

Radio-astronomy and satellite tracking proved popular exhibits in spite of the travelling (about 10 miles and 3 miles respectively) involved. The radio telescope at Defford, near Malvern (*Nature*, 190, 1150; 1961) has been used as an interferometer at 610 Mc/s on nearly 100 radio sources and very accurate positions have been derived for about 30 of these. Used as a radar, the Defford installation has been used to examine meteor echoes at 1,300 Mc/s, and more recently measurements have been made on incoherent scatter by electrons in the upper atmosphere. The satellite tracking equipment on show included a recently erected 45-ft. diameter precision radar tracker and its associated equipment. Though not yet complete, visitors were able to watch the aerial lock on to satellites *Allouette* and *Anna*. Included in the exhibit was a 24-in. diameter *F1* Schmidt camera which can accurately record the position of a satellite or star down to magnitude 9.

An important series of exhibits illustrated the part that the Royal Radar Establishment is playing in the development of a fully integrated air traffic control system. The increasing quantity of air traffic of the present day demands techniques which will match the increasing demands without impairing safety, and it seems that a combination of modern radar with electronic computing techniques may meet the requirements. Experimental systems involving a number of automatic techniques are being investigated at the Establishment and the exhibits showed how simulated situations might be dealt with in a series of exhibits at once elegant and complex.

Many of the exhibits demonstrated the work being carried out to improve the resolution of radar targets against a background of clutter. Pulse compression techniques demonstrated the ability to simulate the

effects of short pulses of embarrassingly high-peak power with, in fact, a long pulse of modest peak power. Another showed how it might be possible automatically to compensate for the distortion of a large aerial, for example, in high wind, or under load, and so preserve the accurate profile so essential to accurate angular determination of target direction.

Modern and refined techniques now being made available for airborne use for navigational purposes were on show. These included a new optical line scan technique for aerial photography in which the ground is scanned by a rotating mirror as the aircraft moves forward. The resulting images are transformed into electrical signals which can be used to form a strip photograph. The results obtained with sideways-looking radar techniques were shown, and Fig. 1 shows a map of England and Wales which has been built up from a series of flights which might well be over cloud or by night. High resolution reconnaissance requires high resolution display equipment. A fully resolved television picture measuring 2.5 × 3.0 mm and viewed through a microscope proved an eye-catching exhibit.

To conclude this brief account of the Royal Radar Establishment open day exhibits mention must be made of the Establishment's College of Electronics where students take, among other things, the Higher National Certificate and Diploma Courses in Electrical and Electronic engineering. The College was open for inspection, the demonstrations including a gas laser and a 3-cm marine radar. The College, now some fifteen years old, caters for some 180 student-apprentices, and about 100 craft apprentices and for day-release students.

A. F. GIBSON

J. E. N. HOOPER

## OBITUARY

### Prof. J. F. Piccard

THE gentle giant, professor emeritus of aeronautical engineering at the University of Minnesota, Jean Felix Piccard, died of a heart attack on January 28, 1963, at the age of seventy-nine.

Prof. Piccard was born January 28, 1884 of French-speaking Swiss parents Hélène (*née* Holtenhoff) of Geneva, and Jules, head of the Department of Chemistry in the University of Basle, Switzerland. He is survived by his wife Jeannette (Ridlon) Piccard, three sons, Donald, John, and Paul, a sister Mme. Paul Lambert of Lausanne and a brother, Dr. Paul Piccard of Lucerne.

Jean and his twin brother, Auguste, attended the Obere Realschule, Basle. After graduation from that school in 1902, Jean Piccard enrolled at the Swiss Institute of Technology in Zurich, took his degree in chemical engineering (1907) and, like his brother, was awarded a doctorate in natural science (1909) from that institution. He received his doctorate in organic chemistry in 1901 as a result of his thesis "The Constitution of Meriquinon-ique Compounds" which brought him an Institute prize and the silver medal award. He taught at the University of Lausanne during 1914-16, when he was appointed assistant professor at the University of Chicago; but he returned in 1919 to join the staff of the University of Lausanne. Then he returned to the United States and was appointed instructor at the Massachusetts Institute of Technology, until 1929 when he entered private industry as consultant for various organizations. He became a United States citizen in 1931. Afterwards, he worked as head of the Chemical Service Department at the Hercules Powder Co. of Delaware (1929-32). He next assumed the post of research associate at the Bartol Research Foundation, Swarthmore, Pa., during 1933-36. In 1936 Prof. Piccard joined the teaching staff of the

University of Minnesota as special lecturer in aeronautics, and attained professorial rank in 1937 from which he retired in 1952 as professor emeritus.

In 1957 Jamestown College, North Dakota, presented him with an honorary doctor of science degree; in 1959 he was honoured by the American Meteorological Society for his pioneer work in scientific stratosphere balloon flight. The University of Strasbourg conferred on him an honorary Ph.D. degree in 1932, and in 1960 he received the United States Distinguished Service Award. He had been named one of Minnesota's 100 "Living Great".

Named the "Mr. Up" of scientific exploration, Prof. Piccard's interest in balloons stemmed from collaboration with Auguste in 1913, when they made the first balloon flight together in Switzerland, and were the first to use a balloon as a physics laboratory. During the First World War, Jean and Auguste served as civilian consultants for the Swiss Army on captive balloons. The 1930's brought his contribution to the forefront when in 1933 Prof. Piccard designed a stratosphere gondola for the Dow Chemical Co., the basis for to-day's gondola design. The following year he ascended in a special balloon piloted by Mrs. Piccard. They took off from the Ford Airport in Dearborn, Michigan, and after attaining a height of 57,579 ft. landed in Cadiz, Ohio. In 1936 he sent up a balloon equipped with a radiosonde set from the University of Minnesota football field. This endeavour proved to be the first known experiment with a plastic non-extensible balloon. One of his helpers on this project was Robert Gilruth, now director of Manned Space Flight Program of the National Aeronautics and Space Administration.

In 1937 Prof. Piccard introduced another 'first' by successfully completing a flight over Rochester, Minnesota, testing the cluster idea of balloons. He made the ascent to about 10,000 ft. in an aerostat, *Pleades I*, using 98

rubber latex sounding balloons fastened to a metal gondola for lift. Of this flight Dr. Gilruth said: "It was a tremendous achievement. For one thing, he used electrically controlled blasting caps to blow off his ballast. Thus he was the first to use pyrotechnics to actuate devices. Now we have 73 such pyrotechnic devices for Mercury capsule".

His interest in high-altitude flight and balloons preceded that of Raven Industries in Sioux Falls, South Dakota; Winzen in South St. Paul; Schjeldahl in Northfield, and General Mills in Minneapolis. He later experimented with 'Cellophane' and other plastic balloons, and helped design the polyethylene *Skylark* series of high-altitude

balloons with which the U.S. Air Force sent manned flights to altitudes exceeding 100,000 ft.

Prof. Piccard published many papers on ballooning, and in his earlier specialization, chemistry (organic, inorganic, and physical), and in aeronautical engineering.

His hobbies and interests included sailing, skiing, mountain climbing, riding in 'blimps' and aeroplanes. In regard to this he said: "But to me, riding in a free balloon is the most beautiful sport of all". During his retirement, he and Mrs. Piccard found pleasure in their cabin retreat of a four-acre island in Lake Vermilion. He and Mrs. Piccard were also part-time teachers at St. Paul's Episcopal Day School.

C. C. CHANG

## NEWS and VIEWS

### Royal Society Research Appointments

THE Royal Society has made the following appointments in original scientific research: The Tropical Research fellowship has been awarded to Dr. K. Vickerman, of the Department of Zoology, University College, London, to enable him to work on the mechanism of structural and physiological transformation in the life-cycles of trypanosomes. A Stohert Research fellowship has been awarded to Mr. C. N. Hales, of the Department of Biochemistry, University of Cambridge, to enable him to work on the immunochemical investigation of insulin. A further Stohert Research fellowship has been awarded to Mr. P. E. Reynolds, of the Department of Biochemistry, University of Cambridge, to enable him to work on cell-wall synthesis in bacteria, and the effects of antibiotics. The Head Bequest Committee of the Royal Society has awarded the Henry Head Research fellowship to Dr. J. S. Gillespie, of the Institute of Physiology, University of Glasgow, to enable him to continue his work on the automatic innervation of the gut. The appointments take effect from October 1.

### Warren Spring Laboratory : Dr. C. C. Hall

DR. CHARLES HALL has been appointed director of the Warren Spring Laboratory of the Department of Scientific and Industrial Research at Stevenage. Dr. Hall, at present deputy director of the Laboratory, will succeed the retiring director, Mr. S. H. Clarke, who will take up a post in the Department's Headquarters, with responsibility for supervising the careers of scientific staff in the Department. Both appointments take effect in January 1964. Dr. Hall was born in Croydon and was educated at Beckenham County Grammar School and at Sir John Cass College, University of London, where he graduated (B.Sc.) in 1929 with first-class honours in chemistry; he obtained his M.Sc. in 1930 and Ph.D. in 1934. He joined the Fuel Research Station of the Department of Scientific and Industrial Research in 1930 and was with that Station until it closed down in 1958. During most of the time, Dr. Hall was concerned with the chemistry and technology of the production of liquid fuels from coal. From 1939 until 1958 he was in charge of the Station's largest team working on the Fischer-Tropsch process. After the Second World War he played a leading part in the investigations into the development of the process in Germany. From 1953 until 1958 he was the deputy chief chemist of the Fuel Research Station. In 1959, Dr. Hall was appointed deputy director of the newly-formed Warren Spring Laboratory, which is engaged in research primarily on air pollution, mineral processing and chemical engineering. He was elected a Fellow of the Royal Institute of Chemistry in 1944, was a member of Council from 1957 until 1960 and chairman of the London Section from 1957 until 1959. He was elected a Fellow of the Institute of Fuel in 1954.

### International Atomic Energy Agency's Research Laboratories : Prof. Leo Yaffe

PROF. LEO YAFFE (Canada) has been appointed director of the International Atomic Energy Agency's Division of Research and Laboratories. Prof. Yaffe, who took up his post on July 14, was born in 1916 at Devil's Lake, North Dakota. He studied at the University of Manitoba, gaining his B.Sc. in 1940 and M.Sc. in 1941, and received his Ph.D. from McGill University in 1943. He was director of the Radiochemistry Laboratory of McGill University and has been teaching since 1952, and Macdonald professor of chemistry at that University since September 1959. From 1943 until 1952 Prof. Yaffe was project leader in charge of Nuclear Chemistry and Tracer Research with Atomic Energy of Canada, Ltd., Chalk River. Prof. Yaffe was adviser to the Canadian Delegations for both United Nations Conferences on the Peaceful Uses of Atomic Energy at Geneva in 1955 and 1958. His predecessor as director of the Division of Research and Laboratories was Prof. Carlo Salvetti (Italy) until March 1962. In the interim period, Prof. Alexandre Sanielevici (Romania) served as acting director.

### Academy of Sciences of the U.S.S.R.

AT a general meeting of the Academy of Sciences of the U.S.S.R. a re-organization of the Academy has been approved. Fifteen specialized branches for the guidance of research in the main directions of science have been formed. Each of the previously existing eight branches had covered a very wide range of different fields of learning. Therefore, instead of one biological branch, for example, three new ones have been set up: biochemistry and chemistry of physiologically active compounds; physiology; zoology, botany and evolution. Four new branches, including a branch of nuclear physics and mathematics, have been instituted. A new branch has been set up for the science of the Earth, which unites geologists, geographers, oceanologists, geophysicists, specialists on the physics of the atmosphere, etc. Mstislav Keldysh has been re-elected president of the Academy. Nikolai Semenov, who headed the branch of chemical sciences, has been elected vice-president. Norair Sisakyan, who was the academic secretary of the biological sciences branch, has been elected senior honorary secretary.

### Anglo-Russian Exchange of Scientists

SIR BERNARD LOVELL is visiting Leningrad at the invitation of the Soviet Academy of Sciences. On July 9 he met Vasily Isayev, the Mayor of the City, and other officials, and discussed with them scientific contacts between the Pulkovo Observatory and Jodrell Bank, which, he said, were very useful. Leningrad astronomers supported Sir Bernard's proposal that an exchange of junior scientific personnel should be started. Sir Bernard is planning to familiarize himself with the scientific