used as a tracer, the effect may be neglected because small differences do not influence the interpretation of results. In other types of experiments, such as those involving retention and excretion of potentially radiotoxic carbon compounds, interest is primarily centered on the behavior of the isotope per se and, since isotope effects contribute to this behavior, it is unnecessary to evaluate them. In a few types of experiments, however, especially those in which kinetic tracer data are employed for a quantitative interpretation of a natural process, isotope effects should be experimentally evaluated and considered in the interpretation.

References

1. BIGELEISEN, J. *Science,* **110**, 14 (1949).
2. ———. *J. Chem. Phys.,* **17**, 675 (1949).
3. UREY, H. C. *J. Chem. Soc.,* 562 (1947).
4. BREUSCH, F., and HOFER, E. *Klin. Wochschr.,* **13**, 1815 (1934).
5. STEWART, W. W., and HOLCOMB, R. *J. Am. Chem. Soc.,* **56**, 1422 (1934).
6. UREY, H. C. *Science,* **108**, 489 (1948).
7. SCHOENHEIMER, R., and RITTENBERG, D. *J. Biol. Chem.,* **127**, 285 (1939).
8. LASNITZKI, A., and BREWER, A. K. *Nature,* **142**, 538 (1938).
9. ANDERSON, E. C., and LIBBY, W. F. *Phys. Rev.,* **81**, 64 (1951).
10. LIBBY, W. F., ANDERSON, E. C., and ARNOLD, J. R. *Science,* **109**, 227 (1949).
11. MURPHEY, B. F., and NIER, A. O. *Phys. Rev.,* **59**, 771 (1941).
12. NIER, A. O., and GULBRANSEN, E. A. *J. Am. Chem. Soc.,* **61**, 697 (1939).
13. WEIGL, J. W., and CALVIN, M. *J. Chem. Phys.,* **17**, 210 (1949).
14. WEIGL, J. W. *The Relation of Photosynthesis to Respiration,* UCRL-590. (April 1950). Berkeley: Univ. of Calif. Radiation Laboratory.
15. BIGELEISEN, J., and ALLEN, T. L. *J. Chem. Phys.,* **19**, 760 (1951).
16. KULP, J. L., FEELY, H. W., and TRYON, L. E. *Science,* **114**, 565 (1951).
17. BUCHANAN, D. L., and NAKAO, A. *J. Am. Chem. Soc.,* **74**, 2389 (1952).
18. MCKINNEY, C. R., *et al. Rev. Sci. Instr.,* **21**, 724 (1950).
19. SWICK, R. W., BUCHANAN, D. L., and NAKAO, A. *Anal. Chem.* (in press).
20. STEVENS, W. H., PEPPER, J. M., and LOUNSBURY, M. *J. Chem. Phys.,* **20**, 192 (1952).
21. RAYLEIGH, LORD. *Phil. Mag.,* **4**, 521 (1902).

Forest Ray Moulton: 1872–1952

A. J. Carlson

Department of Physiology, University of Chicago, Chicago, Illinois

DR. F. R. MOULTON was born in 1872 on a farm in the clearing forest of southern Michigan, now the village of LeRoy. He was the first child in the family, followed by four brothers, all five brothers being recorded in *Who's Who in America.* F. R. Moulton graduated from Albion College in 1894. He entered the University of Chicago for his graduate training, and received his Ph.D. in astronomy and mathematics in that University in 1899. But three years earlier (1896) he was appointed an Assistant in that University, and he continued to serve for 30 years on that faculty, from Assistant to full Professor, until he resigned in 1926. Dr. Moulton was an outstanding teacher, both to undergraduates and graduate students.

Even sixty years ago there were a number of outstanding scientists on the faculty of the University of Chicago, none greater than the geologist T. C. Chamberlin. At the turn of the century Dr. Moulton collaborated with Dr. Chamberlin in developing the challenging *Planetesimal Hypothesis* of solar system evolution.

In 1923 sixteen members of the faculties in the natural sciences (including psychology) collaborated in planning and giving a six-month elective course for college freshmen, called *The Nature of the World and of Man.* Dr. Moulton, as one of the sixteen, presented astronomy. After two years experience with this new type of college course, each of the sixteen faculty participants agreed to prepare a chapter on his specific subject for a book. When the sixteen drafts were ready, all the participants spent one evening a week for four months in commenting and criticizing each chapter. Dr. Moulton proved himself a very competent critic, revealing his basic understanding of all phases of the natural sciences, even though his own specialty was mathematical astronomy. This may be called a *freshman experience,* very useful for Dr. Moulton's later significant service as Secretary of our Association. In 1937 Dr. Moulton became the editor of the revised edition of the book, *The Nature of the World and of Man,* now issued under the title, *The World and Man as Science Sees Them.*

When Dr. Moulton resigned from the University of Chicago faculty in 1926, he became a business man, as the financial director of the Utilities Power and Light Corporation of Chicago. In 1932 he became the Director of Concessions of the Chicago World's Fair. The concessions were the main source of income to meet the great expenses of the Fair, and the financial depression added to Dr. Moulton's burdens. He came out financially a victor, but with a serious coronary heart injury, from which he made a very good recovery. Evidently there was more to that man, F. R. Moulton, than a superior cerebrum.

When Dr. Moulton became the permanent secretary

of the AAAS in 1937, the journals, SCIENCE and the SCIENTIFIC MONTHLY, were still the property of Dr. J. McKeen Cattell. When the Association took over these journals, the editorial and financial burdens were great. The AAAS had no office space of its own in Washington in 1937; it was the guest of the Smithsonian Institution. The acquisition of the present quarters on Massachusetts Avenue called for careful planning and much work to raise funds. In 1937, the direct membership of the Association was less than 20,000. When Dr. Moulton retired from the Washington office in 1946, the direct membership had reached 43,000, largely the result of his plans and efforts. The scientific conferences, symposia, and publications (20 volumes) were other burdens on Dr. Moulton's active mind, and so were the efforts to make the Annual Meeting of the Association a more and more significant contribution to the advancement of science and human welfare.

Dr. Moulton's former students in the University of Chicago agree that he was a great teacher. This is also indicated in the last sentence of his chapter on astronomy, written for college freshmen in 1926: "The orderliness of the universe is the supreme discovery in science; it is that which gives us hope that we shall be able to understand not only the exterior world but also our own bodies and our own minds." And this last sentence of his 1937 chapter, directed to all adult citizens: "Though science has placed us on an eminence from which we see very far beyond our horizon there still lies a challenge unknown." His achievements, his integrity, and his industry were recognized by honorary degrees awarded him by several colleges; by early (1910) election to membership in the National Academy of Sciences and as a Fellow of the Royal Astronomical Society of Great Britain.

Colleagues who knew Dr. Moulton most intimately over many of his 80 years will agree that he was a man of outstanding ability, integrity, and industry; that he devoted his life to science and human welfare.

News and Notes

National Entomological Societies Merge

ON January 1, 1953, the two national entomological societies, the former Entomological Society of America and the American Association of Economic Entomologists, were united. The resultant single society, representing all phases of the science of entomology, has taken the appropriate name, The Entomological Society of America. Each of the amalgamating societies brings a distinguished reputation into the new organization.

With entomologists of the state agricultural experiment stations taking the initiative, the American Association of Economic Entomologists was organized at a meeting in Toronto, Canada, in 1889. The Entomological Society of America was organized in 1906 in response to a need for a society in which emphasis would be placed on non-economic phases of entomology. Professor J. H. Comstock, of Cornell University, himself a charter member of the Association, was chosen as the first president of the Entomological Society; and the two societies have held what were to all intents and purposes joint meetings every year, with the exception of 1942 when conditions resulting from the war caused omission of the annual meetings, and 1945 when the Association met at Dallas, Texas, and the Entomological Society met with the American Association for the Advancement of Science at St. Louis, Missouri.

Although the two organizations had supposedly different interests, it was apparent from the beginning that in reality these interests over-lapped widely; and as time passed, it became increasingly evident that no clear line of demarcation between the two fields could be recognized. Merger of the two societies was considered many years earlier, but it was not until 1949 that a serious effort in that direction was undertaken. That year each society appointed a committee of three men to consider the feasibility of such a merger and to make recommendations to their respective societies. After presenting preliminary reports in favor of amalgamation at the Tampa, Florida, meetings in December, 1949, the two committees were continued as a joint committee to draw up a proposed constitution and by-laws, which were presented to the membership of each society at Denver, Colorado, in December, 1950, together with recommendations for procedure to effect the amalgamation. After due deliberation the merger proposal was submitted, by mail, to the membership of each society early in 1951. Ratification required a favorable vote by a two-thirds majority of the membership of each organization. The Association, in 1951, and the Society, in 1952, voted to ratify the new constitution, making it possible for the newly constituted Entomological Society of America to begin functioning as of January 1, 1953.

During the current year an Interim Governing Board, composed of the Executive Committees of the two former organizations, is conducting the affairs of the Society, and a full-time Executive Secretary will be selected by the Board. Dr. Charles E. Palm, of Cornell University, is President of the Society for 1953, and Herbert H. Ross, of the Illinois State Natural History Survey, is President-Elect. The Constitution provides that the President-Elect shall serve in that capacity for one year and is then to become Presi-