on Problems of Ice and Snow, Subterranean Waters and Continental Erosion.

Two well-attended public lectures on the following topics were organized in connection with the I.U.G.G. Conference: "The Arctic and Antarctic Program of the I.G.Y.", by Dr. E. I. Tolstikov, Deputy Chief of the Northern Sea-Route Administrations of U.S.S.R., and "The Earth Satellites", by Prof. L. V. Berkner, President of the International Council of Scientific Unions.

The generous Canadian hosts had worked out an excellent programme of visits and entertainments, designed to acquaint the visiting scientists with the natural beauty spots around Toronto.

The Toronto Assembly of the I.U.G.G. concluded its deliberations on September 14th. Dedicating itself, in the words of President Ramanathan, to *Sathyam* (Truth), *Jnanam* (Knowledge), *Anantham* (Without end). It was officially announced that Professor J. T. Wilson of Canada had been elected as the next President. The Twelfth General Assembly will be held in Helsinki, Finland, in 1960.

The Indian delegation was composed of Prof. K. R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad, and Dr. U. Aswathanarayana, Andhra University, Waltair. The following Indian Research Fellows working in Canada joined as guests: Drs. S. C. Das, R. Pratap, M. V. N. Murthy, A. K. Saha and Mr. Agarwal.

U. ASWATHANARAYANA.

PREPARATION OF NOBELIUM

THE new element was synthesized by the fusion of an atom of the heavy isotope of carbon, carbon-13, with an atom of curium (element 96). In order to obtain the most stable product, it was necessary to use the heaviest available isotope of curium. This is curium-244, and it was only available in the United States as a product of irradiating plutonium with neutrons in the world's highest flux reactor.

Great Britain provided considerable quantities of carbon-13 required, from Harwell and the Nobel Institute of Physics, Stockholm, provided the Cyclotron, the only one in the world capable of accelerating carbon ions with the required energy and intensity.

Due to the hazardous nature of the target material and the difficulty of separating a few atoms of the new element from it, a rather new bombardment technique was employed. This utilized the recoil or 'knock-on' effect. A thin layer of curium was deposited on an aluminium foil, and the product atoms knocked out of the target were collected in a plastic film after passing through a very thin aluminium cover foil placed over the curium target, to prevent the spread of curium contamination. The plastic film was ignited on a platinum disk to recover the product atoms. The decay of these atoms could be observed directly, or they could be dissolved off the plate for chemical identification.

A new alpha-activity of 8·5 MeV. energy was observed among the products, and although only seventeen events of this energy were observed with certainty, it was possible to show that the new alpha-emitter had the expected chemical properties for an isotope of element 102. The chemical experiments in each case used ion-exchange techniques. When the activity was absorbed on a column of cation-exchange resin and washed off with a complexing agent (alpha-hydroxy isobutyric acid), the 8·5 MeV. alpha-activity appeared in the drops predicted for element 102.

There was a possibility that the activity might be due to thorium-225, which has a half-life of 8 min. and produces a short-lived daughter, polonium-213, which emits 8·4 MeV. alpha-particles. This was eliminated by eluting the activity from a cation-exchange column with 6 N hydrochloric acid. Under these conditions, thorium is retained by the column, while the trivalent actinide elements are eluted rapidly. The 8·5 MeV. alpha-activity was found in the actinide fraction.

A graph showing the moment of decay of each of the seventeen atoms observed gave a half-life of about 10 min. for the new activity. The observed alpha-particle energy and half-life, the absence of spontaneous fission, and the method of preparation lead us to believe that the mass number of the isotope prepared is either 251 or 253, the latter number being more likely (*Nature*, Nov. 16, 1957.)