than a hundred miles from land. Under these conditions many hundreds of insects were captured, both by day and at night, indicating an enormous population of floating and drifting insects in the air at least a hundred miles away from any locality where they could have been carried up by air currents. More insects were found when the easterly winds were blowing from the Continent of Europe than with westerly winds from Britain. Attempts were made to obtain from air trajectories the possible origin and routes taken by the insects captured on particularly good and particularly bad days. These indicated that many insects had drifted for more than twenty-four hours and had come several hundred miles in their involuntary flight. Since the Second World War, Prof. Hardy has made experiments with nets trailing behind a helicopter flying over the English Channel at heights of 500–1,000 ft.; but the results were disappointing, and work from the masts of ships has been resumed instead. It appears possible that insects over the sea are at a lower level than those over the land.

Dr. C. G. Johnson described his recent studies of the insect drift in the upper and lower air by means of net-traps hung from the cables of barrage balloons at Cardington Airfield in Bedfordshire, with the excellent co-operation of the staff. Nearly every day in the summer, and also on many nights, balloons were flown with a series of traps at intervals up to 2,000 ft., or occasionally to 4,000 ft. The numbers of small insects caught were surprisingly great; on some hot summer days as many as twenty Aphidæ per hour were caught in a single net about three feet across and about 2,000 ft. above the ground. Since only a microscopic proportion of the air passes through the nets, the number of small insects at about this level must be enormous. All the insects were alive and apparently uninjured, and when they again fall to the ground, they could continue to lay eggs and start colonies or outbreaks of pests.

The nets hanging from the cables suffer from the disadvantage that the amount of air sampled varies with the wind velocity, and when the air is calm, as is often the case during the night, few or no insects are caught; but this is no proof of the absence of insects from the air. To overcome this difficulty, Dr. Johnson has developed a suction trap in which a fixed amount of air is blown through a vertical net by an electric fan. The volume of air thus sampled is independent of the wind velocity, at least up to wind speeds of about fifteen miles per hour, and so the results can be expressed as numbers of insects per 1,000 cubic feet of air, and become capable of mathematical treatment and comparison. Using these traps at ground-level, a very definite diurnal periodicity in the number of Aphidæ in the air has been shown to exist. There are one or two peaks during the day and very small numbers at night. It is hoped next year to have these traps attached to the barrage balloons, and so to get a correct estimate of the relative numbers of insects during day and night at the higher levels. This work is being carried out at Rothamsted with special reference to the long-distance distribution of injurious Aphidæ and particularly the black fly of beans (*Aphis fabæ*).

The last paper of the series was a description by Mr. P. S. B. Digby of a wind tunnel constructed recently for the experimental study of flight behaviour of insects. In this instrument wind speed, light, temperature and humidity can all be independently controlled, and the insects can be kept under direct observation during the tests. The criterion used is the rate of wing-beat of the insects as measured by a stroboscopic technique.

In the discussion which followed, the effects of turbulence and convection currents, and the difference between them over land and over sea, were considered by various speakers; the general conclusion was that insects are likely to gain height during the day-time over the land, and to fall steadily both by night over the land, and by day and night over the sea. There might, however, be a cushioning turbulence effect near the surface of the sea, which would prevent the majority falling into the sea under normal conditions. Heavy rain at sea, however, would bring down a large proportion of the aerial population.

C. B. WILLIAMS

NEWS and VIEWS

Nobel Prize for Physics for 1949: Prof. H. Yukawa

PROF. H. YUKAWA, who has been awarded the Nobel Prize for Physics for 1949, is best known for his theory of nuclear forces which, in 1935, first postulated the existence of a particle a few hundred times heavier than the electron. The nuclear forces would then bear the same relation to the possible emission and absorption of such a particle as the electromagnetic forces in an atom bear to the emission and absorption of light. The discovery of the meson in cosmic rays appeared to be a confirmation of Yukawa's prediction, but the study of its properties gradually led to the conviction that it could not be identical with the particle required for Yukawa's theory. It was not until 1947 that Powell and his collaborators demonstrated the existence of a second short-lived particle, the π-meson, which is known to be the parent of the cosmic-ray meson, and which is strongly linked to protons and neutrons. This provided a brilliant vindication of Yukawa's idea. The detailed theory of the relation between this particle and the nuclear forces is still in its infancy; but, whatever the outcome, all thought about nuclear forces for the past decade and for many years to come is entirely dominated by the ideas of Yukawa. Since this first pioneer work, Yukawa has contributed much to other problems in fundamental theory and has built up an important school of theoretical physicists. As the editor of the new journal, *Progress of Theoretical Physics*, he has helped to provide an outlet for the great wealth of important contributions from his own school, as well as that of his colleagues. This new journal has already found a prominent place in literature on modern fundamental quantum theory

Aeronautics at the University of Glasgow: Prof. W. J. Duncan, F.R.S.

PROF. W. J. DUNCAN, who has been appointed to the new Mechan chair of aeronautics and fluid mechanics in the University of Glasgow, is the son of a Glasgow shipbuilder, and, after completing his education at Dulwich College and University College, London, he spent seven years in his father's firm. He then joined

the Aerodynamics Department at the National Physical Laboratory, where he stayed for eight years. There, in collaboration with R. A. Frazer, and later A. R. Collar, he laid the foundations of aeroelasticity, treating the new subject of aeroplane flutter from both the theoretical and experimental aspects. When the Department of Aerodynamics was established at University College, Hull, in 1934, Duncan was asked to become its first head, and in 1938 he was made Wakefield professor in the College. He was building up what promised to be an important school of aeronautics at Hull when the Second World War broke out, and he went to the Royal Aircraft Establishment to help in the war effort. He was engaged in researches on aerodynamics and armaments and was for a time sent to Exeter to take charge of the Armaments Development Research Department there. At the end of the War he spent some time as chief scientist at Völkenrode, studying the work which the Germans had carried out. Prof. Duncan joined the College of Aeronautics at its inception and has been responsible as professor of aerodynamics for building up the teaching methods and the experimental equipment in the Department. He is a member of the Aeronautical Research Council and chairman of its Aerodynamics Committee, besides serving on several other committees and subcommittees of this body. His main interests lie in aerodynamics and advanced dynamics, and his original work in these fields brought him the honour of election to the Royal Society in 1947. Apart from these special predilections, he has a very wide interest in general engineering, and experience of considerable variety, added to which he is a very able mathematician. His loss to the College of Aeronautics next year will be a severe one; but the University of Glasgow will gain a man of science and teacher of outstanding ability.

British Museum: Sir John Forsdyke, K.C.B.

PERMISSION has been granted by H.M. the King to Sir John Forsdyke to resign his appointment as director and principal librarian of the British Museum as from March 31, 1950. He entered the Department of Greek and Roman Antiquities of the Museum in 1907, and was appointed keeper in 1932, having served in the Royal Artillery in the First World War. He took an active part in the preparation of the first volume of the Catalogue of "Greek and Etrurean Vases", and in 1909 published a paper in the *Journal of Hellenic Studies* which went far to determine the significance of the 'Minyan' fabric of pottery from prehistoric sites in central Greece. Under the leadership of Sir Arthur Evans, he excavated Minoan tombs near Knossos; and he gave to the British Academy a valuable lecture on Minoan art.

Appointed to the directorship of the British Museum in 1936, he became responsible for the planning and erection of the new Duveen Gallery for the Elgin Marbles. But the War made it necessary to place these and other principal collections in a place of security, and the bomb-damage to a section of the Library further diverted his energies. At the earliest possible moment, however, the new King Edward VII Gallery was devoted to a compendious but amazing sample of the Museum's treasures, including the recently acquired Saxon burial-find from Sutton Hoo. Outside the Museum, Sir John Forsdyke has been secretary of the Hellenic Society, and for a while editor of its *Journal*. He has also taken an active interest in the Byzantine Research and Excavation Fund, and the British School of Archæology at Athens. It is to be hoped that his retirement at no advanced age will enable him to devote himself both to these and similar administrative interests, and to the many aspects of classical archæology with which he has been concerned in the Museum.

Physical Society: Rutherford Memorial Lecture

THE fourth Rutherford Memorial Lecture of the Physical Society will be given by Dr. Ernest Marsden on December 14, at 5 p.m., at the Science Museum, Exhibition Road, London, S.W.7. Dr. Marsden was formerly professor of physics at Victoria University College, Wellington, and until recently secretary of the New Zealand Department of Scientific and Industrial Research; he is at present in London acting as scientific adviser to the High Commissioner of New Zealand and to the New Zealand Government. Dr. Marsden was closely associated with Rutherford in the experiments leading to the conception of the nuclear theory of atomic constitution and also in those leading to the demonstration of the disintegration of nitrogen by α-particles; he has collected much information on the early family and student life of Lord Rutherford in New Zealand. His lecture will deal with some of these early memories and will show how Rutherford's inspiring personality influenced his research staff. A film will be shown entitled "Transformation of Elements", demonstrating the early experiments which led to the idea of the nuclear atom.

Sir Henry Savile, 1549–1622

NOVEMBER 30 marks the four hundredth anniversary of the birth of Sir Henry Savile, the founder of the Savilian professorships of geometry and astronomy at Oxford, the first of such chairs founded in the English universities. Born at Over Bradley, near Halifax, Yorks, he was educated at Brasenose and Merton Colleges, Oxford, and after gaining his degree read some public lectures on Euclid and Ptolemy. In 1578 he travelled abroad and on his return was made tutor in Greek to Queen Elizabeth. From 1585 onwards he was Warden of Merton College, and from 1596 also Provost of Eton College. A scholar and a patron of learning, he published some fine editions of ancient authors, wrote on various subjects, and, like his friend Thomas Bodley, was a generous benefactor of the University of Oxford. He died at Eton on February 19, 1622 and was buried there, a memorial being erected in Merton College chapel. His quater-centenary will be marked by lectures by Prof. H. W. Garrod, at Eton on November 27 and at Merton College on November 30. An article on p. 899 of this issue recalls some of the distinguished men who have held the Savilian chairs.

Portrait of Fox Talbot

AN appeal for funds for a portrait of William Henry Fox Talbot has been issued over the signatures of Sir Robert Robinson, president of the Royal Society, Lord Brabazon of Tara, president of the Royal Institution, and Mr. Percy W. Harris, president of the Royal Photographic Society. Fox Talbot's researches between 1834 and 1841 place him in the forefront of photographic pioneers, for, from the results of these scientific discoveries, all photographic technique has since developed. The home of the Talbot family for many centuries has been Lacock Abbey, in Wiltshire, and this was presented to the