When cultured in a standard alkaline mannite solution 41 per cent. of the soils failed to show any *Azotobacter* growth. The average nitrogen fixed, per 100 c.c. cultural solution, in such cultures was 7.76 mg. The average nitrogen fixed in cultures showing *Azotobacter* was 16.22 mg. per 100 c.c. cultural solution.

A study of the reaction of these soils gave very interesting results. The hydrogen ion concentration of an aqueous extract of the soils was measured by the colorimetric method outlined by Clark and Lubs.[1]

The range of hydrogen ion concentration in the soil extracts, prepared by shaking one part of soil with one part of water and centrifuging expressed in P_H was from 5.3 to 7.8. All of the extracts from soils which developed *Azotobacter,* with the exception of three, gave a P_H of 6.0 or above. All of those which failed to give *Azotobacter,* with the exception of three, gave a P_H of 5.9 or less. These results would indicate that the absolute reaction is probably the major factor controlling the presence of *Azotobacter* in soils.

P. L. Gainey
Research Laboratory in Soil Bacteriology,
Kansas Agricultural Exper. Sta.

Designation of Specializing Physicists

Physicists specializing along certain definite lines in such a way or to such a degree that the broad term physicist is not sufficiently descriptive of their professional activities, are frequently at a loss for a suitable designation. For example, a physicist engaged in industrial physics along the lines of electricity may not consider himself an electrical engineer, and still less an "electrician" in the ordinarily accepted use of the term. What shall he call himself? A physicist specializing in mechanics may be neither a mechanical engineer nor a mechanic or mechanician. Similarly one specializing in heat may not be a heating engineer, and one in light may be no optician. The specialist in sound who is now coming into recognition more and more has not even the restricted range of choice given to the others cited.

[1] *Journal of Bacteriology,* Vol. 2, Nos. 1, 2 and 3.

The answer proposed to the above problem involves a new set of designations of the main subdivisions of the broad science of physics, designations obvious enough in themselves, which commend themselves as logical and acceptable from a terminological standpoint, quite apart from the solution thereby offered of the question raised in the foregoing. It will be noted that the terms being derived from the classic Greek, are international. The following table will make the matter clear.

The Science of	Proposed Designation	Designation of Specialist
Mechanics	Mechanology	Mechanologist
Sound	Phonology	Phonologist
Heat	Thermology	Thermologist
Light	Photology	Photologist
Electricity	Electrology	Electrologist
Magnetics	Magnetology	Magnetologist
Radiation	Radiology	Radiologist

A suggested sample definition is as follows: A mechanologist is a person who is versed in the science of mechanics, or mechanology, and who may, in addition, be skilled in applying the science.

The terms proposed are so obvious that there is no need to make an extended argument in favor of their adoption. The proposals are made with the thought that the need for such terms will become more and more evident through the increased entrance of physics and physicists into industrial and practical work, and it is well that a suitable terminology should be ready at hand for adoption as required.

Clayton H. Sharp
Electrical Testing Laboratories,
New York City,
April 24, 1918

Scientific Books

The Science and Practice of Photography. By John R. Roebuck. New York, D. Appleton and Company. 1918. Pp. VIII + 298. $2.00.

In this book Dr. Roebuck publishes the course in photography which has been given under his direction at the University of Wisconsin.

In the teaching of photography to students the tendency has been to lay great emphasis on the chemistry of the subject while the physics of photography, which is at least as important as the chemistry, has too often been ignored. Dr. Roebuck has approached the subject from the standpoint of the physicist rather than from that of the chemist, with the result that in this book there is given a clear and valuable exposition of the elementary principles of sensitometry, that is, of the properties of photographic material and its behavior during exposure and development.

The chemistry of the book is distinctly weak, there is practically no discussion of the chemistry of development, and the few equations given for the action of developers are very much open to question. There are also a few obvious errors in chemistry such as the statement that Stas was a German, or that hydrochloric acid can be added to silver nitrate in order to produce an acid emulsion.

In the portion of the book dealing with general theory the author commences with a brief chapter on the historical development of the subject and then deals with the sensitometry of the gelatine dry plate. A short chapter then discusses the subject of color sensitiveness, and another, theories of the latent image. Further chapters deal with negative defects, a very practical chapter indeed, positive processes, lenses, color photography, and the general principles of composition.

The second part of the book consists of a laboratory manual containing a series of experiments to be performed by the student. This will be very valuable to any teacher arranging a course in photography and a student who has worked thoroughly through the course, repeating the more elementary portions several times, will have had a good training in the elements of the subject.

On the whole the book forms a valuable addition to the scanty list of modern works on photography and is to be recommended to all those who are interested in the scientific side of the subject.

C. E. K. MEES

ROCHESTER, N. Y.

THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

THE first number of Volume 4 of the *Proceedings of the National Academy of Sciences* contains the following articles:

The Basal Katabolism of Cattle and Other Species: Henry P. Armsby, J. August Fries and Winfred W. Braman, Institute of Animal Nutrition, the Pennsylvania State College. The results show that the basal katabolism of different species is substantially proportional to their body surface.

The Location of the Sun's Magnetic Axis: F. H. Seares, A. van Maanen and F. Ellerman, Mount Wilson Solar Observatory, Carnegie Institution of Washington. In extension of the work of George E. Hale, a large number of observations were undertaken to determine the position of the sun's magnetic axis, which is found to lie near the axis of rotation at an inclination of about 6°, and to revolve about the axis of rotation in about 32 days.

Resonance and Ionization Potentials for Electrons in Cadmium, Zinc and Potassium Vapors: John T. Tate and Paul D. Foote, University of Minnesota and Bureau of Standards. The results agree within the limits of experimental error with the values as calculated from the quantum relation $h\nu = eV$, where ν is the frequency of the single radiation in the case of resonance potentials or the limiting frequency of the series of radiations in the case of ionization potentials.

The Validity of the Equation $P = dv/dT$ in Thermo-Electricity: Edwin H. Hall, Jefferson Physical Laboratory, Harvard University. The equation is known to be unverified experimentally. The author gives a brief, critical discussion of the validity of some theoretical proofs by which the equation has been deduced.

On the Equations of the Rectangular Interferometer: Carl Barus, Department of Physics, Brown University. A discussion under the under the headings of: Auxiliary Mirror, Rotating Doublet, Ocular Micrometer, Collimator Micrometer.