

attack, but also there is an almost infinite number of stereo-chemical isomers due to the presence of cyclohexane rings. It occurred to Ruzicka that the ring system of the sterols might provide the basis for the synthesis of hormones, and he therefore chose a sterol with a suitable stereo-chemical configuration for the ring system and removed the side chain by oxidation. This provided a most important basis for the synthesis of the hormones, and by suitable manipulation of double bonds, conversion of hydroxyl groups to keto groups, and so on, it was possible to produce from a neutral sterol such as cholesterol the highly potent hormone testosterone. It can be said that the recognition of this principle has solved the problem of hormone production, quite apart from its great theoretical interest. Prof. Ruzicka has been a frequent visitor to Great Britain; his addresses are noted for their clarity and for their wit.

Prof. E. O. Lawrence

THE announcement of the award of the Nobel Prize for physics for 1939 to Prof. E. O. Lawrence, professor of physics in the University of California, Berkeley, will be received by physicists everywhere with approbation. Lawrence's early researches were concerned with photo-electric effects but, in 1930, he became interested in the possibilities of using the method of resonance acceleration in order to obtain positive ions of very high energies, by means of a number of consecutive accelerations through relatively low differences of potential. The method of linear resonance acceleration was pushed to its practical limit in Lawrence's laboratory when, in 1934, mercury ions were obtained having energies equivalent to accelerations through a potential difference of nearly three million volts, using, however, applied potential differences having a peak value of only 70,000 volts. The limitations of the method of linear resonance acceleration in its application to the acceleration of ions of small atomic mass had, however, been recognized by Lawrence in 1930, in which year he proposed a modification of the method for such ions. This consisted in accelerating the ions back and forth between two semi-cylindrical hollow conductors, the paths of the

ions being rendered circular by means of an intense magnetic field. Thus was conceived the magnetic resonance accelerator, or cyclotron as it is now more generally called.

At that time, it was somewhat generally considered that the practical difficulties involved in the cyclotron were of a magnitude likely to preclude the translation of this conception into terms of practical physics. All the greater then, was the tribute to be paid to the experimental genius of Lawrence when, little more than a year later, he announced the success of the method in obtaining light ions of high energy. His success was acclaimed on both sides of the Atlantic, by the awards of the Comstock Prize of the National Academy of Sciences in 1937 and, in the following year, of the Hughes Medal of the Royal Society, the latter being given for "the most important instrument of physical research since the C. T. R. Wilson expansion chamber". Later, however, Lawrence's interest turned rather towards the vast field of physiological research to which the cyclotron, with its prolific output of radioactive indicators, had opened up a new approach. Important results in nuclear physics continued to pour from the Radiation Laboratory at Berkeley, but at the same time a new side was being developed, and the physiological effects of neutrons and the metabolism of phosphorus and iron, and of like elements which could be obtained in a radioactive form, were being exhaustively studied. Not to Lawrence's laboratory alone was this work confined, his generosity providing for scientific workers in many places in America and in Europe as much radioactive material as they could conveniently use. Lawrence is not only a respected director of a research laboratory but, above all, a valued friend of those who have worked with him.

THE 1939 Nobel Prize for literature has been awarded to N. Frans E. Sillanpää, the Finnish novelist. His novels are based chiefly on the peasant life of Finland. The Nobel Prize for Physiology and Medicine for 1938 was awarded to Prof. C. Heymans, and that for 1939 to Prof. G. Domagk (*NATURE*, November 4, p. 777).

NEWS AND VIEWS

Royal Medals of the Royal Society

HIS MAJESTY THE KING has been graciously pleased to approve the recommendations made by the Council of the Royal Society for the award of the two Royal Medals for the current year as follows: Prof. P. A. M. Dirac, F.R.S., Lucasian professor of mathematics in the University of Cambridge, for the leading part he has taken in the development of the new quantum mechanics; Prof. D. Keilin, F.R.S., Quick professor of biology and director of the Moltano Institute in the University of Cambridge, for his con-

tributions to biochemistry and entomology, in particular for his demonstration of the part played by cytochrome in the oxidation reduction mechanisms of the living cell, and for his studies of the higher Diptera.

Centenary Celebrations in New Zealand

IN December 1642, Europeans first discovered New Zealand, although they mistook its general character. A century and a half later their mistake was rectified by Captain Cook. His reports attracted

traders and whalers, but lawlessness, arising from "the absence of necessary laws and institutions", led, a hundred years ago, to bringing the islands under the sovereignty of the Queen of England. It is the centenary of this event which New Zealand began to celebrate last week when a great exhibition was opened at Wellington. It is fitting in a new country that prominence should be given to the natural resources of the country, forests, farm lands, and minerals, and to the means which have led to their exploitation, of which the development of methods of transport has been pre-eminent. Two thirds of New Zealand's land is now 'occupied', for the most part not by great landowners but by persons holding less than 320 acres. It is these European settlers who have developed the resources of their country in such a way as to minimize the disadvantages of isolation from the great consuming centres of the world. Happily the economic exploitation of the country has not been accompanied by a disappearance of the native people, for the sixty thousand Maoris live in friendly co-operation with the Europeans and enjoy full social and political equality. This successful experiment in State-building will be worthily celebrated in New Zealand throughout the coming year, and it must be a matter of regret that the war, which has, once again, brought out the loyalty of the Dominion, should have prevented more active participation in this event by citizens from other parts of the British Commonwealth.

Politics and Academic Qualifications in Germany

RESTRICTIONS on academic freedom in Germany, already sufficiently stringent, are to cut more deeply still into the roots of intellectual development. According to the Berlin correspondent of a Copenhagen newspaper, quoted in *The Times* of November 13, the German censorship will see in future all scientific works written for doctors' degrees. This, it is said, is intended to guard against the introduction of theories offending against Nazi doctrines in politics, law, literature, and the population policy. In view of the distorted interpretation of certain scientific and historical facts which alone is acceptable officially in Germany to-day, it might be thought that any further bar to research or freedom of thought would scarcely be necessary to render any approach to originality innocuous. In order, however, to ensure that orthodoxy, or at least what is regarded as such, shall prevail over any attempt at a scientific and dispassionate examination of fact, which might lead to conclusions at odds with officially approved conclusions, decision as to the fate of any given thesis will not rest with an academic body, which at least might be expected to bring a trained and instructed intelligence to the examination of the bearing of an argument and the value of its evidence, but with the censorship. No thesis will even be submitted for scientific examination until it has passed the censor. Regimentation thus strikes at the very root of intellectual development and scientific training. These must no longer be concerned with the search

for truth in the investigation of the facts of Nature and history in both the broad and narrower sense, but only with the fanatical application of a selective theory dictated by political prejudice.

Horrocks's Observation of the Transit of Venus

THREE hundred years ago on Sunday, November 24 (O.S.), 1639, the young Lancashire curate Jeremiah Horrocks, and his friend William Crabtree, the one at Hoole, near Preston, and the other at Broughton, near Manchester, observed the transit of Venus across the sun's disk, and thus, as Robert Grant said, "did two young men cultivating astronomy together in a state of almost complete seclusion in one of the northern counties of England enjoy the privilege of witnessing a phenomenon which human eyes had never before beheld and which no one was destined again to see until more than a hundred years had passed away". At Broughton the sky had been overcast most of the day, but fortunately cleared just in time for Crabtree to see the transit. At Hoole, Horrocks had watched from sunrise until his duties called him to church. At 3.15 p.m., when again free, he resumed his observations, when, as he wrote, "Oh most gratifying spectacle! the object of so many earnest wishes, I perceived a new spot of unusual magnitude, and of perfectly round form, that had just wholly entered upon the left limb of the sun, so that the margins of the sun and the spot coincided with each other, forming the angle of contact." Owing to the approach of sunset, he was unable to observe the planet longer than half an hour, but during this period he measured its distance from the sun three times. His younger brother Jonas at Liverpool was prevented from seeing the transit on account of cloud.

HORROCKS, in 1639, was about twenty-two years of age. The son of a farmer, he was born at Toxteth Park, Liverpool, and was taught the classics by a country schoolmaster. He was already "a very curious astronomer" when on May 15, 1632, he entered Emmanuel College, Cambridge, as a sizar. Three years later he left the University without taking a degree, but at home he again began his astronomical observation. Through the antiquary Christopher Towneley (1604-74) he began to correspond with Crabtree, his senior by about seven years, and they became fast friends. At the suggestion of Crabtree, Horrocks abandoned the study of Lansberg for that of Kepler, and set about revising the Rudolphine Tables. Early in 1639 he became curate at Hoole, and there made his calculations regarding Venus. Having set down his observations in a manuscript entitled "Venus in Sole Visa", he resolved to visit Crabtree. Three letters dated October 3, December 12 and 19, 1640, referred to this intended visit, and it was on the back of the last that Crabtree wrote that his friend had died on January 3, 1641, being the very day previous to that he had planned for the visit. Crabtree appears to have survived him a very short time. Owing to the Civil War, the name of Horrocks was for the time completely forgotten, but his manu-