many will regret the passing of an institution which has played a prominent part in the scientific life of the French capital. Situated about half a mile south of the Luxembourg, the Observatory was built in the reign of Louis XIV. to the designs of Claude Perrault, the famous architect of the Louvre. It was begun in 1667 and completed in 1671—four years before the erection of Greenwich Observatory—and Dominique Cassini, the Italian astronomer, was appointed the first superintendent.

In spite of the eminence of its designer, the building was not well adapted for its purpose, for as Grant says, "No means were provided in the construction of the building for enabling the astronomer to observe the celestial bodies at all altitudes, by means of instruments sheltered under its roof, nor was it possible to repair the omission, on account of the enormous thickness of the walls". Neither was its organisation one which was likely to lead to the best results. Though Cassini was appointed its nominal head, no fixed sum was set apart to provide for the annual maintenance of the establishment. No definite plan of observation was drawn up, and the Observatory was available for other astronomers desirous of prosecuting their own lines of study. Cassini began his observations at the Observatory on Sept. 14, 1671, Picard his on July 9, 1673, and La Hire his in 1677. Six years later a mural quadrant of 5 ft. radius was installed and with this instrument La Hire made meridional observations for thirty years. Four Cassinis in all were successively at the head of the Observatory, their combined periods of office extending over a hundred and twenty years.

With the nineteenth century many changes were introduced, and the Paris Observatory has had a succession of directors whose names have become household words. From 1830 until 1853, Arago was the director, but it was his successor, Leverrier, who became the real organiser of the Observatory. Newcomb, who stayed in the Observatory as a guest of Delaunay during the Commune in 1870, said Leverrier's work "was not dissimilar to that of Airy at Greenwich; but he had a much more difficult task before him, and was less fitted to grapple with it". Early in 1870, Leverrier indeed had become so unpopular that he was removed from office; but in 1872, on the tragic death of Delaunay, he was reappointed director. He continued to hold office until he died in 1877, and for many years his statue has stood in the Cour d'Honneur.

The reputation of the Paris Observatory has been raised still higher under the régime of Leverrier's successors, Mouchez, Tisserand, Loewy, and Baillaud, who, as Newcomb remarked in his "Reminiscences of an Astronomer", "have known where to draw the line between routine on the one side and initiative on the part of the assistants on the other". The pages of NATURE have frequently contained notes on the progress of work carried out at the Observatory.

## Obituary.

### PROF. OTTO WALLACH.

IN Otto Wallach, German chemistry loses one of its organic pillars. He is almost the last to go of a great generation which believed in the serious study of materials at the laboratory bench as the prime and proper occupation of the chemist and could express itself in plain, straightforward, honest language, free from illusions and pretence. The split *p* and the proton leaning-post have changed all that: the beginner no longer learns even to determine the molecular weight of oxygen, although he is prepared to discuss the 'in'ards' of its atoms; analysis is a meaningless word to him; he is not really to be trusted to analyse anything, either by word or deed. What was a moral science is fast becoming mere superstition to the majority. The example of a craftsman like Wallach is therefore of special value. Devoting himself to the study of one of the great groups of plant products, the essential oils, he developed consummate analytical skill in unravelling Nature's most tangled mixtures, thus laying not only foundations for the future study of vital products but also contributing largely to the development of a most remunerative industry.

Wallach was born on Mar. 27, 1847, at Königsberg, Prussia; he died on Mar. 1. Educated at a humanistic gymnasium in Potsdam, his university studies were carried on at Göttingen, where he came under Wöhler, probably a greater chemist than his partner, Liebig; Fittig, a most accurate but unimaginative worker; and Hübner, a man of lesser note; he then spent a term in Hofmann's laboratory in Berlin. After taking his degree in Göttingen in 1869, he passed the winter in Berlin as assistant to Wichelhaus, becoming assistant to Kekulé in Bonn in the spring of 1870. Part of 1871 was spent in the Berlin Aktiengesells. für Anilinfabrikation. In 1872, he returned to Bonn as laboratory assistant. He became a *Privat-Docent* in 1875 and *extraordinarius* in the following year. Thirteen years later, he succeeded Victor Meyer at Göttingen.

Wallach's career therefore was neither adventurous nor rapid. He began his work on essential oils in 1884. His industry so impressed the electors that, in 1910, as all good German chemists do, he received a Nobel Prize. If an infinite capacity for taking pains be the mark of genius, he was definitely a genius; if imaginative power and a developed artistic and critical sense be the criteria, he was simply a highly competent workman: a good cook, able to serve up dish after dish in well-garnished form, scarcely a *chef* of high degree. He was not even a pioneer but took up the ball, at a propitious moment, when the development of structural and synthetic chemistry was in

full swing and help was coming in from every quarter; following it closely, happily aided by the inspired action of men like Tiemann and Baeyer, who every now and then gave to it a guiding kick, he was able to carry it forward with ever-growing advantage, the score of papers to his record being ultimately 179.

The first foundations of terpene chemistry were laid in France, especially by Berthelot. Gladstone and Wright were early in the field here but did not get very far. In the early 'seventies, Tilden and I began to revise and extend the French work but the real cause of advance was Tilden's brilliant discovery of the beautifully crystalline nitroso-chlorides and nitroso-derivatives of turpentine (pinene) and citrene. We were early convinced that the number of isomeric hydrocarbons had been greatly exaggerated. Wallach began by studying wormseed oil but soon passed into our field—without ever asking our permission, although those were days when not all were pirates as now. He scored his first real success in working with Tilden's compounds. It was therefore amusing when, in 1890, in a paper in the *Annalen* he practically accused me of having picked his brains when I had visited his laboratory shortly before. This was in connexion with sobrerol. As a matter of fact, I had been collecting the material a dozen years previously: it was in this work that Sir William Pope's crystallographic genius first became apparent.

If we ask why Tilden, who made so brilliant a beginning, did so little afterwards, whilst Wallach who had trod in his footsteps did so much, the answer is that in 1880 Tilden became the head of a new school (Mason College) and had 'fish to fry' more important than essential oils. Wallach had not a few helpers, under the German university system. The last thing Birmingham cared for then was research. Tilden had scarce a student to work with him: his men were under no Ph.D. compulsion to attempt original work. I was in a like position and, at about the time Wallach began, had three new laboratories on my hands in rapid succession. Still we kept the camphor pot boiling usefully, so that an English camphor school gradually arose; this began by doubting Kekulé. Perkin junior's synthetic terpene work stands unrivalled. Later English workers in the field have given proof that there are still craftsmen among us. Maybe, ere long we shall have to show that not a few of the conclusions of the Wallach school are unsound.

Wallach was able to accomplish his work because he was under conditions which were the outcome of centuries of loving care for the universities and a public belief in the value of education. Here, fifty to sixty years ago, even Oxford and Cambridge were scarce known to natural science. Cambridge came fairly rapidly to the fore but Oxford was slower. Meanwhile schools of university rank have been established in every considerable town in the country; perhaps some of us who have contributed to this end may prove to have done work of far more value than that on essential oils.

HENRY E. ARMSTRONG.

---

WE regret to announce the following deaths:

Mr. T. C. Cantrill, formerly of the Geological Survey of Great Britain, on April 3, aged sixty-three years.

Sir John de Villiers, noted especially for his work while in charge of the map room at the British Museum and his contributions to geographical and historical literature, on April 2, aged sixty-seven years.

---

## News and Views.

THE Society for the Preservation of the Fauna of the Empire performed a great service when it persuaded the Secretary of State for the Colonies to approve of and support a general survey of the East African group of Colonies and Dependencies from the point of view of the preservation of wild life. A fortunate choice selected as observer Major R. W. G. Hingston, already well known for his natural history observations; and after a rapid survey of the land, the results and conclusions of his tour were presented on Mar. 9, in the form of a lecture to the Royal Geographical Society. Major Hingston had the advantage of discussing with Government officials and representatives of public opinion the problems which face the fauna of Africa, and on the basis of these discussions and his own observations he has submitted for the consideration of H.M. Government a scheme of nine national parks, which, if brought into being and effectively conducted, would ensure the perpetual preservation of the fauna of these territories, without undue interference with native rights or economic development. To anyone familiar with the history of wild life in Africa, the gradual but constant retreat and often final extermination of the large animals is a commonplace, but surely Major Hingston exaggerates when he states that "great and small, everything is retreating". The general experience is that cultivation of the soil *increases* the amount of wild life; only, the great animals go, and the small things that take their place, even if they do not become pests, far from compensate for the picturesqueness of the departed.

THE large animals are at the mercy of several disruptive forces. Of these, man has brought into play cultivation of the soil, the demands of special trades, and the activities of sportsmen; while Nature threatens with epidemic diseases. Not only has African wild life suffered directly from such diseases, but the suspicion that it may harbour or encourage diseases to which man is subject has concentrated a new warfare against it, so that last year 20,000 head of game, including 9000 zebra and 2500 wildebeest, were slaughtered in Zululand because it was feared that they kept alive the tsetse fly with its burden of sleeping-sickness. National parks and game reserves at present help to preserve the wild life of Africa, but the perma-