critically observed facts and carefully tested reasoning may justify. An interpretation thus cautiously reached and conservatively formulated will surely command the serious consideration of scientific men.

CONCLUSION

Have we, in the method of multiple working hypotheses, applied with the aid of rigorous analysis something which will guide us unfailingly to the discovery of truth? We are compelled to answer this question in the negative. No device, however perfect, can wholly deprive the human intellect of its capacity for making mistakes. De Leon searched in vain for the fountain of youth. Can we hope for a magical fountain of truth?

The most for which we may reasonably hope is by correct methods of research to reduce the chances of error to a minimum and to raise to its maximum the probability of discovering the real causes and relations of things. This we have done, so far as lies within our power, when we are accurate in observing facts, careful in classifying them, cautious in generalizing from them, fertile in inventing hypotheses, ingenious and impartial in testing their validity, skilful in securing their confirmation or revision and judicial in formulating ultimate interpretations.

Multiple working hypotheses as a method, employed in connection with critical analysis as an instrument of precision, offer us, in my opinion, the best guarantee of success in scientific research.

SCIENTIFIC EVENTS

UNIFICATION OF RADIO RESEARCH FACILITIES IN GREAT BRITAIN

THE facilities for radio research carried out by the British Department of Scientific and Industrial Research on the advice of their Radio Research Board have been improved by the unification of the Wireless Division of the National Physical Laboratory and the department's Radio Research Station at Slough into a new radio department of the National Physical Laboratory. Mr. R. A. Watson Watt, hitherto the superintendent of the Radio Research Station, is the superintendent of the new department.

Under the new arrangements the Radio Research Board continues to be appointed as at present by the lord president of the council, and its constitution and functions remain unchanged except that the opportunity has been taken to remove the anomaly by which the general work on the maintenance of radio standards at the National Physical Laboratory was a responsibility of the board. In the future the executive committee of the National Physical Laboratory will assume direct responsibility for these standards in the same way as it assumes responsibility for other national standards.

On the formation of the Radio Research Board in 1920, the National Physical Laboratory was entrusted with all work which required a laboratory equipped with instruments of the highest precision. Such work included the development of radio frequency standards, the study of problems of selectivity, aerial arrays and the generation of extremely short waves, as well as methods for the measurement of fundamental quantities necessary in accurate circuit design. Owing, however, to its situation and the proximity of other electrical work, the National Physical Laboratory was considered unsuitable for the conduct of radio research work requiring measurements in the field or on isolated sites. For work of this character facilities were provided by the department at the Radio Research Station erected on land adjoining the Admiralty Compass Observatory at Ditton Park, near Slough. Practically the whole work carried out on behalf of the Radio Research Board was thus divided between the Radio Research Station, Slough, and the National Physical Laboratory.

Although the Radio Research Station and the National Physical Laboratory have closely cooperated in the past, the unification which has taken place gives the Radio Research Board much greater freedom in planning its program as a single unit. The amalgamation of the staff of the two sections under a single direction is in the interests of efficiency and economy, and enables the increasing number of inquiries from industry to be made to one single establishment.

THE ANNUAL MEETING OF THE ROYAL INSTITUTION

THE annual meeting of the members of the Royal Institution was held on May 1, the president, Lord Eustace Percy, being in the chair. According to the report in *Nature* the annual report of visitors for the year ended December 31, 1932, testified to a year of considerable activity. The membership had been well maintained. The privilege of free attendance at the afternoon lectures by *bona-fide* students in London had been much appreciated and used. The report on the progress of the researches in the Davy Faraday Laboratory gave a good indication of the considerable extent of the research organization which is at work under the direction of Sir William Bragg. Some sixteen or eighteen workers are engaged, the majority on problems related to the x-ray determination of structure. Mention was made of Dr. J. M. Robertson's determination of the structure of anthracene, of Dr. A. Müller's work on the long-chain compounds, and of the growth in accuracy and capacity of the

large experimental x-ray plant in the hands of Dr. Müller and Mr. R. S. Clay. The capacity of the apparatus is calculated to be about 50 kw.; as yet it has worked well up to 10 kw. The treasurer's report and accounts showed a very satisfactory position, in spite of the heavy demand on the financial resources of the institution caused by the recent reconstruction. After a total expenditure in connection with the rebuilding of more than £100,000, a diminution in the invested funds of the Royal Institution of about £2,000 is shown. This gratifying result is a consequence of many generous donations to the Building and Research Endowment Fund raised by the institution in the past three years. The donations and other receipts to this fund have been sufficient to defray almost the entire cost of the rebuilding, and to go a considerable way towards completion of the program of permanent endowment of research which the managers of the institution have as one of their principal objects. The following officers for 1933–34 were elected: *President,* the Right Hon. Lord Eustace Percy; *Treasurer,* Sir Robert Robertson; *Secretary,* Major Charles E. S. Phillips.

NATIONAL RESEARCH FELLOWSHIPS IN THE BIOLOGICAL SCIENCES

THE annual meeting of the Board of National Research Fellowships in the Biological Sciences, for the award of 1933–34 appointments, was held in Washington on April 28 and 29, 1933. The board made twenty-six reappointments and forty-one new appointments, as follows:

REAPPOINTMENTS

For Domestic Study

Bond, R. M.—Zoology
Boughton, D. C.—Agriculture
Burkholder, P. R.—Botany
Casida, L. E.—Agriculture
Fry, Glenn A.—Psychology
Glass, H. B.—Zoology
Hopkins, E. W.—Agriculture
Jackson, T. A.—Psychology
Kelly, Isabel T.—Anthropology
Kerr, Thomas—Botany
Miller, E. S.—Botany
Morsh, J. E.—Psychology
Mowrer, O. H.—Psychology
Phelps, Austin—Zoology
Riley, H. P.—Botany
Shaw, Luther—Agriculture
Smelser, G. K.—Zoology
Smith, Wm. K.—Agriculture
Taylor, G. W.—Zoology
Tharp, Wm. H.—Botany
Wald, George—Zoology
Walls, Gordon L.—Zoology
Wolfe, J. B.—Psychology
Zirkle, R. E.—Botany

For Study Abroad

Hill, R. T.—Zoology
Sparrow, F. K.—Botany

NEW APPOINTMENTS

For Domestic Study

Abbe, Ernst C.—Botany
Barker, Horace A.—Zoology
Clark, Harold E.—Agriculture
Day, Harry G.—Zoology
Dyk, Walter—Anthropology
Edelman, Edward E.—Psychology
Gardner, Wm. U.—Agriculture
Goddard, David R.—Botany
Hamlett, Geo. W. D.—Zoology
Harrison, Carter M.—Agriculture
Hooker, Charles W.—Zoology
Hulse, Frederick S.—Anthropology
Hunt, Joseph McV.—Psychology
Jeffers, Katharine R.—Zoology
Krechevsky, Isadore—Psychology
Leeper, Robert W.—Psychology
Livingston, Luzern G.—Botany
Mackinney, Gordon—Botany
Misbach, L. E.—Psychology
Moyer, Laurence S.—Botany
Needham, J. G.—Psychology
Pady, Stuart M.—Botany
Park, Thomas—Zoology
Peckham, Robert H.—Psychology
Rosenfels, Richard S.—Botany
Rudnick, Dorothea—Zoology
Seltzer, Carl C.—Anthropology
Spence, Kenneth W.—Psychology
Steinbach, H. Burr—Zoology
Sumwalt, Margaret—Zoology
Williams, H. H.—Agriculture

For Study Abroad

Barron, Donald H.—Zoology
Baxter, Dow V.—Forestry
Birkeland, J. M.—Botany
Ehrlich, John—Forestry
Graham, Roy—Botany
Lindsley, D. B.—Psychology
Neatby, Kenneth W.—Agriculture
Snyder, Wm. C.—Agriculture
Wells, John W.—Zoology
Wilcox, A. N.—Agriculture

SUMMER CONFERENCE IN SPECTROSCOPY

ONE of the features of the summer research gathering of spectroscopists to be held at the Massachusetts Institute of Technology this year is to be a Spectroscopic Conference scheduled for the week of July 17–22. Each of the five days of the conference will be devoted to some particular branch of spectroscopy, the mornings being devoted to the presentation of papers and the holding of discussion groups, while the afternoons are to be left free