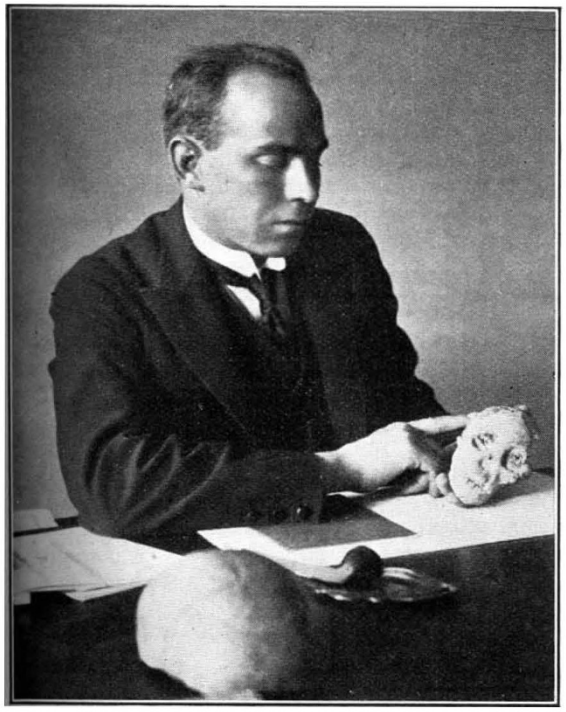
Current Topics and Events.

OUR readers will no doubt be interested in the photograph we publish showing Prof. Raymond Dart, of the Witwatersrand University, Johannesburg, with the Taungs skull. Prof. Dart, who is well known to anatomists in Great Britain, was trained under Prof. J. T. Wilson, now professor of anatomy at the University of Cambridge, and worked in London at the Royal College of Surgeons, and under Prof. Elliot Smith at University College in 1919, where he paid special attention to problems of the brain and to the skull of fossil man. Before taking up his appointment in South Africa he was one of three selected by Prof. Elliot Smith from his staff, at



Prof. Raymond Dart with the Taungs skull.

the request of the Trustees of the Rockefeller Foundation, to visit the medical schools of the United States. A certain amount of criticism has been levelled at Prof. Dart's nomenclature of the Taungs skull. It is generally felt that the name Australopithecus is an unpleasing hybrid as well as etymologically incorrect. Dr. J. G. de Barros e Cunha, of the Institute of Anthropology, Coimbra, who is among those who take exception to the title on these grounds, also writes to point out that if a new family of *homosimiidæ* is constituted, the generic name should be Homosimis, whereas the generic name, Australopithecus, would require the family name Australopithecidæ. Although it may be a little premature to decide, present information does not force either alternative upon us, as there does not seem to be adequate ground for the creation of a new family. Meanwhile the criticism continues, and in a cable which appeared in the *Times* of March 11, Prof. Dart defends himself with some humour but in a manner which suggests that the niceties of etymology do not greatly appeal to him.

PROF. L. VEGARD sends us the following cable message from Oslo, dated March 20: "Shown by experiments in mixtures of nitrogen and neon at the Leyden Laboratory that auroral line is the limit to which the band N_1 approaches by diminishing size of nitrogen particles." Prof. Vegard described his observations of the luminescence of solid nitrogen, and the structure of the two bands in the green part of the spectrum, called by him N_1 and N_2, in communications to NATURE of September 6 and November 15, 1924.

ALTHOUGH the Coal Conservation Report was issued in 1918, there is still considerable difference of opinion amongst electrical engineers as to the advisability of mapping Britain out into power zones each served by super power stations of high thermal efficiency. It is admitted that there are many small stations which burn fuel extravagantly, but in some of our larger stations the thermal efficiency is about 20 per cent. and is still increasing. This compares favourably with anything that has been done by the super power stations in the United States, where the power zone system is adopted. There is one aspect of the problem, however, to which more attention should be directed, namely, the possibilities of interlinking various supply systems by reversible motor-generators so that one company can help the other during times of heavy load. Even if the systems of supply be alternating current of different frequency, suitable electrical devices called frequency transformers can be used for this purpose. When this is done, in nearly every case the ratio of the average demand on a station to the maximum possible demand is largely increased. The overhead charges are thus considerably reduced and will justify a reduction of price to the consumer. The linking together recently of three power stations in Berlin has had the effect of raising this ratio—the so-called "load factor"—to 57 per cent., and made possible considerable economies. The tables published by the Electricity Commissioners prove conclusively that the larger the power station the higher the thermal efficiency. The main difficulties in the way of getting a cheaper supply of electricity, and a more efficient one from the point of view of fuel consumption, are in connexion with raising the capital required for providing the necessary distribution mains. Various schemes have been suggested for overcoming these difficulties, but no general agreement has yet been attained.

THE pages of American scientific and technical periodicals have for some time provided evidence of considerable activity in the field of colloid chemistry. This is not confined to individual work, but there has been a good deal of concerted action directed towards promoting and facilitating the study of the discipline. The Colloids Committee of the National Research Council some time ago issued a fairly complete bibliography of the subject, and has now put forward a definite scheme for the establishment of a National

Institute for Research in Colloid Chemistry. The scheme itself, some of the general claims of colloid chemistry, and a number of successful applications to technical problems are described in a beautifully printed and illustrated booklet published by the University of Wisconsin. This institution puts forward a number of reasons why the proposed Research Institute should be located in its grounds, one of the reasons being the enthusiastic support given to the lectures and research classes held by Prof. The Svedberg of Upsala during part of the year 1923 and the subsequent " symposium " on the subject. The scheme suggests the raising of a sum of one million dollars, a quarter of which is to be devoted to buildings and equipment and the remaining three-quarters to endowment. A director of research, for whose specified qualifications a salary of 8000 dollars does not seem excessive, a director of the laboratory and two research fellows with salaries of 6000 dollars each, are contemplated. There is very little doubt that the money will be easily obtained, and, whatever view one may take of the possibilities of gregarious research, it is impossible to avoid slightly envious comparisons between the colloids " boom " in the United States and the very inadequate provision for teaching and research on the subject in Great Britain.

THOSE responsible for airship development in the United States and in Great Britain have drawn many comparisons with the development of marine transport. To balance their natural optimism a note of caution may be sounded. The new airships are to displace 140,000 cub. m. volume and 150 tonnes mass of air. A ship of the same volume displacement of water would have a mass displacement of 110,000 tonnes. The air leviathans are, of necessity, bubbles lighter than air. Most marine harbours have protected approaches so that in stormy weather ships pass by degrees from the waves of the open sea to completely protected waters before making actual contact with dock or quay. Where the approaches are bad in certain winds, arriving vessels may have to turn back, an experience not unknown to channel passengers. Unfortunately, all airship harbours are bad in all high winds, and if in spite of weather forecasting an airship is caught outside its shed, it must ride out the storm under power or at the mooring mast. With ships, the maximum hogging and sagging stresses increase until the length of the ship exceeds the maximum wave-length, as is the case with Atlantic liners. There is no authoritative information as to the analogous air stresses, but American experience with the *Shenandoah* is held to confirm the belief that these are much greater than the stresses produced by manœuvring in still air. This, then, seems to be the ultimate standard by which the airship will be tested unless it is to remain in its shed until fair weather is predictable with certainty.

THE first manufacture of fused silica ware was a British achievement, and it is satisfactory to learn that the industry which grew from small beginnings at Wallsend-on-Tyne in the early years of this century is still flourishing and well maintaining its pre-eminent position both at home and abroad. Like many other useful inventions, the applications of fused sand and quartz to the construction of laboratory apparatus and to parts of large-scale plant developed at first with extreme slowness, but circumstances arising from the War provided the necessary impetus for their extension : the cutting off of supplies of German porcelain and the recognition of the value of silica condensing-systems for nitric-acid vapour and of silica basins for concentrating sulphuric acid were mainly responsible for the change. Since the end of the War a demand has arisen for silica cooling and absorption plant in the manufacture of hydrochloric acid, both by the old process and by burning hydrogen in an atmosphere of chlorine. Silica stills for the concentration of pure sulphuric acid have also been in request, as silica is the only material that can satisfactorily replace platinum for this purpose. By far the most important new application is the manufacture of gas globes and of bowls for indirect lighting, more fused silica being used for this than for any other purpose. In the immediate future a considerable demand for it is anticipated for making the envelopes of large thermionic valves and the condensers of " radio " sets.

THE number and variety of laboratory appliances made of fused silica are also increasing, and among the latest of these is a mercury condensation pump, which is fully described in the most recent catalogue issued by the Thermal Syndicate, Ltd., of Wallsend-on-Tyne. This pump, measuring 25 cm. in length, is made entirely of fused quartz, and worked in conjunction with a backing pump giving a vacuum of 0·2 mm. of mercury, it provides a vacuum of 0·000002 mm. ; it is operated with only 5 c.c. of mercury, can be heated either by gas or electricity, and is water-cooled. The increased use of fused silica ware for scientific and technical purposes would appear to depend mainly upon its price. It is not easy to manufacture; skilled labour is essential, the necessary electrical equipment is costly, and only very pure raw materials, such as sand from Fontainebleau and quartz crystals from Madagascar, can be used. In spite of these circumstances, considerable progress has been made in reducing production costs, and only a big demand is needed to permit of an appreciable reduction in selling price, and to enable silica ware to compete in price with materials which have hitherto been thought to be much easier to produce. The opacity or translucency of articles made from sand is known to be due to the presence of small air-bubbles and not to impurities in the raw materials. These air-bubbles cannot be expelled because the fused sand is very viscous ; melted quartz-crystal, on the other hand, is quite mobile. The translucent material is, however, quite suitable for most objects, especially when these are glazed, and for some purposes, for example, the manufacture of gas globes, it is to be preferred.

THE British Non-ferrous Metals Research Association has just issued a report on the research work in

progress or completed under the auspices of the Association. The record is a striking one. A graph which is attached to the pamphlet shows that the expenditure on experimental research, which in 1921, the second year of the existence of the Association, was only 1500*l.*, will amount during the present year to close on 16,000*l.* The most interesting feature of the report is the attention given to the scientific study of alloys. The Council of the Association has taken a very broad view, and most of the work is devoted to fundamental problems rather than to the solution of immediate workshop difficulties. It has been decided to establish a small central laboratory, attached to the University of Birmingham, for the use of the Superintendent of Research and also for carrying out preliminary investigations, but the policy of the Association is to have its researches conducted mainly in the universities and other specially equipped laboratories of the country. A glance through the pamphlet shows that at least thirty separate research workers are engaged in various laboratories under the supervision of their respective professors or directors. The non-ferrous metal industry is an extensive one, and there are still branches of it which are not represented in the Association; firms which have not yet seen the benefit of co-operative research of this kind cannot do better than study the present pamphlet. One consequence of the present programme, of interest to physicists as well as to metallurgists, will be the exact determination of the physical properties of many non-ferrous metals and alloys, a subject on which information at present is singularly imperfect, as will be realised by any one who consults the standard volumes of tables of physical constants.

"WINDOLITE" is the name given to an aceto-cellulose wire-net reinforced substitute for glass. It offers a very thin film in the meshes of the wire net, and transmits the ultra-violet rays. One sample tested transmitted light right down to 232 $\mu\mu$, while ordinary window glass cuts off rays shorter than about 330 $\mu\mu$. The most active biological rays, so far as the skin is concerned, are about 300-290 $\mu\mu$, and these are the rays which come through with the high sun on clear days. Windolite should be useful for open-air shelters, verandahs, etc. The makers inform us that gardeners find it draws plants less than glass, and that this is not due to great coolness of the garden frame or house. It should be interesting to see how well plants grow under it, and whether the anti-rachitic substance and the growth vitamin A are present more in plants grown with ultra-violet rays than without. The present writer has tried cress, and so far has found no difference on young rats in the growth-promoting power, but that may be due to vitamin A derived from the seeds. Hess in the United States states that market salad has not got anti-rachitic power, but can be given this by radiation. A new glass has also been submitted to us—Lamplough's Vitaglass; this as rolled is a "cathedral glass," but it can be blown clear. It lets ultra-violet rays through down to 275 $\mu\mu$, costs about 3*s.* a square foot, and should be useful for skylights, verandahs, upper parts of windows of hospitals, sanatoria, schools, nurseries, and possibly for greenhouses if fruit and salads are found to be improved in quality by ultra-violet rays. Blown clear it will be useful for bulbs of tungsten filament quartz lamps, allowing us to get some gentle ultra-violet rays from these.

A DESTRUCTIVE tornado struck Annapolis, Missouri, shortly after 1 o'clock in the afternoon of March 18, swept north-eastward across the Mississippi River, traversing Southern Illinois, and at Elizabeth, Indiana, broke into two lesser storms, which tore pathways through Tennessee and Central Kentucky. The *Times* reports that many towns were completely cut off from communication with the outside world, and others were threatened with destruction by fires which broke out among the ruins. Murphysboro, De Soto and West Frankfort in Illinois, Griffin, Owensville and Princeton in Indiana, and Witham in Tennessee are said to have borne the full force of the storm. At South Greenfield, Illinois, a passenger train was overturned by the wind and several persons were killed. In one place about 50 motor-cars were piled in a tangled ruin. Illinois seems to have been the heaviest sufferer, with 645 known dead and 1945 injured. The latest ascertained figure, to March 20, for all five States is 823 dead and 2990 injured, but many bodies are still buried in the wreckage. The storm tore its way over a length of 150 miles. Often its path was only 300 ft. wide. There are places where it uprooted oak trees a foot thick and split apart heavy stone buildings, but left unscathed flimsy cottages and mere shacks.

THE annual report of the Meteorological Office, Air Ministry, for the year ended March 31, 1924, has recently been published. It is the sixty-ninth year of the Office and the fourth year that the cost of the Office has been borne by the Air Ministry. The report shows a large increase in the staff in comparison with a few years ago, as well as an immense increase in the work undertaken. A good deal of reorganisation has been taken in hand. The Office has apparently attained its normal condition and little further development is expected for some years. Details are given of international work, especially in relation to a common system of reports required for purposes of aviation. The Marine Division has achieved fresh work, including the establishment of the *Marine Observer* and the *Weather Shipping* wireless bulletin. Much weather information is gathered for all oceans from voluntary observers. The Forecast Division has made some progress; 84 per cent. of the gale warnings for the whole of Great Britain were followed by gales or strong winds. The ordinary daily forecasts can be obtained, free of charge, by telephone or from broadcasting stations. The Climatological Division deals primarily with the weather of the British Islands, and numerous observations are gathered from all parts of the globe. The Office is interwoven with the Navy, the Army, and the Air Force. Much research is made with regard to the upper air; 8360 single-theodolite pilot-balloon ascents were made during the year, and 236 aeroplane ascents were made by pilots of the

Royal Air Force to determine upper-air temperatures and humidities. The British Rainfall Organisation and observations in connexion with atmospheric pollution afford much valuable material of general utility.

DURING the course of the Pasteur centenary celebrations, held in May 1923, a Pasteur "day" was held throughout France, when badges were sold in aid of the scientific laboratories of the country. Some nine million francs were collected in this way, while the *Matin* raised a further three million francs by subscription. A committee under the chairmanship of M. Émile Picard, permanent secretary of the Paris Academy of Science, was appointed to distribute the fund, and a list of the allocations has recently been issued. Grouping the awards according to subject, they are as follows: 2,143,000 francs to physics, of which 1,000,000 francs is reserved for the construction of a powerful electromagnet for the Paris Academy of Sciences; 1,340,000 francs to chemistry; 1,150,000 francs for astronomy, of which 650,000 francs will be for a photographic instrument and for a reflector of 1·20 m. aperture; 160,000 francs to mathematics, 120,000 francs of which is for the publication of the works of Henri Poincaré; 190,000 francs to meteorology; 245,000 francs to geography and navigation; 333,000 francs to geology and mineralogy; 630,000 francs to zoology; 640,000 francs to botany; 576,000 to physiology and medicine; 105,000 francs to microbiology; 75,000 francs to agriculture; 600,000 francs for the general biology of the Colonies; 510,000 francs for industrial research and institutions. The three million francs collected by the *Matin* is to be invested and the interest used for prizes and grants. The complete list of the grants appears in the *Revue scientifique* for February 28.

THE fourth annual report, just presented, of the National Institute of Industrial Psychology shows a most interesting development of the work in many directions. The application of scientific knowledge and methods to industrial problems cannot fail to have far-reaching results not only for the firm or industry studied, but also for the sciences applied for the elucidation of its problems; in the course of the application of the scientific principles new data will be available whereby knowledge will be extended. The investigations for the year cover a very wide field—coal-mining and chocolate-making, dress-making and restaurant breakages, to mention but a few. The problems studied have involved—protection from extreme heat, effects of long standing, the mental irritation and worry in connexion with breakages, ventilation and atmospheric pollution. Not the least important part of the Institute's work is concerned with the guidance of children just leaving school; this aspect has been considerably enlarged during the year, owing to a generous grant from the Carnegie United Kingdom Trust, and research work is in progress. The Institute is also conducting an educational campaign by means of lectures and meetings for both scientific and industrial audiences.

THE Textile Institute, the headquarters of which are at St. Mary's Parsonage, Manchester, with London branch office at 38 Bloomsbury Square, has now received a Royal Charter of Incorporation granted by His Majesty's Privy Council by Letters Patent under the date of March 11. The Charter will enable the Institute, in addition to its other powers, to hold examinations and to grant certificates of competency to practise, teach, or profess textile technology. The Institute was formed in 1910 and registered under the Companies (Consolidation) Act, 1908, as a company limited by guarantee. For several years past the question of qualifications in connexion with membership has been under consideration, but it was not until the existing president, Mr. John Emsley, of Bradford, came forward with a definite proposal, accompanied by a generous offer, that it was decided to petition for a Royal Charter of Incorporation. The object of the Institute in adopting this course was to secure not only a higher general status for the organisation, but also that fellowships or associateships which may be granted shall be issued under satisfactory conditions of authorisation. The annual general meeting and spring conference is to take place at Manchester on April 29, whilst the annual conference will be at Edinburgh during Whit-week next. At Edinburgh, the Mather Lecture of the Institute will be given by Prof. A. J. Sargent, of the London School of Economics, whose subject will be "The World Problems of Wool and Cotton."

AT the annual general meeting of the Geological Society of London, held on February 20, the following officers were elected: *President*, Dr. J. W. Evans; *Vice-Presidents*, Dr. J. S. Flett, Sir Thomas Holland, Prof. A. C. Seward, and Sir Arthur Smith Woodward; *Secretaries*, Mr. W. Campbell Smith and Dr. J. A. Douglas; *Foreign Secretary*, Prof. J. E. Marr; and *Treasurer*, Mr. R. S. Herries.

THE Ordnance Survey has published Sheet 44, Mull, of the coloured printed one-inch geological survey of Scotland. The sheet covers an area of involved geological detail and is a beautiful example of fine colour printing. The number of colours used is considerable, and some of them appear in very small area, but the register and general cartographical technique show no flaw throughout the sheet.

WE have received from M. Jacques Boyer, 5 bis, rue Saint-Paul, Paris, a copy of the fourth edition of his "Catalogue de photographies documentaires." It gives a list of the photographic illustrations that he can supply relating to scientific, industrial, and military matters, agriculture, horticulture, geography, aeronautics, automobilism, and portraits of savants and technologists. This last section alone consists of about five thousand portraits, historical characters being taken from the most authentic records. The list of this section is not given. The few sample reproductions included are of excellent quality.

A NEW edition, No. 924, of a catalogue of petrological microscopes issued by Messrs. James Swift and Son, Ltd., 81 Tottenham Court Road, London,

W.1, contains a large and comprehensive collection of microscope outfits for use in petrology, mineralogy, and crystallography. The list includes instruments suitable for elementary students, as well as more elaborate types adapted for the most exacting investigations. A petrological microscope, being an instrument for observing and measuring the optical properties of rocks, minerals and crystals, requires many special fittings and adjustments which are not necessary in a microscope for use in the biological sciences. The models described in the catalogue have been designed primarily for petrological work, and incorporate many of the latest devices for simplifying adjustments and for securing rigidity and accuracy.

MESSRS. Bernard Quaritch, Ltd., 11 Grafton Street, W.1, have recently circulated Catalogue No. 390 dealing with nearly 1900 second-hand works on zoology, botany (including agriculture, forestry, fruit-culture and gardening), and geology. As is usual with the catalogues of this bookseller, many choice and rare publications are listed.

MESSRS. W. Heffer and Sons, Ltd., 4 Petty Cury, Cambridge, have just published a lengthy and well-arranged catalogue (No. 248) of second-hand works in the following branches of science:—Mathematics and physics, astronomy and meteorology, engineering, wireless telegraphy, agriculture, husbandry, and farriery, anthropology and ethnology, botany, chemistry, chemical technology and metallurgy, geology, mineralogy and palæontology, zoology and biology, physiology, anatomy and medicine. Upwards of 3500 books are named, and in addition there is a long list of complete sets of scientific serials which Messrs. Heffer have for disposal. The list is to be had upon application.

Our Astronomical Column.

THE BEGINNING OF THE JULIAN DAY.—There is a lamentable state of confusion in the astronomical world as to whether the Julian Day should begin at noon or midnight. Some countries, following the lead of the United States, have decided on beginning at midnight. But the Astronomical Society of the Netherlands continues the noon reckoning, and many people in the British Isles propose to do the same; some of these quote the fact that no change has been made in the Julian Day table of the Nautical Almanac as registering an official decision in this sense. The fact is, however, that no such decision has been reached, and in its absence the wording of the Nautical Almanac remains as before.

While it is possible to make a good case for either noon or midnight, the use of different systems in different countries cannot fail to be a source of great confusion, and it is earnestly to be hoped that an official decision will be registered by the Astronomical Union at its meeting in July. The present year must in any case be one of confusion, but the sooner that state is ended the better.

THE TOTAL SOLAR ECLIPSE OF JANUARY 24.—The *Scientific American* for March describes this as "the best observed eclipse in history." It was certainly the most populous region that the moon's shadow has traversed since modern methods have been introduced, and the article states that thousands of volunteer observers were engaged in observing the exact limits of the zone of totality and similar researches. Five successful colour photographs of the corona were obtained, and the reproduction of one of them is promised in the next issue. "The great spectacle was not marred by so much as a single wisp of cloud."

The times of the beginning and end of totality were telegraphically recorded on two chronographs, one at New Haven, the other in New York; this facilitated the rapid comparison of results, which were thus available in the cable message despatched to Europe the same day. The main feature of the eclipse as a whole was the eager co-operation of thousands of people in a great many directions, including the effect of the shadow on wireless transmission. There is little doubt that the full report will add to our knowledge very considerably.

The errors in the calculated times of beginning of totality, given in NATURE for January 31, were taken from the cabled reports in the *Observer* for January 25. They were very nearly correct, but need a little revision, which can now be made, thanks to a courteous communication from the editor of the *Scientific American*. The observed times were late on the predicted ones as follows; Ithaca, 5 sec.; Poughkeepsie, 2·7 sec.; New Haven, 4·7 sec.; Easthampton, 5·5 sec.; mean, 4·5 sec., practically identical with that given before. The time at Buffalo was noted as 0·3 sec. early, but uncertain owing to cloud.

Easthampton, on Long Island, was occupied by a party despatched by the *Scientific American*. It was at this station that five successful colour photographs of the corona were obtained by Mr. Edward R. Hewitt, who has devised a very rapid process for such photographs.

MOVING ABSORBING VAPOURS AT GREAT HEIGHTS ABOVE THE PHOTOSPHERE.—Observations with the photographic recording spectrometer as employed by Deslandres in 1910 give the changes in appearance of a line emitted or absorbed by a chromospheric vapour and also its radial velocity. Certain filaments are found to develop violent movements, after which they generally disappear or are much weakened. These phenomena are not observed with the spectroheliograph since its narrow second slit is adjusted for a line of the stationary vapour, and when this line is affected by the Doppler effect, it does not pass through it at all. M. L. d'Azambuja, in the *C.R. Acad. Sci. Paris*, January 5, describes six cases which he has observed in the Meudon Observatory from April 1919 to January 1921, using the calcium K_3 line, four of which are similar to that described by Deslandres, and show radial, but no horizontal, movement. The two others, however, show rapid and extensive horizontal movements, and in addition important radial ones. Maps are given showing the forms and positions of these filaments at different times, together with the positions on the solar disc which they would have occupied had there been no horizontal movement. The filaments were seen at first on the spectroheliograms, but not when the radial velocity became large. The maximum velocity towards the observer of one of the filaments was about 25 km./sec., and it was estimated that it must have reached a height of 225,000 km., or about one-sixth of the solar diameter. No trace of it was left about an hour after it was last seen. It is probable that the same phenomena are involved as in the formation of a temporary protuberance at the edge of the solar disc.