Thursday Island measured and photographed by Saville-Kent were remeasured by Mayer twenty-three years later. These results show that large coral heads may increase as much as two inches in diameter per year, while some kinds do not grow beyond a certain specific size. The average annual growth appears to be about one inch, though in the Floridian reefs the rate of increase is less.

Mayer states that stream waters pouring outward from forested volcanic shores are alkaline and thus can not dissolve limestone by reason of their "acidity." Thus the Murray-Agassiz solution theory of the formation of atolls is not supported. Holothurians are a potent factor in dissolving the materials that go to make reef limestones, which they swallow, and the effects of currents in scouring are important factors tending to convert fringing reefs into barrier reefs.

The problem of the precipitation of $CaCO_3$ in the ocean and the possibility of its solution there is discussed in the light of the latest evidence, and the conclusion is reached that in the shoal waters of the tropics, ocean-water does not dissolve calcium carbonate, but that the contrary process—precipitation by both inorganic and organic (bacterial) agencies—is taking place. Conditions in the deep sea, and perhaps in the cold waters of high latitudes, are different.

In the Murray Island reef sediments, Vaughan states that the dominant rock makers are (1) corals (34 to 42 per cent.); (2) coralline algæ (32 to 42 per cent.); (3) molluscs (10 to 15 per cent.); foraminifers (4 to 12 per cent.) and alcyonarians. Other marine animals are unimportant in their skeletal additions.

Cary shows that, in the Tortugas area, the gorgonians are also very important reef builders and therefore great rock contributors, since nearly 20 to 36 per cent. of their bodies consists of calcareous spicules. As almost all of these colonies die a violent death, and on the average all those living within 30 feet of water are replaced in five years by other colonies, he calculates that at least one ton of spicules or limestone is added per year to each acre of reef ground. In fact, when the gorgonians are common, they are more important as limestone makers than are even the stony corals.

Charles Schuchert

SPECIAL ARTICLES

A METHOD OF DEMONSTRATING THE DIFFERENCE-TONES

If a Rayleigh inductometer bridge be connected up, and a telephone receiver A be in series with the alternating e.m.f., the demonstration of the difference-tone is an exceedingly simple matter. Let the bridge be balanced for a high frequency F', say about 2,500; this tone will therefore not reach the ears if the balancing receivers be of the double, head-strap variety. Now whistle a scale into the receiver A. Since the bridge is not balanced for the new frequency, the whistle "gets through" into the balancing receivers. But one also hears another tone which slides down as the whistle slides up the scale. If between the balancing receiver and the bridge a good amplifier be connected, then the balancing receiver may be a "loud-speaking receiver" (such as are now used for announcing trains in large stations, etc.) and the apparatus is suitable for class demonstration. The great advantage of this arrangement is that we are not confined to any two fundamentals, as in the case of forks.

The phenomenon is unquestionably slightly complicated by the action of one alternator on the other, but I had not the time to see to what extent the extra tone differs from $F'-F''$.

The writer offers the above as a lecture experiment in physics and psychology, being under the impression that it has not been reported before.

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORT OF THE TREASURER FOR 1918

In conformity with Article 15 of the constitution and by direction of the council, the treasurer has the honor to submit the following report for the period December 15, 1917, to December 16, 1918, both inclusive.