picture-postcards of useful evolutionary charts, fossil animals and plants, and eminent evolutionists and biologists with brief descriptive notes should also be produced for sale to students and visitors at cost price. Films showing a reconstruction of evolutionary progress of life should also be shown in these museums. Walt Disney, in his *Fantasia*, has shown us a film which can be suitably modified for educational purposes. We should diffuse the knowledge of the theories and facts of Evolution among the masses thus rousing them from their age-long sleep. It we can get the services of mural painters like Diego Rivera and Orzoco, we should also venture into the facts of social evolution, showing the march of humanity from the primitive society of the Paleolithic period, through Pastoral, Agricultural stages, and Feudalism, Mercantilism, to Capitalism and ultimately to Socialism under the impact of Technology.

Such "Museums of Evolution" should have a prominent place in our post-war educational programmes and plans. This is an age of visual education, and the plan of museums of Evolution with mural pictures, models and specimens, which we have outlined above, all serve as a better medium of instruction as compared with scores of schools and colleges. School teachers and students, who would come from all over the countryside to these museums, will become apostles of science and culture and will play an important role in educating India and in producing a generation of enlightened and cultured people, who will be able to hold their own in the vanguard of world progress.

M. S. RANDHAWA.

PROF. OTTO HAHN

PROFESSOR OTTO HAHN, who has been awarded the Nobel Prize in Chemistry for the year 1944, is a distinguished worker in the field of radioactivity. He has to his credit the discovery and isolation of several radioactive elements, as also the now well-known phenomenon of nuclear fission. Born on the 8th March 1879, he started his career as an organic chemist in an industrial concern and quitted this early to take up the study of the chemistry of the radioactive elements, being impressed by the outstanding work of Madame Curie and Rutherford. Working at first under Sir William Ramsay in the University College, London, he studied the activity of thorianite and isolated radio-thorium. In 1905, he proceeded to Montreal to work in Rutherford's laboratory and discovered radio-actinium. Returning to Berlin to work in the radioactivity section of the *Kaiser Wilhelm Institut Fur Chemie* (of which, later, he became the Director), he discovered mesothorium and perfected a method of separating radioactive products, using the recoil phenomenon. When he was elected to the Prussian Academy of Sciences in recognition of these researches and referred to his good fortune in working with men like Ramsay, Soddy and Rutherford, the President of the Academy naively remarked, "In science we very often find work without luck, but never luck without work". It will be interesting to recall that at a meeting in Bangalore some years ago to honour Sir C. V. Raman on his receiving the Nobel Prize, the Chairman, Prof. H. E. Watson, made a similar remark, "Accidents come to only those who look for accidents".

In the year 1918, in collaboration with Fraulein Lise Meitner, Otto Hahn discovered protoactinium, the immediate radioactive parent of actinium. They also came across the first example of nuclear isomerism in studies of the disintegration of uranium. With v. Baeyer and Meitner, Hahn showed by means of a magnetic analysis that the internal conversion electrons associated with gamma-rays always consist of perfectly homogeneous groups. When the idea of the possible existence of elements of atomic number higher than that of uranium was being put forward by Fermi, based on experiments on neutron-irradiated nuclear reactions carried out by him and his collaborators in Rome, Irene Curie and Savitch in Paris and Hahn and his co-workers in Berlin, set out to examine the products formed by the entry of the neutron into the uranium atomic nucleus, to confirm Fermi's conclusions. Actually, the searching chemical analyses of Hahn and Strassmann revealed that short-lived isotopes of barium and lanthanum are formed when neutrons bombard uranium. In announcing these unexpected results in the columns of *Naturwissenschaften* of 6th January 1939, they wrote with a certain amount of trepidation, "Perhaps, after all, our results have been rendered deceptive by a series of strange accidents". Soon after this announcement was made, Lise Meitner and Frisch pointed out in the columns of *Nature*, that the entry of the neutron into uranium brings about the disruption or "fission" of the nucleus, into two lighter fragments of nearly equal mass and charge, flying apart with great energy. Further chemical investigations in Hahn's laboratory showed that xenon and strontium were the final products in the break-up of the uranium nucleus. On the 23rd July 1939 Prof. Otto Hahn gave a talk on these researches at the Royal Institution in London, as a special guest of the Royal Society. Prof. Niels Bohr who attended this meeting, on his way back to Copenhagen from U.S.A., gave an account of his theory of nuclear fission, on the basis of the liquid drop model of the atomic nucleus, put forward by him, sometime earlier. A more elaborate theory of the mechanism of fission was given subsequently by Bohr and Wheeler in the *Physical Review*. Further experimental work by F. Joliot in Paris and Glasoe, Fermi and others in U.S.A., established the phenomenon of nuclear fission and indicated that it may be brought about in other heavier nuclei as well, by irradiation with neutrons or in some cases with gamma-rays. In conclusion, it may be recorded that the investigations of Hahn and his co-workers are unsurpassed in the assiduity with which they have been carried out and the far-reaching developments they have led to.

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