Current Topics and Events.

STAGNATION of trade in the year 1921 is responsible for a situation in the American dyestuff industry resembling, in many respects, that which prevailed in this country. Firms engaged in the manufacture of coal-tar derivatives numbered 201, of which 74 produced colouring-matters with an output of 39,000,000 lb., while the sales exceeded 47,000,000 lb. Thus the domestic consumption of that year was in part supplied from the large stocks carried over from the previous year's abnormally high production. Nevertheless, it is satisfactory to note that progress was made in the direction of a wider range, many dyes of greater complexity and more specialised application being produced and marketed for the first time in the United States; although such materials do not make substantial additions to the bulk of production, they are essential factors in the development of a flourishing domestic industry. Further encouragement follows from the circumstance that in the year 1914 the United States imported nearly 46,000,000 lb. of dyes and produced only 6,000,000 lb., almost entirely from German intermediates. There are still requirements which have to be met from foreign sources, however, 3,914,036 lb. being imported in 1921, principally from Germany (48 per cent.) and Switzerland (41 per cent.); while this quantity exceeds by 511,454 lb. the amount imported in 1920, the average price has fallen from 1·7 dollars for that year to 1·3 dollars for 1921. Simultaneously, the price of domestic dyes has fallen from an average of 1·08 dollars per lb. in 1920 to 83 cents in 1921. From an American standpoint, the most disturbing feature of the year under review is the diminution of exports, the value of which has fallen from 29,833,591 dollars in 1920 to 6,270,139 dollars in 1921; the total exports thus fell below those of the year 1917, when the first considerable expansion of the domestic dye-manufacturing industry from pre-war dimensions was noted.

SUBJECT to the sanction of Parliament, the Ministry of Agriculture is putting forward a further scheme for the drainage of agricultural land as a measure towards the relief of unemployment, especially in rural districts. It is estimated that last winter not less than 340,000 acres were relieved of flooding or water-logging, but a far greater area is still in need of drainage. The scheme is designed for the improvement of arterial drains and watercourses, and grants cannot be made in aid of such work as tile-draining or the cleansing of field ditches. The work must in all cases be completed by March 11, 1923, as no public money will be forthcoming after March 31 next. All schemes from Drainage Authorities must be submitted to the Ministry before December 1, and from County Agricultural Committees before December 16. As the main object to be achieved is to get unemployed men rapidly to work, the Ministry does not intend to let any unnecessary formalities stand in the way of schemes that can be put into operation promptly.

THE Journal of the Royal Society of Arts for August 4 contains the three Cantor Lectures recently delivered before the Society by Mr. C. Ainsworth Mitchell, on "Inks." It is sixty-five years since a communication was made to the Society on this subject—the previous one being a paper by Mr. Underwood in 1857. The lecturer traces the use of inks as far back as 2697 B.C., the date of an old Chinese manuscript in which is described the process of making Chinese ink from lamp-black and glue. Iron gall inks are known to have been used in this country as early as the ninth century A.D. The use of indigo in blue-black ink was introduced in this country in 1836 by Stephens. Aniline dyes were certainly used in inks more than forty years ago, but their presence in the inks in entries in old family Bibles put forward as proofs that claimants for old age pensions were seventy years old, has several times been fatal to the claim. Documents alleged to date from 1719 to 1792 in support of a claim to a baronetcy were proved to be written with ink containing aniline dyes, and therefore were certainly very much more recent. The manufacture, properties, sophistication, analysis, and legal aspects of the uses of inks of various kinds were discussed by the lecturer.

WE have already referred in these columns to the formation of L'Institut d'Optique and the publication of the *Revue d'Optique* in France. These measures have been taken in order that she may manufacture all the optical instruments she requires at home, instead of importing them. The July issue of the Bulletin of the Société d'Encouragement pour l'Industrie nationale contains a report on the first two years' work of the Institut. According to this report the services of the Institut are likely to be in great demand in the near future, and the accommodation at present provided must be extended. More instruments for the practical work of students are required, and time must be allowed in the three years' course for laboratory work. It is hoped that the publication of the lecture courses will reduce the time of attendance at lectures and thus provide the additional time required in the laboratory. The researches which the optical industry requests the Institut to carry out are increasing in number and importance and show that it meets a real need.

THE fourth centenary of the first circumnavigation of the world was celebrated at Guetaria, near San Sebastian, on September 7. Guetaria was the birthplace of Juan Sebastian del Cano, who succeeded to the command of Magellan's expedition after the leader was killed in the Philippines. He returned to Spain in the *Vittoria* on September 6, 1522. An international fleet of twenty-one ships assembled in the bay to take part in the centenary celebrations, at which Great Britain was represented by Rear-Admiral W. S. Nicholson in H.M.S. *Curaçoa*. A service in the old church was followed by a pageant depicting the scenes which took place on del Cano's return.

The King of Spain laid the foundation-stone of a monument to commemorate the voyage.

AFTER a journey of some 25,000 miles and an absence of almost a year, the *Quest* has returned with the members of the Shackleton-Rowett expedition, and entered Cawsand Bay, Plymouth, on September 15. According to the *Times*, valuable hydrographical work has been carried out in the Antarctic and around South Georgia and Elephant Island, and a large-scale map of Gough Island prepared. The highest point on the latter has been named Mount Rowett. In the Enderby Quadrant a point was reached farther south than the extreme latitudes reached by Biscoe and Bellinghausen, but severe pack-ice prevented the exploration of Enderby Land. Much meteorological data were collected. A new bird of the finch species and a new tree resembling an acacia were discovered on Gough Island. The *Quest* proceeded to Portsmouth, arriving on September 18, and Commander F. Wild received a telegram of welcome from the King; referring to the loss of Sir Ernest Shackleton, the King said: "Your record of achievement and the indomitable spirit displayed by all members of the expedition were in every way worthy of his great example."

PROF. L. BAIRSTOW will deliver a lecture to the Royal Aeronautical Society (at the Royal United Service Institution) at 5.30 on Thursday, October 5, on "The Work of S. P. Langley."

THE twenty-fifth annual Traill-Taylor Memorial Lecture of the Royal Photographic Society will be delivered by Dr. R. S. Clay on Tuesday, October 10, at 8 o'clock. The subject will be, "The Development of the Photographic Lens from the Historical Point of View."

THE following courses of free public Gresham Lectures will be delivered at 6 o'clock at Gresham College, Basinghall Street, E.C.: on October 17, 18, 19, 20—Astronomy, by A. R. Hinks; on October 24, 25, 26, 27—Physic, by Sir R. Armstrong-Jones; on November 14, 15, 16, 17—Geometry, by W. H. Wagstaff.

MR. E. LEONARD GILL has been appointed by the Civil Service Commissioners to fill the vacant Assistantship in the Natural History Department of the Royal Scottish Museum, Edinburgh. Mr. Gill has already had museum experience in Leicester and Manchester, and for almost twenty years has been in charge of the Hancock Museum at Newcastle-on-Tyne.

A CONFERENCE of representatives of some twenty of the smaller engineering societies has been arranged under the auspices of the Society of Engineers, to be held on September 29 at the Engineers' Club. The object of the meeting is to consider, and if thought advisable, to inaugurate an Association of British Engineering Societies. According to the draft constitution of the proposed Association, there would be no individual members, the constituent societies functioning as such; each society, however, would retain its independence. It is proposed to issue a journal or transactions in which all papers read before constituent societies would be printed and the expenses met by capitation grants from the societies concerned. Further particulars of the meeting and the proposals can be obtained from the Secretary of the Society of Engineers, 17 Victoria Street, S.W.1.

REFERRING to the obituary notice of Dr. Alexander Graham Bell in NATURE of August 12, p. 225, Mr. F. De Land, of the Hubbard Memorial Hall, Washington, D.C., informs us that the Boston newspapers of Monday, November 27, 1876, tell the story of transmitting speech on the previous day about 200 miles from Boston through Portland to Salem; the *Boston Post* stated that the "voice could be heard with considerable clearness after having passed over this great distance. But owing to the unfit construction of the telephones for the duty required of them a distinctness was not attained which would allow a conversation to be carried on." Mr. De Land also states that other records show that *conversation* was successfully transmitted in 1876 a distance of 143 miles. We believe, however, that in the first commercial prospectus of the telephone issued, it was stated that 20 miles was the limit at which the company would establish telephony; on account of distortion *commercial* telephony at greater distances would have been impossible with the apparatus then in use, though possibly words were transmitted 143 miles so early as 1876.

OUR knowledge of the organs and sense of smell and of odorous substances is defective, and what there is needs systematisation. Mr. J. H. Kenneth has recently published in *Osmics* (Oliver and Boyd: 2*s.* net) the first instalment of a bibliography of the subject of 500 items which should prove useful to any one desiring to find his way into the scattered literature. There are indexes of subjects and of species of animal.

THE Ministry of Agriculture and Fisheries has recently issued in collected form the leaflets dealing with diseases of animals and insect pests of fruit trees. The two series are now available in bound form ("Collected Leaflets on Diseases of Animals," 1*s.*; "Collected Leaflets on Insect Pests of Fruit Trees," 10*d.*). Successful treatment and prevention, whether it be of animal or plant diseases, depends upon early and accurate diagnosis: for the correct identification of the symptoms of any complaint it is necessary to have accurate information available for reference. The leaflets of the Ministry are written with this object in view as well as to supply instructions for the best treatment. The information contained in these two booklets has been brought thoroughly up-to-date, and, in many cases, new and better illustrations than those which accompanied the older leaflets have been provided.

THE reference in NATURE of September 2, p. 324, to the excellent series of wireless telephone receiving sets which are being placed on the market by the Metropolitan Vickers Co., Ltd., contains a statement which, if uncorrected, might lead to misapprehension regarding the completeness of the apparatus sent out by the company. In referring to the simplest of the sets, the remark was made that it was not clear whether the battery was contained in the case. The set in question, however, is fitted with a crystal detector, and therefore no battery is required; and, indeed, this is one of its chief advantages. In the case of the more expensive valve sets, all the necessary batteries are included with the apparatus, for the company makes a special point of the fact that every outfit is sent out complete in every respect.

WE have received from Leslie McMichael, Ltd. (Providence Place, Kilburn), a catalogue of wireless telegraph and telephone apparatus covering a considerable range, and including not only complete receiving sets of various types, but also extensive lists of component parts and accessories from which amateurs and others can make up equipment to cover any requirements on a moderate scale. We notice in particular a very low-priced two-valve receiving set for short wave-lengths which should fulfil the requirements of broadcasting but can easily be converted to longer wave reception and greater sensibility when desired. Some of the apparatus listed has been purchased from the Disposals Board and is offered at favourable prices, and a few items are marked German captured material, transformed as new. A quantity of accessories for transmitting as well as receiving apparatus is included.

Our Astronomical Column.

MARS.—An interesting example of the somewhat unusual atmospheric conditions exhibited on Mars at this apparition is described by E. C. Slipher (Pub. Ast. Soc. Pacific, Aug. 1922). This was a large white equatorial spot situated at the south end of Margaritifer Sinus; it was about 800 miles long, 400 miles wide, and comparable with the polar caps in brilliancy, though slightly more yellowish. There was no trace of it on July 8; it was very brilliant on July 9; on July 10 it was larger but fainter, and crossed by two greyish streaks; on July 11 it had split into three separate portions, of which only one, to the right of Margaritifer Sinus, remained on July 12. On July 13 and 14 the region had resumed its normal appearance. Whitish patches are frequently seen near the limbs, but they generally disappear near the central meridian, indicating that they are morning or evening mists or hoar frosts. This great spot, on the other hand, persisted in full strength throughout the Martian day. The article is illustrated by drawings and photographs, the latter being on a small scale, but fully confirming the changes in the aspect of the spot, which was probably cloud or mist. Its appearance shows that conditions on the planet's surface are by no means so stagnant as some assert.

Prof. W. H. Pickering contributes an article on the planet to *Popular Astronomy* (Aug.-Sept. 1922). It is in reply to one by Prof. Porter, and lays stress on the broad dark band that is visible round the melting polar cap; he gives good reasons for thinking that this is water, not carbon dioxide, and concludes that the day-temperature, even near the poles, is above freezing point, while at the equator it may rise to (say) 60° F. He notes the green colour of the "Maria" after the melting of the polar caps, which he, in common with many astronomers, ascribes to some form of vegetation, another indication of a temperature above freezing point. From the frequent presence of cloud or mist near the terminator, he conjectures that the nights are generally cloudy, which would tend to mitigate the severity of the night frosts. He notes that Prof. Campbell's spectroscopic observation (quoted by Prof. Porter) did not prove the complete absence of water-vapour, but only that its amount was less than a quarter of that in the earth's atmosphere.

THE LAW OF SOLAR ROTATION.—The determination of the law of rotation of the sun is an old problem, first formulated by Carrington, who studied the motions of spots as they moved across the solar disc. As sunspots are confined to middle and low latitudes, the law, based on actual data, was restricted to these latitudes. The spectroscopic method of determination was a great step in advance, because a law could be deduced which could be extended to the solar poles. Spectroscopists have, until recently, been somewhat in difficulty with their results, for determinations at different times by different observers have resulted in formulæ which did not agree. The fact is that a law formulated from observations made at, say, sunspot minimum is not applicable at a sunspot maximum, because the movements of the vapours in the solar atmosphere vary from year to year. This question of the variability of the sun's rotation during a cycle of solar activity was raised last year by Prof. Newall (Mon. Not. R.A.S., vol. 82, p. 101), and in the current number of the same publication (vol. 82, p. 479) Dr. Halm now clearly shows that "the same law of rotation of the reversing layer can be expected only under similar conditions of activity." He shows a very impressive series of curves, illustrating the angular velocities for about every ten degrees of solar latitude for each year from 1901 to 1914, excluding 1910. In these the angular velocity increases rapidly from sunspot minimum (1901) to sunspot maximum (1905), and then more slowly decreases to sunspot minimum (1913); the amplitude being much more pronounced for high than for low heliographic latitudes. These results are based on observations made at Upsala, Edinburgh, Mount Wilson, and Ottawa.

SUNSPOT IN HIGH LATITUDE.—A small sunspot was noted at Mt. Wilson on June 24 in latitude 31° north, longitude 8° east. No spot has been seen in such a high latitude since December 1919, and it is considered to be the first spot of the new cycle. It will be remembered that the equatorial spots of the expiring cycle continue for a year or more after the commencement of the new one, so that the actual minimum may not be reached till next year. The above spot was of negative polarity, whereas most of the single northern spots in the expiring cycle were positive. This is a further argument, though not a decisive one, for the spot belonging to the new cycle.