SPECIAL CORRESPONDENCE

THE RUMFORD FUND

THE Rumford Fund of the American Academy of Arts and Sciences was established by Benjamin Thompson, Count Rumford, physicist and administrator, through a gift of five thousand dollars to the American Academy, in July, 1796, for a medal or premium to be awarded at regular intervals to authors of the most important discoveries or useful improvements in light and heat, in any part of the continent of North America or in any of the American islands.

The American Academy had, in the earlier years, certain difficulties in administering the fund, and applied, in 1831, to the Supreme Court of the Commonwealth of Massachusetts for instructions. The court issued a decree which enabled the academy to apply part of the income from the fund for grants to researchers in light and heat. Since 1833, the academy has maintained a standing committee of seven fellows, known as the Rumford Committee, which makes recommendations to the council for the award of the Rumford Premium, and also makes grants to suitably qualified researchers in light and heat.

The thirty-five recipients of the Rumford Premium to date, commencing with the first award in 1839, have been Hare, Ericsson, Treadwell, Clark, Corliss, Harrison, Rutherford, Draper, Gibbs, Rowland, Langley, Michelson, Pickering, Edison, Keeler, Brush, Barus, Thomson, Hale, E. F. Nichols, Acheson, Wood, Curtis, Crafts, Ives, Stebbins, Coolidge, Abbot, Bridgman, Lyman, Langmuir, Russell, Compton, E. L. Nichols and Plaskett.

The Rumford Committee has also made more than two hundred and eighty grants of money, ranging from $25 to $500, to researchers, the average amount since 1839 having been about $270. These grants are for apparatus, materials or experimental equipment, but not for the payment of assistants. They are also made towards the printing of researches on light and heat, subjects in which Count Rumford was particularly interested. More recently, however, the subject of X-rays has been accepted by the committee as coming within the scope of the fund.

Persons making application for grants from the Rumford Fund are expected to inform the committee of the nature and method of the research, so that a clear judgment can be formed as to whether it comes within the scope of the fund; also as to whether any similar applications have been made for grants from other funds for the same research. Researches aided by the Rumford Fund may be published in any place or form, with the proviso that due recognition be made therein as having been aided by the fund. A complete copy of each such publication should be presented to the academy.

Applications for grants should be addressed to the Chairman, Rumford Committee, American Academy of Arts and Sciences, 28 Newbury Street, Boston, Mass. Such an application may be made by any duly qualified person in North America, or any of the American islands. It should specify the nature of the research and the pecuniary amount desired.

A. E. KENNELLY,
Chairman of the Rumford Committee

QUOTATIONS

THE WORK OF DR. KARL LANDSTEINER

KARL LANDSTEINER, since 1922 a member of the Rockefeller Institute for Medical Research in New York, is the recipient of the 1930 Nobel Prize in medicine. Since the beginning of his scientific career, more than thirty years ago, Landsteiner has made contributions of great significance to medical science. He has thrown much new light on the nature of paroxysmal hemoglobinuria. With Popper he first produced infantile paralysis in the monkey, a demonstration that was followed by the intensive experimental work to which we owe practically all that is known of the nature of the causative agent of the disease. Undoubtedly Landsteiner's greatest and most brilliant work is his study through many years of fundamental problems in immunity, particularly the chemistry of the specificness of immune reactions. In this field, that is, the relations of the mechanisms of immunity to chemical structure, he has been and is a great leader, making no hasty or extravagant claims but standing always on solid ground. The main motivation for awarding to him the Nobel Prize in medicine appears to have been his discovery of the human blood groups or the phenomenon of iso-agglutination. His first statement about human iso-agglutination appears in a footnote to an article in 1900 about the antifermentative, lytic and agglutinating actions of the blood serum and lymph. In this footnote he says that the serum of normal persons agglutinates not only the blood corpuscles of animals but also the corpuscles of other persons. It remains, he continues, to determine whether this phenomenon depends on natural, individual differences or on injurious influences perhaps of bacterial nature. In fact, he had found the action especially pronounced in blood from patients with severe diseases. Before long he demonstrated conclusively by careful observations that iso-agglutination depends on individual, physiologic differences in the blood. Here was a concrete and clean-cut discovery that was destined to have wide applica-

tions. Landsteiner himself early pointed out the possibility that iso-agglutination might prove of importance in the identification of blood for medicolegal purposes and also in blood transfusion. The practical use of blood grouping, now universal, to exclude incompatible donors in therapeutic transfusion was initiated and developed especially in this country. When it became established that the factors on which blood grouping depends are transmitted according to the laws of heredity, determination of the blood groups was applied to the study of interracial relationships and of problems of parentage. When Landsteiner described the blood groups, he was an assistant under Weichselbaum in the pathologic-anatomic institute of the University of Vienna. No doubt he little thought then that that work was to bring him such rich reward thirty years later, but he did the work and carried out the observations as carefully and accurately as he could without any consideration or motive other than to find out all in his power about something new and obscure. Thus his work became the starting point in a series of advances in knowledge and achieved its international and well-merited recognition.—*The Journal of the American Medical Association.*

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN ELECTROMAGNETIC TOUCH-STIMULUS REACTION KEY

FOR laboratory investigation of tactual reaction time, the author has constructed and employed with success at the Florida State College for Women an electromagnetic touch-stimulus reaction key which can be controlled at a position remote from the recording chronoscope. The apparatus described below is an improved form of the author's original key. The extended rocker of the original key was provided with an elongated terminal perforation through which a metal rod was activated vertically by means of the armature of a modified electromagnetic sounder. By substituting linear solenoid motion for the leverage armature motion which characterized the earlier model, any angular displacement of the plunger rod is completely eliminated.

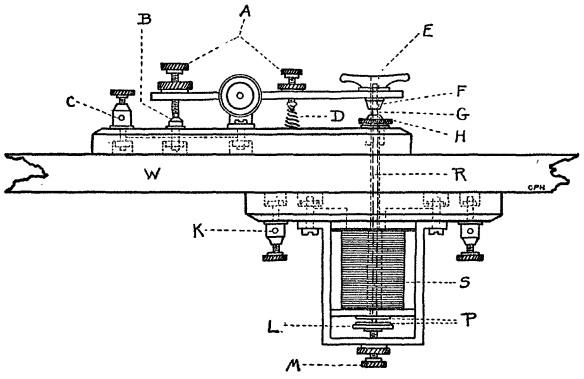

FIG. 1. Electromagnetic reaction key. A, Adjusting screws. B, Platinum contact. C, Binding post. D, Brass resistance spring. E, Rubber finger knob with circular hole in center through which plunger rod passes. F, Heavy platinum contact. G, Hard rubber plunger rod. H, Adjusting screw which serves as binding post. K, Binding post connecting electromagnet. P, Thin felt cushions. S, Magnetic coil wound with 22 B.S. gauge double cotton covered wire. R, Plunger rod passing without contact through table top. L, Soft iron plate to which plunger rod is affixed. M, Adjusting screw to vary the distance between plunger plate and magnet core.

The reaction key (Fig. 1) is simple in design and is substantially constructed of hard brass to withstand considerable laboratory use and punishment at the hands of the beginner. The reaction key is employed in conjunction with the Heinlein duo-circuit stimulus key. The latter key, consisting of two conjoined but mutually insulated parallel rockers balanced on a single fulcrum, acts as a nicely adjusted double-pole single-throw circuit breaker. Both reaction and stimulus keys are inserted in the conventional Dunlap chronoscope circuit. The complete electrical hookup is indicated in Fig. 2.

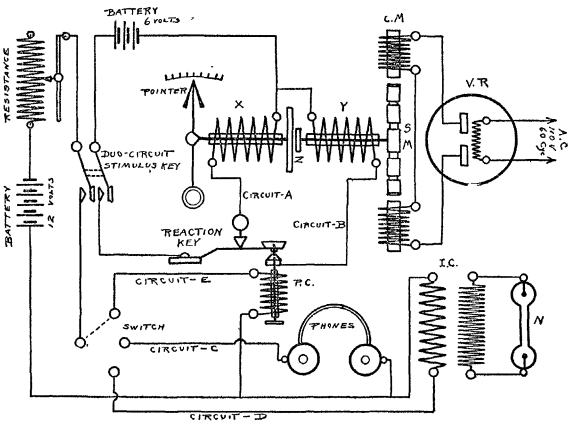

FIG. 2. Chronoscope hookup. X, External clutch coil. Y, Internal clutch coil. Z, Clutch plates. SM, Armature of synchronous motor. CM, Motor field pole. VR, Valve rectifier. PC, Plunger coil of touch reaction key. IC, Induction coil. N, Neon tube.

When the finger knob of the duo-circuit stimulus key is depressed, through completion of the primary and secondary circuits, both the internal electromagnetic coil of the chronoscope friction clutch and the electromagnetic coil of the touch-stimulus reaction key are simultaneously activated. If the internal resistance, magnetic affinity and working load of each electromagnetic coil are approximately the same, the