

In a new edition pages 18, 19 and 20, in so far as they discuss air density, might be slightly modified to advantage. Here "air holes" are spoken of as places of low air density.

An aeroplane entering one of these low density regions from the air of higher density around it, will suddenly fall without any warning, merely because the pressure has enormously decreased, and the aeroplane has not had time to attain the requisite velocity of support in this lighter medium.

Enormous differences in pressure must cause enormous changes in the barometer, but such sudden changes are never found in the open, and, besides, it can be shown that the movement (whirl) of the atmosphere necessary to produce a change of pressure amounting to one tenth of the total would be of most destructive violence.

But this is a small fault to find with a book so generally helpful.

*Elementary Aeronautics.* By ALBERT P. THURSTON. Whittaker and Co., 126.

This is a non-mathematical but clearly written account of the action of air upon moving surfaces, plane and curved, and the application of these principles in the design and operation of aeroplanes.

While both elementary and brief, it seems to be free from errors, and can be recommended to those who wish some reliable information about the general action of aeroplanes, but have not the time to make a real study of them.

W. J. HUMPHREYS

*A Manual of Philippine Silk Culture.* By CHARLES S. BANKS, Department of the Interior, Bureau of Science, Manila, 1911.

Mr. Banks has been engaged, among his other duties, in a study of the possibilities in the way of profitable silk culture in the Philippines ever since the Bureau of Science was started, and this manual puts into convenient shape the results of his investigations. It is a royal octavo pamphlet of about fifty pages, with 18 good halftone plates and diagrams of rearing house and reel. He gives directions for the care of the domestic mulberry silkworm, and announces a cross between the Ben-

gal-Ceylon and Japanese silkworms which he terms "the Philippine race of silkworms." He also announces the successful introduction of the Eri or Castor silkworm (*Attacus ricini* Boisd.) from Ceylon. He thinks that the silk produced from this insect will be popular not only among the Christian Filipinos, but also among the mountain tribes and the Moros, and further that it will find a sale among the Americans and Europeans for hangings, upholstery and even for heavy dress goods. He concludes that, with both the mulberry and the Eri silkworms, the industry can be carried on in the Philippines under conditions as favorable as those which obtain in the best silk-producing countries in the world, with the added advantage that no disease has appeared as yet. That every effort is being made to prevent the introduction of disease is shown by the act of August 14, 1907, prohibiting the importation of silkworms, either eggs or cocoons, into the Philippine Islands except by the Bureau of Science.

L. O. H.

#### SPECIAL ARTICLES

##### FOSSIL HOLOTHURIANS

FEW classes of animals have a less satisfactory geological record than the holothurians and every fragment that can be gathered is therefore of unusual interest and importance. The known records occur in two forms, impressions of the whole animal or much more commonly, nearly or quite microscopic calcareous particles imbedded in fine shales and limestones and resembling more or less nearly the similar calcareous particles found in the body-wall of most living holothurians. Ludwig<sup>1</sup> has well summed up the phylogenetic value of these fossil particles:

Solche Reste aus dem Kohlenkalk, dem Jura, der Kreide und dem Tertiär vorliegen, aber keine sichere Bestimmung nach Art, Gattung und Familie gestatten: nur die eocänen Synaptidenreste . . . machen davon eine Ausnahme, da sie sich mit einiger Sicherheit auf die Gattungen Synapta, Chiridota (oder Trochodota) und Myriotrochus beziehen lassen.

<sup>1</sup> 1892, "Die Seewalzen," p. 446.