

(2) Will not a food currency lead to over-production of grain? No, because human needs are various and with the increase of prosperity the population will create a demand for other agricultural products, that will become more paying to produce, than grain.

(3) The food currency will foster harter transactions in the rural areas, with the elimination of currency notes.

It would be a welcome procedure, eliminating the middleman completely and giving to those concerned the full value for their services.

(4) It will be difficult to collect taxes in grain.

Taxes will be collected as usual, in currency notes. Exchange of grain against currency notes is done separately, preferably by the station masters.

(5) The State will incur heavy losses by accidental deterioration of grain.

The modern granaries can keep grain for very long periods. If the reform is passed by the Government, we undertake to design air conditioned and ventilated granaries in which grain will keep as long as in the Egyptian Pyramids.

(6) A heavy load will be put on railways.

Not at all; State granaries will not be big at all. The majority of grain transactions will pass through private hands, who will desire to profit by the seigniorage. Apart from this the increased railway traffic, due to higher prosperity, will pay off the railways generously the necessity of sending a trainload of grain free.

(7) Excess of grain will accumulate in State granaries.

Grain is a starting point in a variety of chemical industries. It can be dumped away by the State. A large percentage of currency notes issued will never be claimed to be exchanged for grain and the excess of grain can be sold to licensed chemical industries at lower rates or exported.

It is impossible in a single article to go into all the details of the scheme and to discuss all the corollaries. However utopian it may look at the first sight, it is a simple, understandable scheme. It deserves consideration—and we are sure that a generation will come that will take it seriously and put it to practice.

Stratosphere Flight in the Balloon "Explorer II".*

IN the issue of *Current Science* for April 1936, a brief summary was presented of the balloon ("Explorer I") expedition into the stratosphere; it was organised and conducted in the U.S.A. under the joint auspices of the United States Army Air Corps and the National Geographic Society. This hydrogen filled balloon with a volume of 3,000,000 cubic feet, made and equipped with meticulous care began to give way at a height of about 61,000 feet and ended in disaster; the three heroic fliers had to jump out of the gondola hurtling down under its own weight and save themselves by parachutes.

Nothing daunted, preparations for a second balloon expedition were almost immediately organised; this second balloon—"Explorer II"—was bigger by 70,000 cubic feet and filled with helium instead of hydrogen to avoid all risk of explosion. As in the case of the previous expedition, a large number of scientists and scientific institutions, firms and government departments enthusiastically co-operated in the great adventure. The gondola was again a remarkable floating laboratory equipped to carry out an amazing variety of scientific measurements and observations, all automatically recorded; nature, intensity and directional distribution of cosmic rays; atmospheric ozone distribution; electrical conductivity; composition of air; pressure, temperature and wind velocity variations with height; micro-organisms in the stratosphere, etc.

On 11th November 1936 (Armistice Day), leaving the Stratobowl near Rapid City at 7 A.M., "Explorer II" safely returned to earth eight hours later, after a remarkably successful flight to the

record height of 72,395 feet. The details of the flight and the preparations for it are very vividly, and with humour, described by Major Stevens, the Commanding Officer.

The theoretical and practical considerations underlying the design and construction of the balloon and the gondola; the radio telephone communication system by which the balloon was in touch with the earth throughout; the photographic and recording arrangements; the apparatus and operation for the large number of scientific observations and their automatic recording; all these are described in appropriate detail, supported by a large number of line diagrams and excellent photographs.

The results of the examination and analysis of the various records and specimens are reported in a series of scientific articles occupying nearly two-thirds of the volume. Each of these is written by a specialist. As in the case of "Explorer I," cosmic ray investigations occupy a prominent place.

The general reader will be interested to know that the electric potential at 72,000 feet is some 400,000 volts above earth and 100,000 volts above the value at 16,500 feet. Though the air pressure is no more than about 35 mm. of mercury, the wind velocity at 70,000 feet is so high as 40 miles an hour. No wonder that under this churning action, the composition of the air at these heights differs really little from that at sea-level. Of no small significance is the evidence from the cosmic ray records that nuclear disintegrations can take place without the capture of the incident particle.

For the specialist as for the general reader, the book will be very interesting reading.

A great adventure in every way, finely planned and carried out.

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* *The National Geographic Society—U. S. Army Air Corps Stratosphere Flight of 1935 in the Balloon "Explorer II,"* Stratosphere Series No. 2, published by the National Geographic Society, Washington, 1936; Price \$ 1.50.