

in a phenomenon essentially different from them. Here on the contrary "the true nature of the cause only becomes apparent in the effect". Equally certain was the insufficiency of any merely biological interpretation of the world of moral and religious experience. It is impossible to do justice to the sense of obligation and the instinctive admiration of unselfish devotion to far-reaching ends such as truth, beauty and moral perfection on any theory which takes the survival and material well-being of the species as the supreme goal and all else as instrumental to them—incidental results and by-products of the cosmic system. All explanation in a word of the higher by the lower is philosophically a *hysteron proteron*. Everything remains unintelligible until we invert the order of naturalistic explanation and go to work on the supposition that a purposeful moral intelligence is in reality the key to the world's meaning, the fact in the light of which all other phenomena must be read. In his own words, "every true philosophy is an attempted theodicy"—the vindication of a divine purpose in things.

However extravagant this claim may seem to those wedded to another order of thought, its vindication has been the dream of a long line of great thinkers since the time of Plato who found alone in the Good the adequate principle at once of the being of things and of our understanding of them. Pringle-Pattison's interpretation and defence of this thesis against prevalent forms of naturalism on one hand and forms of idealism, which sought for the principle of reality in a sphere beyond Good and Evil, on the other, ranks him with the great teachers, including Sir William Hamilton, who preceded him in the chair he so long occupied in Edinburgh.

An account of Pringle-Pattison's opinions gives, however, an imperfect idea of his work as a writer. It was the way in which he developed them out of a singular fullness of knowledge of contemporary philosophy, and the command of a peculiarly

graceful style derived from an equally wide knowledge of the best in literature, that gave that work its peculiar distinction. Added to this he was known to his friends and his fellow-townsmen as a man of singular gentleness of manner and dignity of presence. He lived and looked the philosopher. Yet when called upon by the inheritance of an estate in the country to play the part of a Scottish laird, he surprised his friends by the firmness and efficiency of his management. Without the interest of his brother and colleague Prof. James Seth in the practical life of his city, and contrasting with 'Prof. Jim' in the more formal method of his teaching from written lectures, these self-limitations enabled him to give a certain completeness to the literary expression of his ideas in a long series of works of uniform distinction, closed only last year by the publication of his "Studies in the Philosophy of Religion", described by the *Times* of Sept. 2 as "among the best in the apologetics of rational theism".

Pringle-Pattison was LL.D. in his own university, honorary D.C.L. of Oxford, and a fellow of the British Academy. Among his early friends, besides those already mentioned, were Ambassador J. G. Schurman and the late Lord Balfour, who founded the lectureship under that name in the University of Edinburgh with the express purpose that Andrew Seth, as we then knew him, should be the first to hold it. Seldom have youthful appointments been better justified.

J. H. MUIRHEAD.

WE regret to announce the following deaths:

Sir Gregory Foster, Bart., formerly provost of University College and vice-chancellor of the University of London, author of many educational works, on Sept. 24, aged sixty-five years.

Dr. Charles A. Keane, formerly principal of the Sir John Cass Technical Institute, Aldgate, on Sept. 18, aged sixty-seven years.

News and Views.

As we go to press, we have received the following radiogram, dated Sept. 28, from Sir C. V. Raman, F.R.S., and S. Bhagavantam: "Experimental demonstration of spin of light.—The depolarisation of Rayleigh scattering of monochromatic light in carbon dioxide gas does not diminish to one quarter of its value when spectroscopically separated from rotational scattering, as demanded by existing theories of radiation. The actual observed diminution, from 10 per cent to 6 per cent, is quantitatively explicable, assuming that common light consists of spinning quanta possessing one Planck unit of angular momentum.—C. V. Raman and S. Bhagavantam."

THIS is the centenary of the discovery of miners' safety fuse—more generally known as Bickford fuse—by William Bickford. He was a Devonshire man, but having married a Cornishwoman, he went to live in the

little village of Tuckingmill in the mining area of Cornwall, and there he first started his experiments on safety fuse. In this he was actuated by humanitarian motives, for he had nothing whatever to do with mining, his business being that of a currier. Blasting operations as conducted one hundred years ago were exceedingly difficult and dangerous. The only explosive then known was gunpowder, and though the handling did not involve any great risk, the methods in use for conveying the fire to the charge were definitely dangerous. It was at this stage that accidents were of such frequent occurrence, and the old records in Cornwall and elsewhere show that the fatalities were very great. But it was the number of permanently maimed men utterly incapacitated for work through the loss of fingers, an arm, or a leg, visible evidence of the hazardous nature of mining, which spurred Bickford on with his work. The most effective and

possibly the safest device employed in Cornwall for conveying the fire to the charge was to fill goose quills with crushed gunpowder, after nipping off the thin ends. Thus a thin end of one quill was fitted into the wide end of another, and by this means, a column of powder was built up which, though fragile, was fairly effective but very uncertain. This in turn was set off by touch-paper.

BICKFORD had naturally many disappointments and failures when carrying out his experiments, and indeed was just on the point of abandoning the whole thing when in visiting a friend in his rope-walk he had the idea that the fibre of the rope might be so spun as to enclose a core of powder fed from a funnel. He achieved success in the end mainly with the assistance of a mechanical genius called Davey, who must share the credit. Application was in due course made for a patent, and the specification, which is dated Sept. 6, 1831, reads as if it had been drafted yesterday, so minutely and correctly are the operations described. Unfortunately, Bickford did not long survive his invention, but his family carried on the work. The little workshop where the first manufacturing operations were carried out still exists, but around it has grown a fine up-to-date works. Through the safety lamp invented by Sir Humphry Davy, one of the two great causes of accidents in mining was removed, and through Bickford fuse the other was, after a time, definitely eliminated. These two inventions have probably done as much as any other to conserve human life. Bickford reaped no financial reward from his invention, and it was only after many years that the fuse was known outside of Cornwall. Nevertheless, his name is worthy of a passing thought even in these crowded days.

THE discussion on human population which was held in Section D of the British Association on Sept. 26 is of peculiar interest in view of the general theme of Prof. E. Cannan's presidential address to Section F. Prof. Cannan's argument is that the population of the world is almost stationary. He, like Prof. J. S. Huxley in the discussion, points out that migration is rapidly coming to an end. With contraception affecting all countries a new problem is arising—that of either over- or under-population. Prof. Huxley also emphasised the effect of progress in medicine, sanitation, and so forth in lessening the rigour of natural selection. The fertility and possible sterilisation of individuals is also receiving much attention now, thus placing the problem of population on biological bases. Prof. A. M. Carr-Saunders considers that there is not so much cause for concern over the decline in birth-rate as there is in the connexion between this decline and western civilisation and culture. Prof. L. T. Hogben made a plea for more intensive physiological research into human reproduction. The recent decline in the European birth-rate is undoubtedly due to limitation of parenthood owing to the spread of contraceptive measures, but Prof. Hogben is not prepared to place all the responsibility on contraception.

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PROF. E. W. MACBRIDE considers that, now the problem of over-population cannot be settled so easily by migration to unoccupied territories, one of two things is possible: either war or internal degeneration. Prof. F. A. E. Crew looks upon the problem from the point of view of the geneticist. He emphasised the inability of pure-bred British stocks to claim biological harmony with habitats outside the temperate zones. If, therefore, parts of Australia cannot be colonised by the Australians, but can be by Italians, Japanese, or Chinese, then the latter have the prior right. Similarly have the Indians preferential claim for the greater part of East and South Africa. Nevertheless, being of such mixed racial composition ourselves, it might be possible finally to suit the whole Empire by a better distribution of our migrants among its diverse parts. In this connexion it is interesting to note Prof. Cannan's conclusion, that the remedy for unemployment is mobility in regard to both place and occupation.

A GROUP of biologists of the University of Minnesota has filed a memorandum with the White House Conference on Child Health and Welfare, suggesting that a special conference of experts on heredity be called, to see what can be agreed upon as a positive programme looking to the application of knowledge of heredity to the human species, and to recommend how such a programme should be carried out. In this connexion, Dr. E. P. Lyon, dean of the Medical School, University of Minnesota, has issued through Science Service, Washington, D.C., a statement in which he points out that man has enormously improved domestic animals by the intelligent application of the laws of heredity, and should be able to apply the same intelligence to similar ends in regard to his own species. Human rights are involved, but the right of every individual to have children is opposed by the right of the hopelessly diseased baby to remain unborn. It is not necessary to have any model towards which to aim, but progress can begin with elimination of the manifestly unfit by breeding only from the fit. He suggests that public opinion should be educated on this matter, and that a programme might be adopted extending over one hundred years. This would be further ahead than the human race has ever planned before. At present, very large expenditure and enormous social effort are directed to the environmental side, while the practical aspects of heredity as applied to man are comparatively neglected.

THE twelfth Annual Report of the Ministry of Health, which relates to the year ended on March 31, 1931, has recently been issued. (London: H.M. Stationery Office. 5s. net.) The subjects dealt with fall under the main heads of public health, local government and local finance, poor law, national health insurance, and contributory pensions, the Annual Report of the Chief Medical Officer of the Ministry being published separately. During 1930, 136,515 samples of food and drugs were analysed, of which 6496 were reported against, a percentage of 4.8, which is the lowest recorded. A notable feature of the year was the considerable decline in the number of notified

cases of, and in the deaths from, pneumonia; there has also been a steady decline in the number of cases of encephalitis lethargica, but the prevalence of mild smallpox continues. With regard to housing, the average cost of non-parlour houses, £344, is only £18 less than that in 1928, and dissatisfaction is expressed that there should not have been a more substantial reduction. Attention is directed to the serious lack of reliable information regarding the flows of rivers and streams, and a sub-committee of the Advisory Committee on Water has been appointed to consider what measures can be taken for the accurate gauging of rivers and underground water.

THE activities of local authorities in Great Britain in the sewerage of their areas have, according to the Annual Report of the Ministry of Health, been more than maintained during the year, and loans sanctioned for this purpose amounted to nearly nine million pounds, and the total sum for this purpose since the War is approximately fifty-two million pounds. The report by Mr. Owen Llewellyn, inspector under the Canal Boats Acts, is of the nature of a retrospect, for he is retiring after thirty-two years' service. He remarks that during his period of office many hundreds of miles of canals have become derelict or have fallen into disuse. Motor-engined boats are taking the place of steamers and of horse-drawn boats, though the last-named are the most economical form of transport in many, especially hilly, districts. On canals as a whole, there seems to be no decrease in the number of children found on boats, and the 'floating school' at West Drayton for canal-boat children has proved a success. It is impossible to state with any certainty how many boats exist and are at work, for there is no legal obligation to report the end of once-registered boats. The last portion of the volume contains the report of the Welsh Board of Health, with a number of appendices.

IN his evening discourse to members of the British Association on Sept. 24, entitled "Zoos and National Parks", Sir Peter Chalmers Mitchell described the problems of and need for three types of animal reserves—zoological gardens, zoological parks, and national parks. There are many popular ideas of how various animals should be kept; but Sir Peter pointed out some of the difficulties of keeping animals under conditions resembling so far as is possible their natural habitat. Such problems are not relieved by the diverse nature of the different species of animals seen at our great zoological gardens. Experience in the keeping of animals under such conditions brings out some surprising facts. Examples are the necessity for sunlight and a suitable temperature. Nearly all animals love sunlight, even polar bears and owls; given the chance, they bask in the sun and benefit from it. A constant temperature is not desirable for any kind of animal; variations should be made for the well-being of all animal types. Another great asset, to nearly all animals, is plenty of opportunity to obtain fresh, open air.

ONE point especially emphasised by Sir Peter is the fact that the zoological garden should not be

looked upon merely as an adjunct to the amusement and general instruction of the public, but should be regarded as a splendid field for research. Much more should be done in this respect. An example of this is the behaviour of the kangaroo when under an anæsthetic. The kangaroo is never known to utter any kind of sound normally, yet when subjected to an anæsthetic, probably partly through fright and partly due to the anæsthetic, the animal utters a cry similar to that of the marsupial wolf. Here is an opportunity for research into the cries of animals under various conditions. Many other such problems are still awaiting investigation, which can be carried out advantageously only in a zoological garden. Zoological parks present a still further difficulty in that they allow much more freedom, and therefore only animals with a considerable range of adaptability can be chosen. National parks are useful for the preservation of types of fauna in danger of extinction, the American bison being now a historical example. The chief agent in animal extermination is the advance of civilisation and not sportsmen or scientific collectors.

THE Trustees of the British Museum celebrated on Sept. 29 the fiftieth anniversary of the opening of the Natural History Museum building at South Kensington. The exact date of the opening was April 18, 1881, but the celebration was deferred so as to come within the period of the centenary meeting of the British Association. About a hundred and fifty delegates of museums and learned societies at home and abroad were received by the Trustees at the afternoon meeting. The Earl of Crawford and Balcarres, chairman of the Jubilee Celebration Sub-Committee of the Trustees, presided, and was accompanied on the platform by Lord Rothschild, Sir David Prain, Mr. F. Cavendish-Bentinck, and other Trustees, as well as by the director of the Museum, Dr. C. Tate Regan. Lord Crawford, in opening the proceedings, welcomed the delegates and expressed the pleasure which the Trustees felt that so many had been able to attend the celebration in spite of the world-wide financial difficulties which were then prevailing. Dr. Regan then gave a brief account of the history of the Museum and of the development of the collections contained in it. The delegates were then individually received by the Trustees. In the evening, the Government gave a reception at the Museum, which was attended by the delegates, as well as by a large number of naturalists and other scientific workers attending the meeting of the British Association. The guests were received by the Prime Minister, Rt. Hon. J. Ramsay MacDonald, M.P., and Miss Ishbel MacDonald.

A RECENT writer in the American journal *Forest and Stream* gives an account of a lion farm at El Monte, U.S.A., the property of Mr. and Mrs. Gay. As an adult lion is worth a thousand dollars even untrained, the domestication of the lion—long known as the readiest of sensational 'wild beasts' to breed in captivity—is evidently a paying proposition; and, apropos of this, it may be as well here to give a tentative list of the known domestic mammals, as no such list, embodying

all the latest results, appears to exist. The only other feline domesticated is the common cat; of the dogs, we have now, besides the ordinary dog, the common and arctic foxes; of the weasels, the ferret, mink, and skunk. The domestic rodents comprise the rabbit, guinea-pig, rat (*Mus decumanus*, not *rattus*), mouse, and musk-rat, probably also the coypu and the Patagonian cavy (*Dolichotis patagonica*). Of ungulates, nearly all the known species of *Bos* have been domesticated—the common ox, zebu (if this be really distinct), water-buffalo, yak, gaur (the domestic form being known as gayal or mithan), and banteng, while the two bisons are at any rate emparked; other domesticated hollow-horned ruminants are the sheep and goat and probably the Barbary sheep (*Ammotragus lervia*) and blackbuck (*Antilope cervicapra*), and in East Africa, at any rate, the eland. Among the deer, the milou (*Cervus davidianus*) has never been known except as a park animal; while the reindeer and fallow deer are well known as domestic, and there are park races of the red deer and doubtless others. The two camels (only known certainly as domestic), the llama (the domestic descendant of the guanaco), the pig, the horse, the ass, and Bennett's wallaby, a well-established park animal, complete the list, in which it is to be noted that among the recent achievements in domestication only that of the eland has practical utility as its object.

MR. DENIS BUTLER, of Goodhart Way, West Wickham, Kent, has sent an account of curious behaviour in a North American corn-snake (*Coluber guttatus*) in reference to moles. The snake, which had been kept in an open-air cage, escaped, and on recapture, after about a week, showed by a bulge in the stomach-region that it had fed well. When the cage was next visited, three decomposing moles were found there, which the snake had eaten while at large; most of the flesh seemed to have been digested, but the skins and bones were intact. After about a week, the body of a fourth mole, which must have burrowed in and been swallowed, was found in the cage. It is suggested that this apparent inability to digest moles, when other animals, such as mice, are digested bones and all, is strange; but in the case of the first three found the disturbance of the snake's system caused by recapture no doubt caused them to be disgorged when half-digested. The case of the fourth specimen is more difficult to understand, but though moles are eaten by the common adder and by the four-rayed snake (*Coluber quatuor-radiatus*) of the Continent, it may be that lowering of the digestive powers caused by captivity was just enough to prevent any digestion of a new prey by a snake the natural diet of which is rodents and birds; and one is reminded of the belief of falconers that the eating of a moorhen puts the trained goshawk out of working condition, though it is not likely that the free bird abstains from such prey. But in any event, it is interesting to find that a reptile coming from a country where the summer is so much warmer than that of Great Britain can not only do well in an outdoor cage, but have sufficient energy to escape and find prey for itself, in such a poor summer for warmth as we have had this year.

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THE strange acquirement of a Central Australian parrot, the Corella (*Kakatoa sanguinolenta*), is described by A. W. Mullen in the *Australian Museum Magazine* for July. The individual in question is now twenty-six years old. When it was a year old, the owner's children were firing off crackers close to the bird's cage, when in terror it seized its loose drinking tin (a shallow preserved-meat tin) and placed it over its head—the writer says, "to hide what was to the parrot a terrifying scene". The action in itself was curious, but it is more extraordinary to learn that ever since then the parrot has placed the tin can on its head every night. "He places the tin on his head before falling asleep, and keeps it on like a night-cap until the first streak of dawn awakens him." When by day he had to be transported by rail, he clapped the tin over his head whenever he encountered the strange sights and sounds of the railway station. During his quarter of a century he has worn out at least four tins. We fear to speculate as to the thought which originated and continued this curious action, but remembering the imitateness of parrots (this one talks and calls the children by name, as well as mimicking dogs and fowls), we wonder if his master ever wore a night-cap.

A STRIKING example of human concern for the well-being of wild fauna, apart from mere prevention of cruelty, has recently been set by the Viennese Society for the Protection of Birds. Owing to the very inclement weather in Austria at present, thousands of swallows have been stranded on their migration southwards. The Society has taken the problem into its hands and has collected the stranded birds, giving them sanctuary and food. The birds are then being sent over the Alps either by specially heated coaches attached to the night express train or in cases, which each hold 1000 birds, by aeroplane. The first consignment of 2000 birds was sent to Venice on Sept. 25, and, landing in a suitable climate, took to their wings, finally making their way south. On Sept. 26, 25,000 birds were sent by aeroplane. The weather was unsettled on Sept. 27, so 35,000 were sent to Venice by train. Thousands more are being dealt with, and after resting in Vienna will in due course be sent to Venice.

A LARGE number of visitors availed themselves of the invitation of Sir Joseph Petavel to attend a reception at the National Physical Laboratory on Sept. 24, arranged in connexion with the Faraday celebrations and the centenary meeting of the British Association. Each visitor was provided with a programme of exhibits, members of the staff were present to explain the various investigations being made, and by an excellent system of signs and numbers it was a simple matter to find any particular exhibit. Tea was served in the great building housing the new duplex wind tunnel. This tunnel is 14 ft. by 7 ft. in section, and in it models up to 7 ft. or 8 ft. span can be tested with air speeds up to 75 miles an hour. Another notable aeronautical exhibit was the compressed air tunnel, now nearing completion, in which models will be tested under an air pressure of 300 lb.

per sq. in., the air jet being 6 ft. in diameter. Whereas the other wind tunnels are built of wood, this tunnel has a steel shell $2\frac{1}{2}$ in. thick and weighs 250 tons. It has been tested hydraulically to 500 lb. per sq. in. By the use of this tunnel, scale effect is eliminated, and the results of experiments are immediately applicable to the full-scale machine or component. In the William Froude Laboratory visitors were shown a model ship under test, and the methods of making the models. The demonstrations of flashover tests at 350 kv. on a porcelain insulator string in the High Voltage Laboratory also attracted many visitors. Throughout the laboratory every facility was afforded for learning what was being done, and the efforts of the members of the staff were much appreciated.

THE extensive new laboratories of the Lancashire and Cheshire Coal Research Association were opened on Sept. 22 by Mr. R. A. Burrows, the first president of the Association. The Association was formed in 1918, the funds being provided voluntarily by eight of the large colliery firms in Lancashire. The organisation is now supported by the Lancashire and Cheshire Coal Owners' Association, which includes substantially all the collieries in the coalfield. The programme of work of the Research Association embraces the physical and chemical survey of the seams of the coalfield, the investigation of problems connected with safety in mines, and the study of coal mining. The coal survey work forms part of the National Coal Survey, and in 1922 the fuel research organisation of the Department of Scientific and Industrial Research provided grants to enable the work on the survey aspects of the Association's work to be expedited.

DR. F. S. SINNATT, of the Department of Scientific and Industrial Research, who was the first director of research to the Lancashire and Cheshire Coal Research Association, outlined its early history and development, and said that the staff has been favoured by the enthusiastic support of the coal owners of the district, and has been helped by the fact that there has been continuity of direction by the Council. Originally the Association was largely concerned with the problems of the utilisation of coal, but now its investigations embrace questions of safety and coal winning. Prof. J. S. Haldane, who is especially interested in the investigations connected with the Safety in Mines Research Board, welcomed the establishment of the new laboratories, and said that he regretted it had not been possible for him to come to Lancashire more frequently to help them in the work they were doing. A very large number of coal owners from the Lancashire coalfield and fuel technologists from every part of the country inspected the laboratory, the details of which were explained by the director of research, Mr. Simpkin.

THE report presented by the Seismological Committee to the British Association contains, besides references to the death of the late chairman, Prof. H. H. Turner, the revision of the seismological tables, and work on deep-focus earthquakes, an interesting note on recent earthquakes by Messrs. A. W. Lee, R. Stoneley, and F. J. W. Whipple. A map of the North

Sea earthquake of June 7, depending on about 400 observations, has been prepared by Dr. H. C. Versey and Mr. Stoneley. The shock was felt at Waterford, in the Channel Islands, the north of France, in Belgium, Holland, and Denmark, and so far east as Hamburg and Brunswick. The epicentre indicated by the map agrees closely with the position assigned to it by the Rev. J. P. Rowland, *S.J.* (see *NATURE*, vol. 128, p. 147, July 25, 1931). It lies under the North Sea, near the Dogger Bank, and about 60 miles from the coasts of Yorkshire and Norfolk. The spacing of the isoseismal lines suggests that the focus was decidedly deeper than in most British earthquakes. The seismograph records show, however, that it was not below the granitic layer.

A REPRESENTATIVE party of twenty members of the University of St. Andrews, officially accredited by the University Court and travelling under the auspices of the Overseas Education League (see *NATURE*, Aug. 1, p. 196), returned to Southampton on Sept. 26 from an enjoyable and highly successful visit to the provinces of Quebec and Ontario. Throughout their tour the visitors were cordially welcomed by civic and educational authorities and in private homes, and special facilities were placed at their disposal so as to enable them to see as much as possible, in a limited time, of Canadian life, institutions, activities, and resources. The group was officially entertained by the cities of Montreal, Toronto, and Hamilton, by McGill, McMaster, and Queen's Universities, and by the Universities of Toronto and Western Ontario. In Quebec, the members were received by the Lieutenant-Governor at 'Spencer Wood', and were the guests of the Provincial Department of Public Instruction at Kent House, Montmorency Falls. At Montreal, visits were also made to Macdonald College and the Université de Montréal; at Toronto, to the Canadian National Exhibition and Lake Simcoe; at Ottawa, to the National Research Laboratories and the Gatineau district; at Hamilton, to Queenston and Niagara Falls; and at Kingston, to the Royal Military College and the Thousand Islands.

At a farewell dinner, given to the visitors from St. Andrews, at the Chateau Frontenac, Québec, by Mr. E. W. Beatty, president of the Canadian Pacific Railway and Chancellor of McGill University, Prof. John Read, leader of the party, stressed the importance of such tours as a factor in education and in promoting understanding between Great Britain and the overseas Dominions. He expressed the hope that similar tours will follow this initial venture, and commented on the value of an interchange of teachers, as well as of an increasing number of post-graduate students, between Canadian and British universities. As one means to this end, he advocated the gradual establishment of non-resident lectureships in universities throughout the Empire. The Rev. Father Cannon, of Laval University, in giving the young Scots a glimpse of educational history in Québec, explained the main factors which have enabled the French- and English-speaking Canadians to live together in harmony. At the conclusion of the evening, according to the *Chronicle-Telegraph*, Québec, "the score of

braw lads and lasses frae the auld grey toun, rose and sang 'Ygorra, Beatty', a version of their University song, in honour of the C.P. president".

THE *Polar Record* (Scott Polar Research Institute, Cambridge), in its July issue, maintains the high standard of usefulness shown in its first issue. There is again a full record of the activities of all exploring expeditions in both north and south polar regions and a great deal of material that is otherwise difficult of access. It is of interest to note that the Russian Academy of Sciences has been exploring the Indigirka region in eastern Siberia and has established several meteorological stations: also that a new research station is functioning in the little-known New Siberian Islands in lat. $73^{\circ} 11' N.$, long. $143^{\circ} 15' E.$ Stations have also been started in Franz Josef Land and, to the east, in the newly discovered Kamenev Islands. In an article on the Second Polar Expedition, 1932-33, Dr. G. C. Simpson gives a list of the many stations which various States propose to establish as their contribution to that international project.

IN discussing, in the issue of *Scientiarum Nunciis Radiophonicus* for July 30, the hypothesis that the penetrating rays originate in the 'annihilation of matter', Prof. Gianfranceschi points out that this expression is not readily acceptable by all. Annihilation of matter, in the sense applied to this process by Jeans and others, would give rise to energy in the form of photons, these being nuclei of radiant energy, which is a state of matter. It seems, therefore, preferable to say that the positive or negative corpuscles are transformed into primigenic matter, with liberation of a certain quantity of radiant energy, of which photons are composed. In this form the hypothesis is capable of wide extension. Electrons and protons are a special form of the universal primigenic matter, and both the formation of corpuscles within this matter and their dissolution to re-form the primigenic matter are possible. This universal primigenic matter is what constitutes space-ether, since, even in the hypotheses of the most advanced relativists, real space has physical properties and is hence a primigenic form of matter.

THE annual Henry Herbert Wills Memorial Lecture in physics at the University of Bristol will be given in the Wills Physical Laboratory by Prof. Niels Bohr on Oct. 5, at 5.15 p.m. Prof. Bohr will speak on "Space-Time Continuity in Atomic Physics".

THE 1931 award of the Ferranti Scholarship of the Institution of Electrical Engineers (annual value £250, tenable for two years) has been awarded to W. G. Thompson, of Armstrong College, Newcastle-on-Tyne.

THE inaugural sessional address of the Pharmaceutical Society of Great Britain will be delivered by Prof. G. E. Gask, dean of the Faculty of Medicine in the University of London, on Oct. 7. The presentation will also be made of the Pereira Medal of the Society.

THE Foreign Work Committee of Leplay House is arranging to take a group to Italy during the coming

Christmas vacation. Rome and Naples will be the centres from which Oetia, Tusculum, Herculaneum, Pompeii, Paestum and other places of interest from the archaeological, historical, and sociological point of view will be visited. For full particulars application should be made to Miss Tatton, Director, Foreign Work Committee, Leplay House, 65 Belgrave Road, Westminster, S.W.1.

MESSRS. Ernst Leitz, of Wetzlar (London Branch, 20 Mortimer Street, W.1), have recently completed their 300,000th microscope, which, in accordance with their usual custom of dedicating each 50,000th microscope to a well-known scientific worker or institution, has in this instance been presented to Prof. Ludwig Aschoff, of the Pathological Department of the University of Freiburg. This microscope, in addition to having valuable apochromatic objectives, is equipped with the new Ultropaque illuminator (working in incident light) and the complete set of fifteen new objectives specially constructed for this illuminator. The Ultropaque arrangement, which is a recent innovation, has already proved of value in cancer research and in the investigation of living tissues in general. Previous gifts of Leitz microscopes, each marking the completion of 50,000 instruments, have been made to the German Sanatorium for Consumptives, Davos, Switzerland; Robert Koch; Paul Ehrlich; Prof. M. Heidenheim; and the Institut für Schiffs- und Tropenkrankheiten, Hamburg.

MESSRS. W. and G. Foyle, Ltd., 119 Charing Cross Road, W.C.2, have just circulated a comprehensive catalogue (Dept. 7) of second-hand and new books on technical subjects and applied science. In many cases both the published price and that asked for second-hand copies is given—a useful feature.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A chemist-bacteriologist in a margarine factory in St. John's, Newfoundland—The Trade Commissioner, Newfoundland Government Offices, 58 Victoria Street, S.W.1 (Oct. 8). An honours graduate in chemistry at the Wolverhampton Municipal Secondary School—The Director of Education, Wolverhampton (Oct. 10). A London representative of the New Zealand Fruit-Export Control Board—The Secretary, New Zealand Fruit-Export Control Board, Box 882, Wellington, New Zealand (Nov. 30). A lecturer in chemistry at the Handsworth Technical College—The Principal, Handsworth Technical College, Handsworth, Birmingham. A lecturer in the building trades department of the Cape Technical College—Chalmers and Guthrie (Merchants), Ltd., 9 Idol Lane, E.C.3. A chief mathematical master at the Swansea Grammar School—The Director of Education, Dynevor Place, Swansea.

ERRATUM.—In the announcement of Messrs. G. Bell and Sons' standard and new science books in last week's issue of NATURE, the title of Prof. E. N. da C. Andrade's "The Structure of the Atom" was incorrectly printed as "The Mechanics of the Atom", and that of his "The Mechanism of Nature" as "The Mechanics of Nature".