vidual impulses which one may "read" quite easily, and, if desired, a Fourier analysis may be applied to the oscillograms of the individual impulses.

Why endeavor to infer the properties of an individual egg from an omelette, even by means of elaborate chemical analysis, when the individual eggs can be purchased separately?

H. DAVIS
A. FORBES
L. GARCEAU

THE PINE FORESTS OF COSTA RICA

IT was not through oversight that in his "Plantas Usuales de Costa Rica" Professor H. Pittier failed to mention the occurrence in that country of pine trees. No one knows the vegetation of Costa Rica so well as the writer of that now almost classic report, and if trees so important economically as pines did occur in Costa Rica, he could not be pardoned for neglecting them.

But, in a recent volume devoted to the "Tropical Forests of the Caribbean" (Gill, 1931), the reader is informed that "In British Honduras pine extends practically to the coast, but in Costa Rica it is confined to the uplands, and in Panama fades out entirely" (whatever the last phrase may mean). Opposite the page (p. 151) on which this statement appears, there is a map illustrating the distribution of pine forest in Central America. There is a modest strip of black extending the length of what apparently is intended as the main cordillera of Costa Rica (which does not exist), with a discreetly reduced, isolated patch of black farther south, near the Panama border.

Further, on page 317, under Table No. 3, it is stated that the forest area of Costa Rica consists of eight millions of acres, of which one million acres are reported optimistically as "conifers." Under "remarks" there appears the distressing information, "Pine type badly injured by fire."

The present writer is not prepared to criticize the forest data reported for other countries, although to one who has traveled by railroad from Puerto Barrios, Guatemala, to Guatemala City it is evident that the distribution of pine forest as indicated for that country is erroneous. Likewise, a botanist who has studied the flora of the Pacific coast of Central America will be unable to comprehend why Pacific Nicaragua should be mapped as "deciduous" forest, and all the rest of the Central American coast as "rain" forest. The facts are that exactly the same species of trees characterize the Pacific flora all the way from Guatemala at least as far as the Nicoya Peninsula in Costa Rica, and to Panama, for that matter. Floristic areas, unfortunately, do not usually coincide with political boundaries; it would make work easier for the systematic botanist if they did.

The subject of the southern limit of pine trees (and of all conifers) in North America is a matter of substantial scientific and economic interest, else it would not deserve mention here. In a book which purports to be scientific, the information published should be as accurate as possible, or else omitted. The distribution of pines in tropical America has been discussed by competent writers, and the facts could have been obtained without any great amount of research. Thomas Belt, in "A Naturalist in Nicaragua," reports that when traveling northward from Chontales, he observed the first pines in the vicinity of Matagalpa, and that is probably their southernmost extension in North America. (They do not occur, of course, in South America.)

The quotation cited in the second paragraph of this article should be corrected to read: "In Costa Rica pines are confined to dooryards," and in the table mentioned the area should be reduced from one million acres to one acre. A plot of that size, perhaps with a little crowding, would contain almost all the pine trees of Costa Rica. They do exist, it is true, for in two winters passed in the "uplands" I have seen some of them, but they were always about houses, and evidently planted. Systematic questioning of country people and of educated persons thoroughly familiar with the country failed to elicit a single report of the existence in Costa Rica of a native pine tree. In a recent letter to the present writer, Mr. F. Charles Clark, a lumber exporter of San José, Costa Rica, writes: "I have traveled practically all over the forests of this country, I might say, looking for native pine (genus *Pinus*), without success. I can not imagine anyone making a statement that there are millions of acres of pine trees in this country, and I, for one, should like to come across the first native tree." Friends of forest conservation may be comforted by the fact that under the circumstances it is scarcely possible that the Costa Rican pines have been "badly injured by fire."

PAUL C. STANDLEY
FIELD MUSEUM OF
NATURAL HISTORY

THE SOARING OF TURKEY BUZZARDS

THOUGH the means by which certain birds accomplish their soaring flight with wings held stationary is by no means the mystery it was before man learned to make use of upward air currents in flight with motorless gliders, the following observation seems of interest. The observation may not be unusual, yet neither myself nor any of the half dozen others who witnessed it had previously noticed it.