The research programme of the Institute was divided up, magneto-optics to Ollivier, ferromagnetism to Forrer, paramagnetism to Foëx, X-radiography to Hocart, mathematical physics to Bauer, high-frequency work to Ribaud, to all of whom Weiss conveyed his enthusiasm. Every Monday all the research workers met for a session of "questions de l'ordre du jour". Weiss went to endless trouble at these meetings to help a worker finding honest difficulties; he went to similar trouble in rebuking a worker doing slovenly work or presenting it badly if he or she should have known better. Of particular joy to Weiss was the formation of a Strasbourg section of the Société de Physique française—the first of the provincial sections. There was but one choice for president. In the 1919–39 period Weiss continued his practice of shutting himself in the laboratory one or two days a week and being available to no one. Rather more than forty papers were produced in these years.

Large numbers of foreign workers came to the Institute, and Weiss was always most helpful and kindly to them, going out of his way to assure himself that they were comfortably housed, had sufficient money, and that all was well at their homes. The number of British students was small, but Rumanians and Poles came in plenty. Many of the workers were mature, being schoolmasters to whom the French *lycée* teaching programme afforded plenty of leisure. Weiss was a charming host, and there were many happy receptions held in the long wide corridor of the Institut de Physique following scientific meetings. Everyone met everyone, and not the least charming feature was the manner in which the other members of the Weiss family devoted themselves to putting everyone at ease. Weiss could chat readily in German (including Swiss, Alsatian and Mulhouse patois), Dutch and English besides his native French. Happy, and believing in the value of the work being accomplished in Alsace, Weiss declined advancement in Paris; in 1926 he had been elected a member of the Academy of Sciences. He was also doctor *honoris causa* of Geneva.

Weiss retired from the post of director at Strasbourg in October 1936, but continued to direct the magnetic laboratories until 1939, when the University was dispersed. Weiss himself went to Lyons, and, despite serious heart trouble, worked hard editing and translating papers presented to the International Magnetism Congress held in Strasbourg four months before the outbreak of war. In November 1940 he died in his seventy-sixth year.

I am indebted to Prof. G. Foëx, director of the Institut de Physique at Strasbourg, for furnishing me with some of the details mentioned.

C. R. S. MANDERS

WE regret to announce the following deaths:

Mr. F. W. Frohawk, well known for his illustrations of bird and insect life, on December 10, aged eighty-five.

Brigadier H. St. J. L. Winterbotham, C.B., C.M.G., D.S.O., formerly director-general of the Ordnance Survey, and recently general secretary of the International Geodetic and Geophysical Union, on December 10, aged sixty-eight.

NEWS and VIEWS

Crystallization of Synthetic Penicillin

THE recent announcement in *Science* (**104**, 431; November 8, 1946) that du Vigneaud, Carpenter, Holley, Livermore and Rachele have isolated the crystalline triethylammonium salt of synthetic penicillin-II, identical in all respects with the optically active triethylammonium salt of natural penicillin, has solved one more of the extraordinarily difficult series of problems that this remarkable substance has set. Readers will recall the statement on penicillin chemistry which appeared in *Nature* of December 29, 1945, p. 761, wherein an account was given of the co-operative effort of British and American chemists working under the auspices of the Medical Research Council (London) and of the Committee on Medical Research (Washington), and which will appear shortly in monograph form. During this highly successful essay in trans-Atlantic co-operation, chemists in the United States and in Britain were able to show that in the reaction between certain oxazolones bearing a potential aldehyde group and *d*-penicillamine, antibiotic activity corresponding to a 0·03 per cent yield of penicillin could be produced with regularity, and this could be raised to a 0·22 per cent yield under better conditions. This product, moreover, had a 'bacterial spectrum' similar to that of natural penicillin, and when isotopic 'tracer' technique was applied to the problem by use of penicillamine containing radioactive sulphur, the added natural penicillin was isolated as a triethylammonium salt which could be recrystallized repeatedly without sensible variation of its radioactive sulphur content. In addition, the presence of penicillin in the synthetic mixture was shown by its destruction by the enzyme penicillinase.

The use of partition chromatography by an American firm on the synthetic reaction mixture led to an active material containing 2·6 per cent of penicillin, while an application of the 'counter-current distribution' principle of Craig to this problem by du Vigneaud and his colleagues has raised the yield in one case to more than 16 per cent. The innate instability of penicillin frustrated efforts to fractionate such products, and it was only when the one-stage condensation process was modified to a two-stage process that a readily reproducible yield of activity could be obtained which proved thoroughly amenable to fractionation by the 'counter-current distribution' method. Eventually crystals of triethylammonium penicillin-II were obtained, identical in all respects with the corresponding salt of the natural product. Although use of *l*-penicillamine in the synthesis apparently leads to biologically inactive material, du Vigneaud and his colleagues have found that *d*-penicillamine can be replaced by *d*-cysteine, the thiolthreonines and β-mercaptoleucine with production of new penicillins which may possess different 'bacterial spectra'. It cannot yet be said that "what was only a path is now made a high-road", but the knowledge that is now being garnered with regard to the mechanism of the reaction involved in the two-stage synthesis may one day make it possible for synthetic penicillins to compete with the natural products.

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