To those who studied their psychology with the introspectionist school it must be strange to find brought together under a psychological heading, the work of the physiologist on drugs and fatigue, of the engineer on motion-study, of the biologist on heredity, of the psychiatrist on mental abnormality, of the clinician on mental development, and of the educator on learning, in addition to the research of the psychologists. It marks the change in psychology to the more objective study of behavior. Applied psychology rejoices that it affords a clearing house for any knowledge which bears directly upon the understanding and control of human action.

The authors cite telling examples in which scientific studies of the human factor have produced better results than the hit-or-miss methods of practical sense in dealing with business, industrial, and professional problems. In many other cases than industrial accidents it will doubtless be found that the most important cause to be controlled is not in the field of the applied physicist but in the field of human engineering. In leaving the book, if the reader still feels that we are yet only on the threshold of a new pursuit, he will at least have found abundant evidence scientifically formulated to convince him that we are on the threshold and not merely viewing the house at a distance.

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SPECIAL ARTICLES

NOTE ON THREE DEVICES FOR USE IN ELECTROMETRY

DURING recent work with an electrometer the author has employed three devices which are obvious enough and can hardly be novel, but which seem worth putting more definitely on record as tested devices.

(1) A simple means of increasing the deflections of an electrometer is often wanted under circumstances where the use of a sufficiently long distance from mirror to scale is inconvenient. This may be accomplished by interposing a concave lens between mirror and scale, thus magnifying the deflection. A lens of rather long focus placed, if anytihng nearer the mirror (fig. 1) is preferable, as the effects of chromatic aberration are thereby diminished and the proportionality of the deflections is also better preserved. The image will be much brighter if a *cylindrical* lens is used; such a lens can be secured quickly and at small expense as a special order from Bausch & Lomb.

By this means a Dolezalek electrometer with platinum fiber was raised from 3,000 to 18,000 mm. per volt at a scale distance of 4 m. Owing to diffraction, the spot was about 1 mm. wide, but its position could be read to 0.2 mm., and the proportionality between deflection and potential was very good.

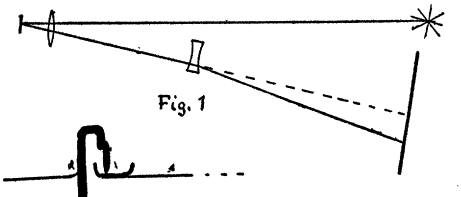

Fig. 1

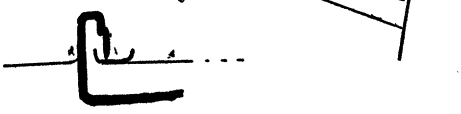

Fig. 2

(2) Sometimes one wants a simple means of connecting two wires together which will permit of easier disconnection than a soldered joint and yet will not introduce the additional capacity and possible leakage of a key. For this purpose one may solder a little silver cup to one wire and then attach the other wire to a piece of heavy wire tipped with a silver point and bent so that the point rests upon the floor of the cup (fig. 2). Silver oxide being a fairly good conductor, the slight pressure thus obtained is quite sufficient to make good contact.

(3) To obtain time signals at rather long intervals a torsion pendulum is more useful than a gravity pendulum because of the ease with which the period may be varied over a wide range. If the inertia system consists of a light cross-rod carrying two heavy sliding weights, then the period is approximately proportional to the distance of the weights from the center, so that a range of 1 to 10 in the period is easily obtained. The system can be

rendered stable by a rigid upright in the center; and a wire on one end of the cross-rod is easily arranged to close a mercury contact and actuate a sounder.

E. H. Kennard

University of Minnesota

THE AMERICAN SOCIETY OF PHARMACOLOGY AND EXPERIMENTAL MEDICINE

The ninth annual meeting of the American Society of Pharmacology and Experimental Therapeutics was held in Minneapolis on Thursday and Friday, December 27 and 28, 1917, and in Rochester, Minnesota, on Saturday, December 29. The following program was presented:

Two papers by David I. Macht were read by title:

"On the comparative absorption power for drugs of the bladder and urethra (male)."

"On the relation of the chemical structure of opium alkaloids to their action on smooth muscle structures."

FIRST SESSION

Thursday Afternoon, 2:00 to 4:30

Experimental observations on anaphylaxis in the dog: Mort D. P., and D. E. Jackson.

Effect of adrenalin on vaso-motor and on heart action studied separately by means of elimination of blood pressure through compensation: C. McPeek, R. J. Seymour and Clyde Brooks, University of Ohio.

The action of drugs on different parts of the intestine: W. C. Alvarez, Hooper Institute, San Francisco.

The location of the adrenalin vasodilator mechanisms: Frank A. Hartmann, University of Toronto.

The growth of chickens under laboratory conditions: Lafayette B. Mendel and Thomas B. Osborne, Yale University and Connecticut Experiment Station.

The Distribution and Function of Certain Nerves: D. E. Jackson and Mort P. Pelz, Washington University.

Studies with American grown digitalis and with digitalis lutea: S. M. White and R. E. Morris, University of Minnesota.

The effect of alcohol on the vaso-motor and respiratory mechanisms: E. G. Hyatt and Viggo Jensen, Illinois University Medical College.

The influence of Yohimbine on reproductivity: Florence L. Rumry, Illinois University Medical College.

The action of lactic acid on the respiratory center: Seymour J. Cohen, Illinois University Medical College.

The stimulation of the vago-gastric medullary center by drugs: Fred. T. Rogers, University of Chicago.

SECOND SESSION

Friday Morning, 9:00 to 12:00 M.

Effects of iodine on the eggs of sea urchins: E. P. Lyon, University of Minnesota.

Antagonistic action of drugs on the respiratory center: C. Voegtlin and C. J. Wiggers, Hygienic Laboratory, Washington, D. C.

Stimulation of the respiration by sodium cyanide: A. S. Loevenhart and Messrs. Lorenz, Martin and Malone, University of Wisconsin.

The reaction of the respiratory mechanism to chlorine gas: W. H. Schultz, University of West Virginia.

The influence of chlorine upon the heart: W. H. Schultz, University of West Virginia.

A study of acute bichloride intoxication in the dog: Wm. DeB. MacNider, University of North Carolina.

Cross tolerance: renal response to caffein and theobromin in rabbits long tolerant to caffein: Harold B. Myers, University of Oregon.

Straub's biologic test for opium alkaloids: Florence L. Rumry and Viggo Jensen, Illinois University Medical College.

The influence of pituitary extracts on the daily output of urine: H. M. Rees, University of Chicago.

Effects of external temperature and certain drugs on thyroid activity: A. C. Mills, University of Kansas.

Does atropin alter the effects of digitalis upon the tonus of heart muscle: A. D. Hirschfelder, University of Minnesota.

Effects of amino acids and their salts upon the contraction of intestinal strips: A. D. Hirschfelder and W. Cantwell, University of Minnesota.

Acridity of some plants due to a mechanical action: E. D. Brown and D. D. Anderson, University of Minnesota.

The mode of action or anesthetics in producing anesthesia: W. E. Burge, University of Illinois.