

actually communicating any; by using quotation marks, the writer informs the reader that he considers the term inadequately defined.

It may seem that the principles just illustrated are so obvious that the notational devices are trivial. That this is not so is demonstrated by the frequency with which the principles are ignored in public utterances, not excluding those of scientists.

My equation "sun = sunset + sunrise + . . ." symbolizes the extensional definition of an "object" by enumeration of concrete experiences. Linguistic and semantic studies have confirmed the need for such an approach. But meanwhile, modern "rigorous" mathematics has continued to take "objects" (or "things") and "predicates" for granted (12, 13). Jeffreys (14) has expressed some misgivings about objects, and Whitehead, Russell, Bell, and others (see quotations and bibliography in 7) have made other basic criticisms; nevertheless, a great part of mathematical philosophy and symbolic logic seems merely a more precise formulation of conventional Indo-European grammar, without critical scrutiny of its tacit assumptions. As far as I know, no mathematicians have tried the experiment of going into the nursery and erecting their mathematical system on a solid foundation of

blocks, gestures, grunts, etc., *without grammatical language*. The possibility of such a procedure has been mentioned before, however (15, p. 44), and I hope some mathematician can be induced to try it.

The work that I have cited, in linguistic anthropology and in general semantics, is closely related to ideas presented in my article and first written down in manuscript in 1930; yet I did not learn of it until 1950, although meanwhile I had been reading *Science* and other general scientific publications. I think these and other scientific activities, outside the field of physics, are important to physicists both within their science and in its relation to other social activities; but how does one find out about such things?

My suggestion is that *Physics Today* help us to become better informed, by asking scientists in other fields, and especially in fields outside physical science, to contribute articles particularly directed to physicists. I think such a program would give both the physicists and the guest writers concrete experiences that could serve as elements in an extensional definition of "the unity of science", and so begin to take it out of quotation marks.

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High Altitude Laboratories

In a recent article on "High Altitude Laboratories" in *Physics Today*, November, 1950, page 17, the need for additional laboratory facilities in the equatorial zone was stressed. No sooner had the issue of *Physics Today* reached some members of the medical fraternity than the author began to receive letters pointing out an omission from the account of existing stations. Indeed four of these letters arrived one day in the same mail. Evidently such distinguished individuals as Dr. Warren Weaver are also keenly interested in this problem.

One of the correspondents was thoughtful enough to give the reference to the only description of the omitted laboratory which has so far come to my attention, namely, a letter signed by Carlos Monge, M.D., and Alberto Hurtado, M.D., both of Lima, Peru, published in the *Journal of the American Medical Association*, Vol. 135, 1947, page 375. Since this journal is not ordinarily read by physicists, nor is it available in most physics libraries, it seems worth while to restate the substance of their letter. This is especially the case since physicists may again wish to make observations in this region as they have in the past, and the presence of a build-

ing with laboratory facilities may affect their plans.

The Institute of Andean Biology, devoted primarily to a study of the physiological effects of high altitudes, has completed a building at Morococha, Peru. The altitude of the building is 4,540 meters or 14,900 feet. Electrical energy is available, at 220 and 110 volts, as is hot and cold water. The building has four bedrooms, a library, and kitchen, as well as laboratory rooms. Morococha is about 90 miles from the capital city, Lima, and can be reached by rail or by a good auto road. The road crosses a pass at 15,920 feet (4,850 meters), and from this pass one can climb to altitudes of a bit over 17,000 feet without encountering any mountaineering regarded as technically difficult. The town of Morococha is built around a mine of the Cerro De Pasco Copper Company, and any visiting scientist would find a number of persons there, including both Peruvian and American engineers, who are technically trained and cordially willing to assist scientific work. Drs. Monge and Hurtado are both connected with the Faculty of Medicine at the University of Lima.

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