

tones into a regular sequence. After hearing the morning stars singing together in their glory for so long, it was no wonder that they had influenced his character and made him to his many admirers only a little lower than the angels. The Rector of the College, Mr. Tizard, afterwards presented Prof. Fowler with an illuminated address, together with a writing desk, chair and a silver tea-tray from past and present colleagues.

New Science Buildings at Cambridge

FOUR important additions to the scientific laboratories at Cambridge will be available for public inspection on October 22, the occasion of H.M. the King's visit to open the new University Library. All, however, will have been in use since the commencement of the Michaelmas term, so that there will be no ceremony. These buildings, in so far as they are concerned with research, are paid for under a generous scheme agreed to with the Rockefeller Trustees, but, in addition, the University has built new teaching laboratories for the Zoological Department, the two top floors and part of the basement of its new school representing the Rockefeller contribution. The new wing for physiology is a building about 70 ft. by 50 ft. and 60 ft. high with five floors, of which the lowest is a theatre to hold 280 students. The first floor is devoted to pharmacology, and the second to chemical aspects of physiology, while the top floors represent advanced teaching and research; this wing gives the Department a total accommodation for more than forty research workers. Botany has received a 60-ft. extension of its previous building. The addition comprises an advanced lecture room and library extension on the ground floor. Half of the first floor is devoted to palaeobotany, while the remainder of this floor and the second floor form a Sub-Department of Mycology, the top floor falling to advanced physiology. Agriculture has a new building largely devoted to offices, etc., but the Rockefeller scheme here is invaluable in the assistance given to research in animal physiology, in soil research and in statistics, among other subjects. Zoology retains its old Museum wing unaltered, but otherwise has an entirely new building with novel features that are likely to cause it to be most extensively visited on October 22. Rooms have been assigned in it to fifty-seven workers engaged in research work.

The Male Sex Hormone

ORGANIC chemists are well accustomed to spectacular results from the researches of Prof. L. Ruzicka and his school. Yet the artificial production of the male sex hormone recorded in the October number of the *Helvetica Chimica Acta* by Ruzicka, Goldberg, Meyer, Brünnger and Eichenberger probably transcends in interest any previous publication from the Zurich laboratories. Adopting the hypothesis of Butenandt, who first isolated and characterised the testicular hormone, that this substance is a hydroxyketone closely related to the sterols, Ruzicka and his collaborators examined the neutral

fractions arising from the chromic acid oxidation of the acetate of dihydrocholesterol and some of its stereoisomerides. The removal of the sterol side chain by such oxidations has long been used for the identification of the side chain, but previous investigators had been unable to isolate the major fragment of the molecule. This has been achieved by Ruzicka, and the hydroxyketone resulting from *epidi*hydrocholesterol proved to be completely identical with the male hormone (androsterone) isolated by Butenandt. By this simple experiment, the structure of a complex natural product has been completely elucidated and its stereochemical relationship to the sterols established. Apart from speculation, the only previous chemical knowledge of the hormone was that it was a saturated hydroxyketone of the probable formula $C_{19}H_{30}O_2$. It is unfortunate that this conversion of cholesterol into androsterone should be described by the investigators as a 'synthesis'.

THE simplest biological test for the male hormone is its effect in promoting comb-growth in capons, and in this respect the artificial substance proved as effective as the natural hormone. A remarkable feature is the specificity of the hormone. Of the four stereoisomeric hydroxyketones obtained by the oxidation of dihydrocholesterol, *epidi*hydrocholesterol, coprosterol, and *epi*coprosterol, those from the last two compounds had no influence on the comb-growth of capons in daily doses of 1000 γ ; that from dihydrocholesterol required daily doses of 500 γ for comb-growth, whereas the artificial hormone (from *epidi*hydrocholesterol) gave a response with daily doses of 70 γ .

The Chemist and Warfare

MR. J. DAVIDSON PRATT, secretary and general manager of the Association of British Chemical Manufacturers, addressing the Glasgow Section of the Society of Chemical Industry on October 5, discussed the part to be played by the chemist in schemes of national defence against attack from the air. He said that, in spite of the Geneva Protocol prohibiting the use of gas in war, it is necessary that the general public should be instructed in methods of defence, since some nations in signing the Protocol have made it clear that they would use gas if an adversary used it first. Gas used against an uninstructed civil population has a demoralising effect, but the publication of highly alarmist articles on the subject of poison gas attacks from the air by people whose knowledge of the subject is very limited is most undesirable. Mr. Pratt referred to the work which would fall to the chemist in the event of an air raid. He would have to be on the spot to identify the gas used, and would be required to decide quickly whether an area would require to be decontaminated or not, as some types of gas would be quickly swept away by the wind while other types would persist for a considerable length of time. The best method of defence for the civil population is the provision of gas-proof shelters, and every building should contain a gas-proof room. The chemist's advice would be required in selecting and fitting these rooms.

MR. PRATT then discussed the attitude of chemists to chemical warfare. He said that it has been suggested that chemists should bind themselves together and refuse to have anything to do with the manufacture of material which could be used in warfare. It has been stated that this scheme is not practicable because the chemical profession in most countries is not sufficiently organised and that it would require the co-operation of every nation, whereas the League of Nations itself has shown that it is impossible to get complete agreement on any matter of international policy. Another objection is that, in some countries, every citizen has to do as he is told, and in any event, in war, a man's first duty is to his country. In spite of these objections, Mr. Pratt insisted that the idea is worthy of further consideration because the alternative is so appalling that the chemist might well destroy the civilisation which he has been instrumental in creating, unless he insists that his inventions are not used for warlike purposes.

National Planning in Industry

THE need for sound national planning of industrial effort was emphasised in an address delivered before the Birmingham Group of the Institute of Industrial Administration on October 4, by Mr. Harold Macmillan, M.P., president of the Institute. Mr. Macmillan said that we have moved into a new economic society. The conditions of the nineteenth century world have passed away. In the old world Great Britain had great advantages. It was a pioneer nation and the workshop of the world, and on the whole the system was very satisfactory for the greater part of the nineteenth century. In the period preceding the War Great Britain exported capital to foreign countries, financed the market for its own exports and very largely developed the world. That system was very satisfactory while it lasted, but it has largely changed and to-day's problems have arisen almost entirely as the result of that change. The War quickened the pace, and the world has largely industrialised itself, economic nationalism prevails, and the balance of the world has been overthrown. The potential capacity to produce has increased at a rate far more rapid than the market to absorb.

AFTER referring to directions in which the War impeded British industry, Mr. Macmillan said that we have to face realities, and must not be content any longer to try to return to the past. We have to consider on what prosperity depends. It is the maintenance of certain balances—the balance between production and demand, and the monetary balance between the rate of saving and the rate at which savings re-enter a market in the form of investments. He does not think industrialists should be content to go on as industrialists in the same way as they did in the last two or three generations. Industrialists then did not bother themselves very much about monetary standards, but the last ten years have taught them how deeply concerned they are. National self-sufficiency is everywhere increasing. International trade barriers have to be overcome if the standard of living is not to fall.

Unco-ordinated competition among ourselves for the home market weakens resources for obtaining export trade. Capital must contribute by acquiescence in a planned industry, and by demanding high professional standards from management. Management has to contribute by the more efficient co-ordination of functional activities and the elimination of waste in every form, and labour has to contribute by full co-operation resulting from a greater confidence in an industry so planned and conducted.

Friedrich Tietjen, 1834-95

THE centenary occurs on October 15 of the birth of the German astronomer Friedrich Tietjen who, in 1881, with Tisserand, E. C. Pickering, Tempel and Gylden, was made a foreign associate of the Royal Astronomical Society. Born in a village in the duchy of Oldenburg, Tietjen left school at the age of fifteen years to work on his father's farm, but some years later, having relinquished his right to the farm, he was able to attend the Universities of Göttingen and Berlin, and in 1862 at twenty-eight years of age became an assistant under Encke at the Berlin Observatory. Three years later, he became first assistant to Foerster, Encke's successor, and this post he held until 1874. In 1866 he discovered a minor planet, and in the same year, with Albrecht, carried out geodetic operations in connexion with the Mid-European Survey. In 1868 he went to the East Indies with Spörer and Engelman to observe the solar eclipse of August 18. An indefatigable worker and a remarkably facile computer, in 1874 he was made editor of the "Berlin Jahrbuch" and four years later succeeded Bremiker as editor of the "Nautisches Jahrbuch". With Foerster he also managed a school of instruction in scientific computation. He died at the age of sixty years on June 21, 1895, having suffered from ill-health for several years.

Nazi Philosophy and Truth

IT would be difficult to find a more complete and cynical indifference to freedom of thought and intellectual expression than appears in the speech, as reported in the *Times* of October 6, delivered by Dr. Frank, the Reich Commissar for Justice, on October 4 to the joint meeting of the Association of German Jurists, the Foreign Political Department of the Nazi Party and the teachers of economics in universities and other places of higher education. Dr. Frank is reported to have said: "as the pursuit of knowledge is the service of truth it must necessarily be service to National-Socialism. We insist that the unity of the philosophy which lies at the basis of National-Socialism must not be challenged by anybody." The exclusive and inviolable identification of philosophic truth with the principles and ideas of a dominant political faction, has a familiar ring which would have provoked no surprise had it come from the mouth of a politician, but its uncompromising terms are startling when uttered by a commissar for justice, who has been responsible for the recent reorganisation of jurists throughout Germany. More was to follow. Dr. Frank went on to say, "Our aim