through a number of processes before actually arriving at those in which its manufacture into the particular type of plywood being turned out is undertaken. Most of these processes are in the hands of women and are by no means uninteresting, while the condition in which the women work with artificial sunlight and the latest aerating devices are excellent.

The modern plywood factory is nothing short of a revolution in the prolongation of the life of, notably, the remaining primeval forests on the globe. Each log from each big-sized tree felled in these forests in the future can be put to its full use by man with the minimum of waste. The annual requirements in logs from any forest will thus be restricted automatically, and the existing amounts of timber still available be spread over a longer period.

Never perhaps in the history of the world has such a prolongation been more necessary, for never has a timber famine in one form or another loomed larger on the horizon. But man's cleverness in producing and perfecting the plywood mill will prove of little use unless the Governments of the chief countries concerned come together, and see that its apparent special advantages are made use of, and are not suppressed by existing vested interests, which have little in relation with the true economic uses and exploitation of the forest.

THE U.S.S.R. ACADEMY OF SCIENCES

JUBILEE SESSION

THE Soviet Academy of Sciences celebrated the twenty-fifth anniversary of the U.S.S.R. by a special jubilee session held at Moscow on November 15–18, 1942, and the papers read at the session have now been published in a very neat volume of 250 pages. Apart from the texts of the greetings messages sent by the Academy to Soviet leaders, to fighters of the Red Army and the Navy, to men of science of the world, etc., the volume contains a series of surveys of the progress achieved in the various spheres of the Academy's activities during the twenty-five year period.

Prof. A. A. Baikov reviewed general development of the Academy which in 1917 consisted of three sections (physico-mathematical; Russian language and literature; and historico-philological), with forty-five academicians and 212 other scientific and technical staff. By 1941 the Academy had eight sections (physico-mathematical; chemical; geologo-geographical; biological; technological; historico-philosophical; of economics and law; of literature and languages), with seventy-six institutes, eleven laboratories, forty-two stations, six observatories, twenty-four museums, in which were working 118 academicians, five honorary academicians, 182 corresponding members and 4,700 scientific and technical personnel.

Apart from these quantitative changes, the scope and the character of the work have also undergone great evolution, mainly in the direction of a closer contact between pure research and its applications. This tendency has found its practical expression in the elections to the Academy of a number of eminent engineers, industrial chemists, etc., and culminated in the organization in 1935 of a section of technology. In 1934 the Academy was transferred from Leningrad to Moscow and taken under the immediate control of the Soviet of People's Commissars which discusses and approves plans of research. In 1938 the Soviet recommended the Academy to concentrate its attention on the leading scientific problems necessary for the development of socialistic economics and culture. In 1939 the Academy elected J. V. Stalin as its member, and this event was regarded as a symbol of transformation of the Academy into the "general staff of Soviet science". Since the outbreak of war, the Academy has concentrated its attention on problems connected with the mobilization of natural resources for military purposes. Among such problems an outstanding place belongs to the work of a special commission for the mobilization of resources of the Ural, where great progress has been achieved in the scientific organization of metallurgical industry, and of Kazakhstan, where great reserves of coal, copper, nickel, etc., were discovered.

Prof. A. F. Joffe produced a summary of the development of exact sciences in the U.S.S.R. during the past twenty-five years. In 1918 the Institute of Physics and of Bio-physics (P. P. Lazarev), Physico-technical, Roentgen (A. F. Joffe) and Optical (D. S. Rozhdestvensky) Institutes were founded in Moscow. The Physico-Technical Institute supplied personnel for similar Institutes at Tomsk, Kharkov, Dnepropetrovsk and Sverdlovsk. The Physical Institute of the Academy (L. I. Mandelstam), which moved from Leningrad to Moscow, became a leading institution. New problems of application of physics in agriculture are studied by the Leningrad Institute of Agro-physics. Chemical science also has now a series of institutes: of general and inorganic chemistry (N. S. Kurnakov and L. A. Chugaev); of organic chemistry (A. E. Favorsky, N. D. Zelinsky); other institutes are devoted to colloids, electrochemistry, radiological chemistry, applied chemistry, chemistry of fertilizers, pharmaceutical chemistry, etc.

Astronomy advanced at a less rapid rate, but the Mathematical Institute of the Academy has developed into one of the world centres of mathematical science.

The progress of mining technology and of metallurgy, as reviewed by Prof. I. P. Bardin, reveals gigantic work of reconstruction in which academic institutions and scientific workers have taken an honourable part. An even more impressive picture is presented by Prof. A. V. Vinter in a survey of the energetics of the U.S.S.R.—a fascinating story of the utilization of the resources of the water and air, of the great hydro-electric installations, of the electrification of transport, etc.

In the biological sciences, as reviewed by Prof. L. A. Orbeli, the progress was mainly in the direction of planned research, concentrated on the leading problems of the Darwinian theory of evolution, which are studied not only in laboratories but also in the field. Spectacular progress can be registered, of course, in physiology as a heritage of the late Prof. I. P. Pavlov. Investigations of the floristic and faunistic natural resources of the Soviet Union are proceeding apace and many volumes of the "Fauna of U.S.S.R." and the "Flora of U.S.S.R." have been published.

The geological sciences (V. V. Obruchev) have made one of the greatest contributions to the economic development of the Union, and the Academy took an active part in the extensive and exhaustive investigations carried out by hundreds of expeditions in the remotest corners of the Union.

Not less than seven papers, occupying well over half of the volume, are devoted to the humanitarian

sciences: the importance and place of the great October revolution in the history of mankind (E. M. Yaroslavsky); twenty-five years of the great October revolution and the patriotic war of the Soviet people (G. F. Alexandrov); Soviet State—a State of a new type (A. J. Vyshinsky); philosophical science in the U.S.S.R. during twenty-five years (M. B. Mitin); development of historical sciences in the U.S.S.R. during twenty-five years (B. D. Grekov); Soviet historiography (E. V. Tarle); a quarter century of Soviet literature (A. N. Tolstoi).

OBITUARIES

Sir William Noble

SIR WILLIAM NOBLE, who died on November 10 at the age of eighty-two, had devoted the whole of his active and strenuous life to the service of electrical communication, in which he rose from the humble grade of telegraph messenger to the leading position in the British Empire. He was appointed as a Post Office telegraphist at Aberdeen in 1877 at the age of sixteen, and at once began to show a keen interest in the electrical and technical sides of the telegraph service. He gained many medals, prizes and other honours and after a few years became a lecturer in electricity and telegraphy at Gordon's College, Aberdeen. It was not, however, until 1893 that he obtained a transfer to the P.O. Engineering Department as sectional engineer at Aberdeen. He soon attracted the notice of his departmental chiefs and thereafter his advancement was rapid. In 1897 he was personally selected for appointment as first-class engineer on the headquarters staff in London, by Sir John Gavey, who had had occasion to observe a highly original and efficient means he had devised for the mechanical testing of telegraph poles. Further promotions carried him through the grades of technical officer, assistant superintending engineer, and staff engineer, to that of superintending engineer for the London District in 1907. In 1912 he became assistant engineer-in-chief and in 1919 he succeeded Sir William Slingo as engineer-in-chief, a position which he held until his retirement from the Government service in June 1922.

Sir William Noble, who received a knighthood in 1920, was intimately concerned with all the many scientific, technical and commercial developments of the Post Office communications services during his long period of responsible office. As an administrator he had a genius for selecting the right man for the right place; he made quite exceptional efforts to make and maintain personal acquaintance with all the leading personalities of his great staff throughout the country. Every good and enterprising officer could count upon his understanding assistance and support, and he was accepted as guide, philosopher and friend by all.

Shortly after his transfer to headquarters in 1897 he plunged into the heavy work of the initial 'telephoning' of London on the basis of underground multiple cables in all central areas and the 'central battery exchange' system throughout. This involved pioneer work of much diversity and the careful gathering and maturing of experience in readiness for the complete transfer of the National Telephone Company's local exchange system to the Post Office in 1911. (The National Trunk Line system had been transferred to the Post Office in 1895.) The full transfer in 1911, and its aftermath, also brought him much strenuous work, not the least of which was the unification and fitting in of the large technical staff of the National Telephone Company with that of the Post Office; in this delicate work he played by far the most important part, and its smooth and successful accomplishment stands to his credit. He had the subsequent development of the new situation well in hand when unfortunately the outbreak of the War of 1914–18 put a stop to everything. The changed financial situation and the industrial difficulties and confusion of the early post-war years introduced further obstacles, and meanwhile public criticism of the shortcomings of the country's telephone service became acute. Sir William's manful efforts to put the past and the future in proper perspective, both in the public Press and before parliamentary committees, will still be within the recollection of many.

When, a little later, Parliament set up the Geddes Committee with instructions to wield the economy 'axe' among Government departments, Sir William's able demonstration of the economic side of the Post Office Engineering Department, and its methods of continuously assessing and fostering the efficiency of capital and maintenance expenditure in all districts, carried conviction, with the result that his Department was one of the very few Government departments to receive a complimentary testimonial from the Geddes Committee.

Sir William was deeply interested in, and did much to encourage, the adoption of long-distance trunk telephone cables in place of overhead wires on pole lines. Even before the advent of the telephone repeater, communication from London to Birmingham, Leeds, Manchester and Liverpool had been provided by means of multiple twin cables carrying comparatively heavy copper conductors. On the invention of the thermionic valve, with its almost limitless applications to the amplification of high-frequency electrical oscillations, he recognized at once that the situation had been transformed by the introduction of a new factor which would place the means of achieving world-wide telephony in the hands of his successors.

His interest in radio communication was continuous from the early days in which he assisted Sir William Preece in experiments in inductive (or perhaps one should say earth conductive!) wireless telegraphy between parallel wires along the opposite sides of Loch Ness, up to the times when he was chairman of the first Broadcasting Committee and afterwards one of the founders of the British Broadcasting Company, of which he was a director from 1922 until 1926.

The development of the automatic switching systems of telephony was another subject very near his heart, and one in which he retained an active interest after his retirement from the Post Office in 1922 when he became a director of the General Electric Company. From that date until quite a short time before his death he was managing director of that Company's telephone manufacturing works at Coventry, a source from which has emanated much of the automatic switching plant, telephone repeater equipment and many other items of communications engineering used by the Post Office and other administrations.

Sir William's commercial and social activities were many and varied. He made many friends and few, if any, enemies. On his professional side he may be