

many consonants, but could still follow the conversation by paying close attention. One who has 50 per cent. loss can hear only the vowel sounds, and cannot understand unless the speaker talks loudly or close to his ear. With a 60 per cent. loss, nothing would be heard at all with the speaker three feet away, but by talking as loudly and close to the ear as possible, much can be understood. For greater deafness, no amount of loudness will be of much service, as the upper limit of the ear's response has been reached, and further increase will be painful or even injurious.

As a practical means of telling whether any device will be of assistance, Dr. Fletcher gave the following simple test: Have a friend speak simple sentences directly into your ear. If you can interpret them without difficulty, then a hearing aid can be designed which will make it possible to obtain the same interpretation. But if the speaker raises his voice to a very loud tone and you are still unable to understand, then probably no aids on the market can assist you.

The fallacy that deafened persons can hear better in noisy surroundings was disposed of by Dr. Fletcher with this explanation: The affect of noise is the same as an impairment of hearing. Noise in the average room is equivalent to a 20 per cent loss of hearing; New York's subway racket is as serious as 48 per cent loss. Hence in a subway train the man of 48 per cent deafness is on a par with his normal companion. Both shout, and both are heard equally well - or ill.

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#### ORGANIZATION TO STUDY TROPIC PLANTS

Recognition of the large and increasing importance of the part played in the economic life of the temperate zones by the products of the plants of the tropics is seen in the incorporation of the Tropical Plant Research Foundation, by some of the leaders in the United States in the knowledge of tropical plants. The foundation was initiated during the past year by a committee of the National Research Council and was incorporated June 6 in the District of Columbia.

The particular objects of the Foundation will be to promote the study of the plants and crops of the tropics; to conduct investigations and to publish the results of them; and to establish and maintain such temporary or permanent stations and laboratories in tropical countries as may be necessary for the accomplishment of these objects.

The necessity for this study is stated by the organizers of the Foundation to be the economic dependence of the temperate zones upon the tropics, from which come many of the necessities of modern life. This dependence will increase in the future. The quantities of sugar and oils, fiber and rubber, coffee and cacao, fruits and vegetables, that are imported annually are only the vanguard of the future supplies that will be drawn from the tropics. The production, preparation, and shipment of these products involve problems that have as yet received little study. With the exception of the areas under the immediate jurisdiction of the United States, the tropical agriculture of the Western Hemisphere does not have the counterpart of the governmental and institutional agencies which contribute so much to crop production within the United States.

The industrial importance of the scheme is recognized in the Board of Trustees, four of whom will represent industry. The other five will be scientists chosen from several national societies more closely identified with the projected

work. The initial board consists of George P. Ahern, former chief forester of the Philippines, J. T. Crawley, former director of Cuban and Porto Rican Experiment Stations, V. M. Cutter of the United Fruit Co., Dr. William Crocker, director of the Thompson Institute, Dr. R. A. Harper, National Research Council, Dr. L. R. Jones, head of the department of plant pathology at the University of Wisconsin, H. C. Larkin, president of the Cuba Railway company, Dr. S. C. Prescott of the Massachusetts Institute of Technology, and Dr. D. L. Van Dine of the American Society of Economic Entomologists. The scientific director and general manager will be Dr. W. A. Orton, now with the Bureau of Plant Industry of the U. S. Department of Agriculture.

Dr. Jones will be the first president of the Foundation, and Dr. Harper will be vice-president. The administrative headquarters will be in Washington. Much of the laboratory work will be done at the Thompson Institute, Yonkers, N. Y., and field laboratories will be established in the tropics as needed.

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#### NEW SOUNDING METHOD IMPROVED BY COAST SURVEY

Accurate determinations of the velocity of sound in sea water, which will make possible the further development of the sonic depth finder in marine survey work, have been made by the U. S. Coast and Geodetic Survey. The speed of the sound waves under water has been found to vary so greatly with the temperature, pressure, and salinity that unless these are known the sonic method of sounding the depths of the sea is apt to be inaccurate. The problem has been to work out some sort of theoretical velocity which might be safely used in this work.

The oceanographic cruise last fall of the Coast and Geodetic Survey steamer Guide from the east to the west coast by way of Porto Rico and the Panama Canal, and the subsequent work of that vessel on the Pacific Coast led to results which went far toward a solution of this problem. Wire soundings were taken at many places ranging in depth up to more than five miles. Sonic soundings were taken at the same time, and the temperature of the water and its salinity measured or calculated for various depths.

As a result, it has been found possible to deduce a theoretical velocity for the sound waves at many places, and under differing conditions which when used for computing depths by the sonic method and compared with those obtained by wire soundings, showed very slight errors.

The sonic depth finder was developed by Dr. H. C. Hayes of the Naval Research Laboratory, Bellevue, D. C. It measures the time taken for sound to travel to the bottom of the ocean and back again and has been used for deep sea soundings by Navy vessels in various parts of the ocean, especially off the Southern California coast. Sound travels in sea water at a speed of from 4800 to 5000 feet a second, and the importance of determining this velocity accurately if accurate soundings are to be made, is evident.

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READING REFERENCE - Murray, John. The Ocean. New York, Henry Holt and Co. 1913.

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