

reached by more than one investigator. A description of Newton's instrument was read before the Royal Society, and it was ordered that a letter should be written by the secretary assuring Newton "that the society would take care that all right should be done him with respect to this invention." The telescope which he presented to the society is carefully preserved and carries the inscription, "The first reflecting telescope invented by Sir Isaac Newton, and made with his own hands."¹⁷ Newton acknowledged that he had been acquainted with the telescope proposed by Gregory, before he contrived his own; nevertheless, certainly no one has greater claim to being called an inventor of a reflecting telescope than Newton.

(4) *Action at a distance*: In the preface to the second edition of the "Principia," 1713, the editor, Roger Cotes, advances the doctrine of "action at a distance." Through lack of discrimination, Cotes's doctrine came to be ascribed to Newton himself, even though Newton nowhere expresses his adherence to this doctrine. On the contrary, in a letter to Bentley, February 25, 1692, Newton says:¹⁸ "That gravity should be innate, inherent and essential to matter, so that one body may act upon another at a distance through a vacuum, without the mediation of anything else . . . is to me so great an absurdity, that I believe no man, who has in philosophical matters a competent faculty of thinking, can ever fall into." In his "Opticks" (Queries, 18, 22) Newton postulated the existence of an ether. In this century a new meaning is attached to the phrase "action at a distance." Instead of being used in the old sense with reference to the non-existence of a medium intervening between attracting masses, it is now used to indicate an instantaneous action at a distance. In place of an agent we now consider the time of action. But even now the view of Newton is misrepresented. Albert Einstein¹⁹ speaks of "Newtonian action at a distance" as "immediate action." Newton, on the other hand, postulates an agent and gives it time to act. To be sure, in his calculations of gravitational attractions, he assumes, as a necessary approximation, that the action is instantaneous, but not so in his talks on gravity. In a letter to Boyle²⁰ he considers the cause of gravitation between two approaching bodies.

They "make the ether between them begin to

¹⁷ Sir David Brewster, *op. cit.*, Vol. I, 1860, p. 40-46.

¹⁸ "Correspondence of R. Bentley," Vol. I, p. 70; Kelvin in *Proceed. of Royal Society of London*, Vol. 54, 1893, p. 381. See also S. P. Rigaud, *op. cit.*, Appendix, p. 62, 69.

¹⁹ A. Einstein, "Sidelights on Relativity," transl. by G. B. Jeffery and W. Perrett, London, 1922, p. 4, 5, 17, 18.

²⁰ "Horsley's Newton," Vol. 4, p. 385; S. P. Rigaud, *op. cit.*, App., p. 62-65.

rarify." And again,²¹ "So may the gravitating attraction of the earth be caused by the continual condensation of some other such like ethereal spirit," . . . in such a way, . . . "as to cause it [this spirit] from above to descend with great celerity for a supply; in which descent it may bear down with it the bodies it pervades, with force proportional to the superficies of all their parts it acts upon."

(5) *Wave hypothesis of light*: The impression is widespread that Newton rejected the wave hypothesis when he advanced his emission hypothesis. Such is not the case. He showed that the phenomena of colors formed by thin plates might be explained as undulations. With great hesitation did he argue against the wave hypothesis. "Tis true," he says, "that from my Theory I argue the Corporeity of Light, but I do it without any absolute positiveness, as the word *perhaps* intimates; and make it at most but a very plausible consequence of the Doctrine." And again, "it has a much greater Affinity with his [the objector's] own Hypothesis, than he seems to be aware of; the Vibrations of the Aether being as useful and necessary in this, as in his."²² Little did Newton suspect that for a whole century his followers would dogmatically insist upon the emission hypothesis and would flatly reject all other explanations, and that even in the twentieth century his study of the possibilities of the wave hypothesis would be overlooked.

FLORIAN CAJORI

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SCIENTIFIC EVENTS

THE PRESIDENT'S COMMISSION ON OIL RESERVES

THE President's Commission on Oil Reserves has organized with George Otis Smith as chairman, and Lt. Commander M. C. Robertson has been assigned by the Secretary of the Navy to serve the commission as its secretary. After calling on President Coolidge the commission issued a statement saying:

The policy under which the President's Commission on Oil Reserves has been appointed and under which it approaches its task is the definite policy of conservation in aid of national security.

The present is a period of overproduction of oil, but an approaching shortage of American oil can be surely forecast, for consumption is rapidly increasing and already production has begun to drop from the high figures of last year. American wells can not long continue to supply the bulk of the world's needs. Conservation

²¹ S. P. Rigaud, *op. cit.*, App., p. 69, 70.

²² *Philos. Trans. Abr.*, Vol. I, p. 146. Quoted in G. Peacock, "Miscellaneous Works of the Late Thomas Young," Vol. I, p. 145, 146.

measures are the part of wisdom; practices that will make for thrift in the use of oil may well be adopted by many industries and the general public, but the plan of reserving of oil for use in national defense even more insistently demands public approval.

The President's Commission regards the needs of the Navy as fundamental to its study of the situation but, at the same time, fully appreciates the broader aspect as to the whole question of national security and prosperity.

The Navy itself is a national insurance policy and adequate reserves of the best fuel for the Navy form an indispensable part of this provision for the national security.

The naval oil reserves were created with the declared purpose that the government retain ownership of as large tracts of oil lands as could be then found, so as to provide for any future needs of the Navy. The original intent, declared in a time of plenty, was to store oil where nature placed it against the time when oil in the quantities then needed could not be had through the ordinary trade channels. This purpose was later reiterated by the General Board of the Navy in its study of national defense by recommending "the purchase of oil for the Navy's needs as long as it is possible to do so, thus deferring the tapping of the Navy's reserve until the last moment."

When the time comes that American industry and commerce are forced to depend in large part upon foreign oil, the American Navy, as well as other arms of national defense, should have its reserves of American oil to fall back upon. Any other policy would endanger national security.

ADVISORY COMMITTEE TO THE LAKE STATES FOREST EXPERIMENT STATION

SECRETARY WALLACE, of the U. S. Department of Agriculture, has just appointed the advisory committee to the Lake States Forest Experiment Station. This committee consists of representatives of forest industries and state institutions and departments concerned with the forest problems of the Lake States. The individuals on the committee were nominated by their respective organizations and appointed to serve on the committee by Secretary Wallace.

The function of this committee will be advisory to the Lake States Forest Experiment Station in passing upon forest research most urgent for the region, correlating forest research throughout the region, and in any other way to promote forest research throughout the Lake States. Each of the members of the Advisory Committee has had wide experience with the forest problems now confronting the Lake States Station and the committee should prove of great assistance in advancing the work of the station. The following list names the members of the committee and the organization which each represents.

MICHIGAN

Herman Lundeen, Michigan Department of Conservation and Michigan Hardwood Manufacturers' Assn.
 Professor L. J. Young, University of Michigan.
 Professor A. K. Chittenden, Michigan Agricultural College.
 John M. Bush, Upper Peninsula Development Bureau.
 George A. Newett, Lake Superior Mining Institute.

MINNESOTA

G. M. Conzet, Minnesota Forest Service.
 Dean W. C. Coffey, Department of Agriculture, University of Minnesota.
 H. C. Hornby, Northern Pine Manufacturers' Association.

WISCONSIN

C. L. Harrington, Wisconsin Conservation Commission.
 Dean H. L. Russell, Wisconsin Agricultural College.
 A. L. Osborn, Northern Hemlock and Hardwood Manufacturers' Assn.
 D. C. Everest, Wisconsin Protective Association.

AT LARGE

E. E. Parsonage, Association of Wood-Using Industries.
 D. C. Everest, American Paper and Pulp Association.

The general problems of the region have been presented to the members of the committee by the experiment station in order that they may familiarize themselves with the entire scope of the station's work. At the first meeting of the advisory committee to be held at the Cloquet Forest of the University of Minnesota, on May 19, the most important problems of the region will be selected and suggested to the experiment station as urgent problems. The program of work for the station will then be based largely upon the recommendations of the Advisory Committee.

The Lake States Forest Experiment Station of the U. S. Forest Service was established last fall to study the forest problems of the Lake states and to lead the way for forestry in the region. Headquarters for the station have been established at the University Farm of the University of Minnesota at St. Paul and several field stations have been located throughout the region from which active investigations will be conducted into the forest problems of Minnesota, Michigan and Wisconsin.

RAPHAEL ZON,
Director

UNIVERSITY FARM,
 ST. PAUL, MINN.

FELLOWSHIPS IN PROBLEMS OF NUTRITION

ON the basis of a contribution by the National Live Stock and Meat Board, the National Research Council announces the establishment of two fellowships