wealth of material it contains, the following points are of wide interest. The total population in thousands of Great Britain and Ireland was:

	1926.	1925.	Increase + or Decrease - per cent.
England and Wales	39,067	38,890	+ 0.46
Scotland	4,897	4,893	+ 0.08
Northern Ireland	1,256	1,257	- 0.08
Irish Free State	2,970	2,985	- 0.50
Total	48,190	48,025	+ 0.34

In England and Wales the male population increased by 0.52 per cent. and the female population by 0.40 per cent. The births registered during the year 1926 numbered 694,563, which is equal to a rate of 17.8 per 1000 population. This rate was 0.5 per 1000 below that recorded in the previous year and, with the exception of the War year 1918, is the lowest rate recorded since the establishment of civil registration. Not only has the birth rate declined but also the actual number of births is the lowest recorded since 1860, when the population of England and Wales was only 19,902,000, or about one-half of the estimate for 1926. The number of illegitimate births was 29,591, or 43 per 1000 total births, and was 695 in excess of the total recorded in the previous year. The proportion of male to 1000 female births was 1041. This proportion showed a great increase during the War years and reached a maximum of 1060 in 1919, since when the decline has been almost continuous, and the rate is now approximating to that which prevailed in the period immediately prior to the War.

LANN on the night of Sept. 24, the R.R.S. *Discovery* anchored in Falmouth Harbour, having completed a two years' cruise to Cape Town, South Georgia, and

the Falkland Islands; she is expected to arrive in the Thames on Oct. 1. It will be remembered that the primary object in fitting out the *Discovery* expedition was the investigation of the southern whaling fisheries, and a report of the work carried out up to August 1926 was contributed by the Director of Research, Dr. Stanley Kemp, and members of the scientific staff, to our issue of Oct. 30, 1926, p. 628. The first annual report of the expedition, bringing the account up to the end of 1926, has been recently published (see *NATURE*, Aug. 27, p. 308). It is expected that the scientific staff will spend some months ashore working up the results of the expedition, and it is confidently expected that these will prove of great value to science and to the whaling industry.

A NEW speed record was set up near Venice by Flight-Lieutenant S. N. Webster when he won the race for the Schneider Cup for Great Britain on Sept. 23 at an average speed of 281 miles 1246 yards an hour. The race was over a course about 31 miles in length and triangular in shape, and seven laps had to be covered; this meant making two sharp turns in each lap. Three Italian and three British machines started, but the Italian pilots and one of the British pilots had to come down. Lieut. Webster was flying a Supermarine-Napier S5 with geared engine. This engine, a development of the Napier Lion unit, weighs 920 lb. and develops 890 h.p. The Supermarine seaplane was designed by Mr. R. J. Mitchell, who seems to have been most successful in devising means for reducing head resistance; for example, petrol was stored in one of the floats, while the radiator for the water-cooling system was fitted in an improved way beneath one of the wings. The only other machine which completed the course, piloted by Flight-Lieut. O. F. Worsley, was also a Supermarine Napier, but with an ungeared engine. Lieut. Worsley's average speed was 273.6 miles an hour. In last year's race for the Schneider Cup, the winner, Major de Bernardi (Italy), on a Macchi monoplane with 800 h.p. Fiat engine, averaged 246.5 miles an hour. This year, for the first time, the British entry was organised entirely by the Air Ministry and service pilots were trained for the race.

To ascertain the value of aerial photography in the revision of 1/2500 Ordnance Survey plans, an area of some 600 square miles near Eastbourne was photographed from the air at the same time that the usual revision was taking place during the summer of 1925. The results of this experiment are given in a small pamphlet issued by the Ordnance Survey and entitled "Report on the Experimental Revision of the 1/2500 Ordnance Survey Plans with the aid of Photographs taken from the Air" (London: H.M. Stationery Office. 4d. net). It was found that this method was 50 per cent. quicker than field work, 1670 square miles being photographed by one machine in less than one hundred days. With the exception of some types of wire fences, all details were easily identified in the photographs, and changes in features could be plotted with accuracy. Invasion of lands and premises is reduced by the new method, and the interval between

revision and publication should be shorter than it was of old. The high costs of aerial revision could no doubt be substantially reduced, but the speed of the work makes it impossible to offer a continuous programme of flying to the aviators. As a result of the experiment, the Ordnance Survey proposes to revise solely by aerial photography an area of about 100 square miles each year for several years. It will then be possible to decide if the method will be economical to adopt for all large-scale revisions.

WITH the object of collecting, correlating, and placing at the disposal of British industry, all information of a technical and practical character with regard to the use of nickel and its alloys, the Bureau of Information on Nickel, Limited, has been established with offices at 2 Metal Exchange Buildings, Leadenhall Avenue, London, E.C.3. The services of the Bureau will be rendered without charge or condition.

SIR ARTHUR KEITH'S recent presidential address to the British Association is to be published in Messrs. Watts and Co.'s Forum Series. It will contain a foreword and a supplementary paper entitled "Further Evidence and Some Unsolved Problems"; and there will also be included three essays on "Darwin's Home," "Why I am a Darwinist," and "Capital as a Factor in Evolution," as well as a page diagram elucidating man's origin. The price of the publication will be 7d.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A lecturer in engineering subjects at the Technical College, East London, South Africa—The Secretary, Office of the High Commissioner for the Union of South Africa, South Africa House, Trafalgar Square, W.C.2 (Oct. 7). A woman professor of physiology at the Lady Hardinge Medical College, Delhi—The Honorary Secretary, U.K. Branch Dufferin Fund, care of Major-General J. B. Smith, India Office, Whitehall, S.W.1 (Oct. 8). An agricultural economist and an agricultural engineer under the agricultural department of the Tasmanian Government—The Agent-General for Tasmania, Australia House, Strand, W.C.2 (Oct. 14). A county education officer for the Administrative County of Southampton—The Clerk of the County Council, The Castle, Winchester (Oct. 17). An entomologist in the veterinary department of Tanganyika Territory with special knowledge of the blood-sucking diptera and the Ixodidae—The Private Secretary (Appointments), Colonial Office, 38 Old Queen Street, S.W.1 (Nov. 15). A senior lecturer in geography and geology at the Natal University College, Pietermaritzburg—The Registrar, Natal University College, Pietermaritzburg, Natal (Nov. 30). A woman graduate as chief assistant in the Domestic Science Department of the Battersea Polytechnic—The Principal, Battersea Polytechnic, S.W.11. An assistant bacteriologist at the Wellcome Research Laboratories, Khartoum The Controller, Sudan Government, London Office, Wellington House, Buckingham Gate, S.W.1. A test assistant at the Aeroplane and Armament Experimental Establish-

ment of the Air Ministry, Martlesham Heath—The Officer Commanding, Aeroplane and Armament Experimental Establishment, Martlesham Heath, Woodbridge, Suffolk. An evening lecturer in structural mechanics at the West Ham Municipal College—The Principal, Municipal College, Romford Road, Stratford, E.15.

THE Royal Commission appointed by the Commonwealth Government to inquire into the control and development of radio severely criticises Amalgamated Wireless (Australasia) Limited. This Company claims to have many patents, embracing all branches of radio communication. According to a report in the *Times* of Sept. 15, the Commission says that the Company's demand for royalties is based on the principle "that it is entitled to obtain from the public whatever it can get." The Commission urges that the Company should make reductions in the charges for the use of patents. If the Company fails to make the suggested reductions, the Com-

mission urges that the Commonwealth Government, after ascertaining that the patents are valid, should purchase all the privately held shares in the company and so acquire complete control. Without a full knowledge of the facts, it is very difficult to criticise the motives and actions of the Commission and of Amalgamated Wireless (Australasia), Limited. The Government of Australia holds the majority of the shares, and we should have expected them to control the actions of the Amalgamated Company. Private companies which have expended considerable sums in research for many years hope to reap a harvest later on. It is in the public interest that they should receive royalties on their patents at least for a period of years. It is in this way that great industries have been built up. We believe that there are between two and three thousand companies in Great Britain which utilise broadcasting patents. There seems to be no attempt to create a monopoly for a few favoured firms. The question seems one that could be quickly settled by arbitration.

Our Astronomical Column.

ROTATION OF THE GALAXY.—The fact that the spectroscopist reveals rotation in several spiral nebulae renders it not improbable that a similar motion may be present in the galaxy, which has many points of resemblance to the spirals; it is not very easy, however, to detect a small systematic effect of this kind from star observations. Mr. J. H. Oort makes the attempt in *Bull. Astr. Inst. Neth.*, No. 132. He makes the assumption that there is unlikely to be any systematic motion at right angles to the galaxy; he therefore deduces the precession from proper motions resolved in that direction and finds a correction to Newcomb's precession of $1''.37$ per century and a rotational effect of about $\frac{1}{2}''$ per century.

Mr. Oort notes that if all the mass of the galaxy were concentrated at the centre, the law of force would be the inverse square of the distance; while if the mass were distributed uniformly through a sphere, the law within the sphere would be the direct distance; the actual law would be between the two. He deduces tentatively that the force according to the inverse square law is $\frac{6}{10}$ of the whole, from which he finds that the central mass is about sixty thousand million times that of the sun.

The linear speed of rotation in the sun's neighbourhood is found to be 286 km./sec. towards galactic longitude 55° . The author suggests that the radial velocities found for the Magellanic Clouds is accounted for by this rotational motion, so that they may be outlying portions of the galaxy.

THE NEW STAR IN AQUILA.—*Astr. Nach.*, No. 5519, contains details of the spectrum of this star as photographed at Königstuhl by Prof. Max Wolf on Aug. 17. These agree well with the usual nova type. The hydrogen lines $H\beta$ to $H\gamma$ were seen both as emission and absorption lines; the absorption lines indicated a radial motion of -1600 km./sec., while the emission ones indicated $+100$ to $+150$ km./sec.

THE TOTAL SOLAR ECLIPSE OF JUNE 29.—*Astr. Nach.*, No. 5519, contains observations of the total solar eclipse made at Ringebu, Norway, by G. Armellini and G. Conti of the Campidoglio Observatory, Rome. Shadow bands were well seen both before

and after totality, the latter being the stronger. They were curved like the letter S and had an undulatory movement. The illumination during totality was much greater than that of the full moon. Signor Armellini could read type 0.5 mm. high, while 2 mm. was the minimum in full moonlight. Most of the light during totality was diffused skylight, not that of the corona, as was shown by the fact that a stick 4 cm. in diameter threw no perceptible shadow on a white sheet. The observed times of beginning and end of totality were $5^h 34^m 50.3^s$, and $5^h 35^m 24.6^s$, U.T., each about $\frac{1}{2}$ sec. earlier than calculation.

A sketch by Signor Conti shows the corona as a uniform ring some 7' high, with seven long rays at fairly equal intervals. The longest are 40 long. The temperature fell from $11^\circ.1$ C. to $7^\circ.9$ C., afterwards rising to $12^\circ.4$ C. The colour of the prominences is described as reddish-violet and as yellowish-red by the two observers respectively.

NORMAN LOCKYER OBSERVATORY.—The annual report of the director of the Norman Lockyer Observatory, which has recently appeared, shows a continuation of the programme which has been so usefully followed during the last few years. The chief features are the photography of stellar spectra for classification and parallax work, and the detailed study of changes in the spectra of bright line stars of early type. Four papers dealing with this work have been published during the year, and three others are in preparation. In addition, the $5\frac{1}{4}$ -inch doublet has been mounted for the photography of meteors, and has been oriented to the pole star on clear nights when there has been no bright moonlight. Arrangements were made for obtaining large-scale photographs of the chromosphere, prominences, and corona, and small-scale photographs of the corona and its spectrum, at Richmond (Yorks.) during the total solar eclipse of June 29 last; while at the observatory at Sidmouth, preparations were made for securing large-scale spectra of the chromosphere with the Hilger Littrow spectrograph. Neither programme, however, could be carried out, owing to unfavourable weather. The accounts for the year show a loss of £227, and the hope is expressed that further endowments will be forthcoming.