cussed the possible alternatives which his measurements of time may reveal is not merely an expression of his modesty: it flows from the current view that scientific theories are but convenient summaries of observed facts, or mere working hypotheses, or interpretative policies.

This noncommittal view of scientific theory can be traced back to antiquity, and it came into prominence first in the conflict between theology and Copernicanism. Pope Urban VIII insisted that Galileo should regard the Copernican theory as a mere practical device for computing planetary motions and not as a real explanation of the facts. Indeed, right from the publication of the Copernican theory in 1543, the Copernicans fought bitterly against his positivistic view of the theory, on which Catholic and Protestant theologians equally insisted. It was Newton who finally dealt the death blow to this view by his theory of gravitation, published in 1687.

This conception of science, which had been used so far only to reduce the status of science and to uphold the supremacy of religious dogma, was revived two centuries later by Mach for the purpose of strictly limiting the claims of science to observable facts. It has since become universally accepted. Yet this theory of science is but another pretense, practiced in deference to a false ideal of science. Take the theory of general relativity for which the project of Zacharias promises to supply a decisive test. Since its first publication 40 years ago, general relativity has held a position of supreme interest in science. But it would be grotesque to describe it as the most convenient summary of the facts predicted by it. There are hardly any such facts, and such as there may be can be memorized in a few minutes, while the understanding of these facts by means of the general theory is a task requiring years of preparation even by specially gifted students. Actually, the program of the general theory was first set out by Mach in 1883, without any experimental evidence to support it. It has held the allegiance of science and of the whole world by the intellectual beauty of its representation of the universe. Its rationality was regarded as a token of its truth, exactly as the rationality of the Copernican theory was so regarded by its early adherents who fought and suffered to uphold this truth.

Let us drop these pretenses. No scientist is ever concerned with producing the most convenient summary of a given set of facts. This is the task of the editors of encyclopedias and the compilers of telephone directories. It is of the essence of a scientific theory that it commits us to an indeterminate range of yet undreamed consequences that may flow from it. We commit ourselves to these, because we believe that by our theory we are making contact with a reality of which our theory has revealed one aspect. It is this commitment that lends universal intent to a scientist's most original solitary thoughts. By acknowledging this frankly, we shall restore science to the great family of human aspirations, by which men hope to fulfill the purpose of their existence as thinking beings.

So it would seem that by abandoning the false ideal of detachment in the epistemology of the exact sciences, we are led back to the point once more which we had reached by a critique based on a similar revision of our scientific ideals in respect to sociology and biology.

References and Notes

1. R. B. MacLeod, *Science,* this issue.
2. M. Polanyi, *The Logic of Liberty* (Chicago, 1951), p. 106; expanded in *Encounter* 7, No. 6, 5 (1956).
3. C. Kluckhohn and D. Leighton, *The Navaho* (Harvard Univ. Press, Cambridge, Mass., 1946), p. 176.
4. V. G. Childe, *What Happened in History* (Pelican, London), p. 15.
5. E. Glover [*War, Sadism and Pacifism* (London, 1935), p. 38] explains war as follows: "Tearing up 'scraps of paper,' 'violating' an 'innocent little country,' defending the 'mother' country, however much they refer to current realities, are but echos of many phantasies in which the 'good' mother or child is defended against the sinister (mostly sexual) designs of the phantasied 'bad' father." In the chapter entitled "The problem of prevention," we find on page 108 the following suggestion: ". . . to find out . . . how many dictators, foreign secretaries, diplomats and peace delegates suffer from psycho-sexual impotence or have a secret fear of impotence. A prerequisite is the common recognition of the important facts that impotence in some cases contributes to pacific tendencies, whilst unconscious fear of impotence is a common cause of war-mindedness and grandiosity." For a textbook summing up 11 years later the results of this movement, with a special emphasis on the role of early toilet training, see Kimball Young, *Social Psychology* (New York, 1946), for example p. 44.
6. W. J. H. Sprott, *Science and Social Action* (London, 1954), p. 5.
7. R. W. Gerard, *Science* 125, 429 (1957).
8. K. S. Lashley, in *Cerebral Mechanism in Behavior. The Hixon Symposium,* L. A. Jeffress, Ed. (New York and London, 1951), p. 112.
9. This conclusion controverts also G. Ryle's thesis, expounded in *The Concept of Mind,* that it is meaningless to speak of the mind as distinct from its workings.
10. J. Zacharias, *Science* 125, 427 (1957).

F. W. Hodge, Anthropologist and Editor

On 28 September 1956, there died in Santa Fe, New Mexico, a man whose work will never be forgotten—Frederick Webb Hodge. He combined a deep knowledge of the archeology, ethnology, and history of the Southwest with a rare gift for writing and editing. He had a wonderful memory, a lively sense of humor, and talent as a raconteur.

"Téluli," as he was affectionately called by the Zuñi Indians and many of his other friends, was born at Plymouth, England, in 1864, and was brought by his parents to the United States at the age of 7. He was raised and educated in Washington, D.C., attending Columbian (now George Washington) University.

His first interest in the Southwest was aroused while he was field secretary for the pioneer Hemenway Archeological Expedition, from 1886 to 1889. This gave him the opportunity to see historic towns, meet living Indians, and study the ruins left by their ancestors. From that time on he never forgot the Southwest.

After his return to Washington he was employed by the Smithsonian Institution, at first in the office, then in the Bureau of American Ethnology, where he rose to the post of ethnologist-in-charge in 1910—a position he held for 8 years.

It was during his earlier years at the bureau that he accomplished the work for which he will be best remembered—the creation of the *Handbook of American Indians,* in two thick volumes, containing together more than 2000 pages. This handbook includes all kinds of information, alphabetically arranged, on the first Americans, with many illustrations. Hodge collected this material from various sources, writing some of the items himself and handling the editorial work, which must have been a heavy task. The *Handbook* still remains the best reference work on the American Indian, although the second volume was published in 1910, 46 years ago.

In addition to his work for the bureau he edited the *American Anthropologist,* as well as most of the American Anthropological Association's *Memoirs,* from 1898 to 1917.

Hodge left the Bureau of Ethnology in

1918 to join the staff of the Museum of the American Indian, Heye Foundation, in New York, where he edited all the museum publications and conducted a number of archeological "digs," especially at the ruins of Hawikuh, near Zuñi, New Mexico, one of the "Seven Cities of Cibola."

In 1932 Hodge became director of the Southwest Museum at Los Angeles, a position he held with distinction for 22 years. Here again he edited all the museum publications. And somewhere along the line he found time to edit the magnificent Curtis series of 20 volumes on the North American Indian.

Hodge was also a prolific writer, his bibliography containing more than 350 items dating from 1890 to a few days before his death—monographs and articles for historical and scientific publications. Many writers sought his advice or induced him to compose a foreword for a forthcoming opus. Absolute accuracy was his watchword, and he was asked to weed out errors from many a manuscript, which his wide knowledge and remarkable memory enabled him to do.

He was one of the founders of the American Anthropological Association and of the Quivira Society and was a member of many other scientific organizations.

In 1955 Hodge was granted a year's leave from the Southwest Museum. Early in 1956 he retired and moved to Santa Fe, the heart of the land he loved. Here, he was working on a study of the Apache Indians at the time of his death.

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News of Science

Rockefeller Institute Expands

The Rockefeller Institute will construct four new buildings with two gifts totaling $5 million that have been received from the estate of the late Alfred H. Caspary and from John D. Rockefeller, Jr. Three million dollars has been provided by the Caspary estate. It will be used for an auditorium, a graduate student residence hall, and a president's house.

The auditorium building, Alfred H. Caspary Hall, is now under construction. It includes an auditorium that will seat 500, six smaller auditoriums and conference rooms, and executive offices. A principal feature of the structure is a reinforced concrete dome, 90 feet in diameter and 40 feet high, which will be covered with brightly colored ceramic tile. The Caspary gift is the largest contribution ever made to the institute from outside the Rockefeller family.

The Rockefeller gift provides as much as $2.5 million for the construction and furnishing of a building to be known as Abby Aldrich Rockefeller Hall in memory of Mr. Rockefeller's first wife. The hall will serve as a social and residential center for scientists from all parts of the world who are visiting New York and for the institute faculty. The building will contain living quarters for 24 visiting scientists, two large social halls, a library, a refectory and smaller dining rooms, a music room, and a little theater.

Alfred H. Caspary Hall and Abby Aldrich Rockefeller Hall will fulfill four new functions in the development of the institute as an international science center.

1) Encourage scientists from all over the world to meet and live together for brief or extended periods of time in order to exchange ideas and synthesize important sectors of the rapidly accumulating mass of scientific knowledge.

Through the informal associations of scholars living together, information will be exchanged and new programs of research will be formulated in an environment of intense research activity. The new center has been especially planned to house conferences of eight or ten leading experts in a certain field of science, each assisted by a junior associate, who will live and study together for 3 or 4 months while preparing a monograph which will present a coordinated view of an important sector of science.

The informal exchange of knowledge and ideas should aid scientists to keep abreast of the rapid increase of scientific knowledge. The deliberations and conclusions of the extended conferences will be made widely available to those who are not specialists in the specialists' field.

2) Transmit scientific knowledge to young people and the general public as well as to students.

Because the welfare of peoples and of nations depend on a widespread understanding of science, the institute will assume a new responsibility for presenting scientific information and natural phenomena to school children, college students, and the general public. The laboratories of the institute will be the source of ideas and knowledge which will be described verbally by the faculty to audiences gathered in Caspary Hall. Experiments being prepared in the laboratories will be presented in the auditorium through the medium of closed-circuit television reaching out from the laboratories. In order to increase the size of the audiences many thousandfold, the lectures and the demonstrations will go out to a widespread audience by television, radio and sound films.

3) Provide ideal facilities for meetings of scientific societies in the closely related auditorium, meeting and conference rooms, and the social and residential quarters.

The center will provide a significant addition to the facilities of New York as a home of science and culture. The auditorium and meeting rooms of Caspary Hall will be supplemented by the social and housing facilities of immediately adjacent Abby Aldrich Rockefeller Hall with its extensive facilities for social gatherings, for dining, and for the informal associations which are so important an element in professional meetings. Close to mid-Manhattan, the United Nations, and New York's many cultural institutions, the center will be strategically located.

4) Encourage the cultural life of the institute faculty.

The Rockefeller Institute, like all the universities of New York City, has the advantages of the unsurpassed cultural resources of New York. It has the disadvantage, as do other urban universities, of dispersive commuting to remote suburbs. The center will seek to make the advantages more available to the faculty through exhibitions of paintings, programs of music, and lectures in many fields of the creative and performing arts. It will seek to mitigate the disadvantages by providing a social center for the faculty and their families.

Abby Aldrich Rockefeller Hall, Caspary Hall, and the 13-room president's house are scheduled for occupancy this summer.

Plans for the graduate residence hall are now in the process of development.