

tained throughout 1914-15. There was a slight fall during 1915-16, but 1916-17 saw a reversion to the 1914-15 standard, which has continued. There was a corresponding increase in the area under the crop; this, during 1916-17, was three and a half times as great as the average for the preceding five years. There has been a similar rise in the quantity of indigo exported from India; four times as much was dispatched abroad in 1915-16 as had been shipped during 1913-14. But the total area under the crop in 1916-17, which exceeded 756,000 acres, still remained less than half what it had been in 1895, while the total production in 1916-17, which amounted to 95,500 cwt., was little more than half the output of 1896, which had been 187,000 cwt.

The view held in circles well qualified to judge is that this marked increase in the production of the natural dye since the war began can be regarded only as temporary, the synthetic dye being now too well established ever to be displaced. There is much to be said for this view. Since the war began, the actual output of the dye from the various Indian provinces in which by 1914 the industry had practically become extinct has exceeded that from Bihar. Yet in these provinces the industry had been in the past, and is now being, conducted in a somewhat primitive fashion by methods that result in a relatively poor yield of a product of low quality. The author of the papers before us nevertheless hazards the suggestion that, provided certain improvements in actual practice can be effected, the natural product may "be able to put up an interesting fight with the synthetic dye." It is, however, admitted that the possibility of maintaining that contest must depend upon the retention or the capture of an Eastern market.

An equally lucid and well-illustrated review of the methods of manufacture which obtain in Bihar is given in the second of the articles under notice. The indigo plants there cultivated are two in number: *Indigofera sumatrana*, an Asiatic form, which is still the chief source of the dye in Bihar, first introduced to north-eastern India as a crop in the later years of the eighteenth century; and *I. arrecta*, an African species, first brought to India from Java so recently as 1899. The latter species as a rule yields more green plant per acre than the former, and always produces far more dye per 100 maunds of plant. The two demand different treatment, for *I. arrecta* may be sown in October and is ready for a first cutting in late May or early June following, whereas *I. sumatrana* cannot be profitably sown until February, and as a rule is not cut until mid-July. Another advantage in the case of *I. arrecta* is that this species suffers less from flooding and water-logging than *I. sumatrana* does. One of the most important considerations connected with the future prospects of natural indigo in India therefore is an increase in the cultivation of *I. arrecta* in preference to *I. sumatrana*, so as to cheapen the production of the dye. Unfortunately certain serious difficulties, chiefly of a botanical nature, are met with in the management of what is still a com-

paratively new and correspondingly unfamiliar plant in Bihar.

The most fundamental of these difficulties, which relates to the identity and the original home and habitat of the plant itself, was definitely settled on behalf of the indigo industry by the officers of the Indian Botanical Department in 1902. The remaining difficulties, which are of a physiological and pathological nature, have been the subject of study by the Indian Agricultural Department during the past ten years. The author of the papers now under notice has promised to deal with these difficulties and to indicate the means by which they may be overcome; also to consider how far existing methods of manufacture in Bihar are imperfect and to explain how these may be improved. His further contribution to the general subject will therefore be looked forward to with interest.

PROF. ALFRED SENIER.

PROF. ALFRED SENIER, who died on June 29 at Galway, was born at Burnley on January 24, 1853. His parents, about two years after his birth, emigrated to Wisconsin, where he received his early education. In due course he attended the Universities of Wisconsin and Michigan, and graduated as doctor of medicine of the latter in 1873. But his interest lay principally in the subject of chemistry, and, returning to England, he filled, under Prof. Atfield's direction, the posts of assistant and demonstrator in chemistry to the Pharmaceutical Society in London from 1874 to 1882, and, afterwards, for about three years, that of lecturer in chemistry in St. John's College, Battersea, of which the Rev. Canon Daniel was at that time principal. He then became a research student with Prof. von Hofmann, and after a period of three years received the degree of Ph.D. from the University of Berlin. His inaugural dissertation, "Ueber Cyanursäure, ihre Isomeren und Derivate," on receiving this degree, was published. In 1890 he became *locum tenens* for Prof. Maxwell Simpson in Cork, and in 1891 he was appointed professor of chemistry and lecturer in medical jurisprudence in Queen's College, now University College, Galway.

Prof. Senier's researches in organic chemistry were devoted mainly to the cyanuric acids, to the acridines, and to phototropic and thermotropic phenomena. He proved the non-existence of  $\alpha$ - and  $\beta$ -cyanuric acids, and his discovery of hexamethylacridine and  $\alpha$ -naphthacridine led to the investigation of new acridine derivatives, to new methods of inquiry, and to the discovery of new types of acridine compounds. In his presidential address to Section B of the British Association in 1912, he dealt with the salient features of his work on phototropy and thermotropy.

He was always greatly interested in philosophical subjects, and was familiar with the topics and controversies of philosophy and logic. With Dr. W. R. Dunstan, he was instrumental in founding the Aristotelian Society in 1880. He was hon. secretary and treasurer of this society from its

foundation until 1884, and was made an hon. member in 1902.

Prof. Senier took an active part in all matters connected with the government of Galway College and of the National University of Ireland. He was a member of the governing body of the college and a member of senate of the university, and possessed in a high degree the qualities that are essential for securing efficiency in a position of responsibility in the administrative work of a university. He was a fellow of the Chemical Societies of London and Berlin, a fellow of the Institute of Chemistry, a member of the Royal Irish Academy, and an honorary doctor of science of the late Royal University of Ireland.

#### NOTES.

THE French National Fête Day is July 14, but as the date fell on a Sunday this year it was celebrated with much enthusiasm in London on Friday and Saturday. Last year the sum of 200,000*l.* was raised on "France's Day" for the French Red Cross, and this year it is expected that a total of a quarter of a million pounds will have been reached. The festival was made particularly noteworthy by messages which were dispatched to France by many leading societies and institutions in Great Britain, among them being the following:—*Royal Society*: The Royal Society of London sends greetings to the French nation, and more especially to its scientific men. It recalls the intimate friendship which since their foundation has bound together the Académie des Sciences with its own body. Always united in their endeavour to promote the advance of science, they are now joined in their efforts to defend the cause of civilisation and freedom. *British Association*: Nineteen years ago the Dover meeting of the British Association was "so arranged that two great nations which had been, a century earlier, grappling in a fierce struggle should in the persons of their men of science draw as near together as they could." Another joint meeting with France was on the point of taking place when our high hopes of lasting general peace were so cruelly destroyed. But out of the destruction has arisen a far closer union of our two peoples, and an even brighter prospect of our future co-operation for the good of humanity and of science. *Royal College of Surgeons of England*: Brothers-in-arms, we greet you. Bound by ancient ties of blood and by the memories of many a gallant contest in the past, to-day we stand as one nation united in a sacred cause. We have before us a happy presage from the past. As the united efforts of Pasteur and Lister have laid low the tyranny of disease, so shall France and Britain conquer a tyranny still more remorseless. Our future brightens, and shall endow Gaul and Briton with a common birthright to remain a splendid heritage for all time. *British Academy*: To France, who has so often inspired and led civilisation in Europe: to France, who upholds the banner of intellectual freedom and unfettered thought; to France, who for nearly four years has endured brutal outrage and the violation of all decencies of humanity and civilisation, the British Academy, in the name of British scholarship, sends on this great anniversary a renewed assurance of loyal fraternity and of unshaken determination to continue the conflict until liberty is secured and French soil delivered from the desecration of the invader.

THE prevailing epidemic of so-called influenza is widespread both in this country and on the Continent.

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The most striking symptoms are sudden onset with chills, headache, and pain in the neck, back, loins, and limbs, with general malaise. Fever is present, ranging from 102° to 104°, or even 105° F., but generally disappears almost suddenly on the third or fourth day of attack, and the individual rapidly convalesces. On the whole, the disease is quite mild and unattended with complications. It differs from the true influenza, which was so prevalent in 1889 and the early 'nineties, by being milder and of shorter duration, and by the rapid convalescence. The true influenza is caused by Pfeiffer's bacillus, a minute rod-shaped microbe abundant in the bronchial secretion. As regards the present disease, Capt. T. R. Little, C. J. Garofalo, and P. A. Williams state that they have investigated a number of cases and entirely failed to find the *Bacillus influenzae*, but a gram-positive diplococcus appears to be constantly present in the naso-pharynx, throat, and sputum, which they tentatively regard as being the causative organism (*Lancet*, July 13, 1918, p. 34). The *Lancet* suggests that the disease would be better named "catarrhal fever."

THE following grants of money for research committees were voted by the General Committee of the British Association at the meeting in London on July 5:—*Section A.—Mathematical and Physical Science*: Seismological investigations, 100*l.*; discussion of geophysical subjects, 10*l.* *B.—Chemistry*: Colloid chemistry and its industrial applications, 5*l.*; non-aromatic diazonium salts, 7*l.* 7*s.* 8*d.* *D.—Zoology*: Inheritance in silkworms, 17*l.* *F.—Economic Science and Statistics*: Women in industry, 10*l.*; effects of the war on credit, etc., 10*l.* *H.—Anthropology*: Palæolithic site in Jersey, 5*l.*; archæological investigations in Malta, 10*l.*; distribution of Bronze-age implements, 1*l.*; age of stone circles, 15*l.*; anthropological photographs, 1*l.* *I.—Physiology*: The ductless glands, 9*l.* *K.—Botany*: Heredity, 15*l.*; Australian Cycadaceæ, 7*l.* 17*s.*; Australian fossil plants, 15*l.* *L.—Educational Science*: The "free-place" system, 5*l.* *Corresponding Societies Committee*: For preparation of report, 25*l.* Total, 268*l.* 4*s.* 8*d.*

THE death of Mr. Isaac Beardmore is recorded in the *Engineer* for July 12. Mr. Beardmore, who was eighty-two years of age, was joint proprietor, and was associated with the management, of Parkhead Forge, Glasgow, for about twenty years. Under his control the Parkhead Forge was converted from an iron to a steel works in 1878-80.

THE death is announced, on July 14, at seventy-seven years of age, of Dr. R. O. Cunningham, emeritus professor of natural history and geology, Queen's College, Belfast. Dr. Cunningham was naturalist to the survey of the Straits of Magellan and author of "Notes on the Natural History of the Straits of Magellan" and "On Reptiles, Amphibia, Fishes, Mollusca, and Crustacea obtained during the Voyage of H.M.S. *Nassau*."

TWO Chadwick public lectures were delivered by Prof. D'Arcy Thompson last month at the Mansion House, London, and the Surveyors' Institution, Westminster, respectively. Abstracts of these lectures have been published in the *Fish Trades Gazette* of June 29 and July 6. The first dealt, in general, with the fishing industry of Europe, and in particular with the line and trawl fisheries of Great Britain. The second had for subjects the great herring fishery of the Scottish and English east coasts, the growth of the industry and its administration, and the origin of the fishing population.