collision of pions with nucleons, nucleons with nucleons, and the production of strange particles by pions on protons. One important result that has been established at Dubna is that there is an increase in the production of K-meson pairs with an increase of energy of the primary particle.

Four invited papers were presented at the plenary session on Theories of elementary particles. This session naturally evoked considerable discussion. There always remains the question whether all the elementary particles of today are really 'elementary' or 'basic'. They are recognised as elementary on the basis of our present knowledge of nature. They may not stand as the most basic elements of matter at the next stage of physics. In fact, Fermi and Yang pointed out, as long ago as 1948, a possibility of explaining the π-meson as a compound state of a nucleon and an anti-nucleon. One of the current problems of particle physics on the mathematical side is to evolve a unified theory of fundamental particles. Ohnuki (Japan) spoke on the extension of Sakata's composite model of elementary particles. One interesting outcome of Ohnuki's investigation is the existence of a neutral meson with zero isotopic spin. This has been called $\pi^{\circ\prime}$. It comes out as one of the configurations of the composite model of one baryon and one antibaryon system. Any experimental evidence for this pseudoscalar meson has not so far been found.

Blokhintsev presented some new results obtained by his group at Dubna by the New functional methods in the field theory. Heisenberg reported on the progress of research on the non-linear spinor theory carried out during the year by his theoretical group at Munich. The chief assumption in this attack of the problem is that the symmetry principles rather than the particles themselves are regarded as the elementary notions of physics.

The above summary, though cursory, is sufficient to indicate the voluminous work that is being done on many fronts on the physics of high energies. There is no doubt that the delegates to the Conference obtained quite a lot of new information both on the experimental and the theoretical sides of the various problems connected with high energy physics. As a result of the discussions while many doubts were cleared, some were also deepened. After all, "one criticizes, one learns, gets information, and thereby the progress of science is maintained".

The full Proceedings of the Tenth Conference have been published as an impressive volume of 900 pages.* It will be clear that with this growing activity in this field of particle physics one year interval will be too short a period to understand the full implications of the results obtained and to draw definite conclusions therefrom for presentation. In this context the decision of the IUPAP to hold the Conference on a biennial basis will be welcomed.

The Eleventh Conference will be held at CERN in July 1962.

* *Proceedings of the Tenth Annual International Conference on the High Energy Physics, Rochester*, 1960. (Interscience Pub'ishers, New York-1), 1960. Pp. xxv+890. Price $ 13.50.

THE EARTH'S CRUST

A SPECIAL place in international geophysical research programmes is occupied by explorations of close-lying strata of the earth's mantle, the layer underlying the solid crust. The sialic zone of the earth includes the lightest rock composed of granites, gneissic and sedimentary rock. Its specific gravity is 2·8, as compared with the earth's mean specific gravity of 5·5. **In continental region, the earth's crust is 25 to 40, rarely up to 60, kilometres thick. Under the ocean bottom the sialic zone is only a few kilometres thick.**

The temperature in the lower layers of the earth is not uniform. In the Ukrainian crystalline shield province, for example, the temperature rises by 8·3° per every kilometre downwards and reaches some 250° C. beneath the crust. In the volcanic Carpathian mountains the temperature rises by 35° per kilometre and beneath the crust is as high as 1,200° C.

The age of the earth and the solar system is 5,000 to 6,000 million years. The latest researches indicate that the matter of our planet has existed as a solid for at least 4,000 to 5,000 million years. The age of the oldest discovered rock is set at 3,500 million years.

The history of the earth's crust counts 16 cycles of mountain formation, folding and mineral formation, each lasting from 200 to 300 million years. The latest is the Alpine mountain-forming cycle, in which the Carpathians and the Crimean mountains appeared. This cycle began some 220 million years ago. —(*USSR News.*)