Just Ready!

HEIL
The Physical World

By LOUIS M. HEIL, PH.D.
Associate Professor of Electrical Engineering and Physics, Ohio University

For several years a need of a textbook has been recognized in the field of so called "cultural" physics; a type of physics suitably adapted for those who are not going into science, but who desire to know something about physics and still not be frightened away by mathematical formulae and endless problems. During these same years there has been a growing demand also for a textbook in physical science; that is, one combining astronomy, physics, and chemistry mainly.

This textbook is an outgrowth of the attempt to meet these needs. The various units have been used in mimeographed form for several years. The book represents an attempt to guide the non-technical student into the "hows" and "wherefores" of physical science by a descriptive method in general; that is, to analyze physical science by means of accurate descriptions rather than to have the student briefly sketch through the "meat" of physics, (the accurate descriptions or the laws) and then to spend most of his time trying to find what formula will work this or that particular problem at the end of a chapter. It is granted that a certain minimum number of problems is necessary in order to show the student how the physical quantities are exactly related, because physics is an exact science. But it is the feeling of the author that well chosen and stimulating questions will succeed quite well in the analysis of physical science. After all, the students of journalism, English, the classics, are not going to spend their time making numerical solutions but, instead, they want to know something about the physical world in which they live.

For purposes of definiteness and somewhat for the feeling of completeness, the subject matter of the book has been divided into eleven units. A unit is not always strictly complete in itself, as some units depend, in a general way, on the subject matter of a preceding one. For example, in the discussion of heat, the assumption is made that the preceding unit treating of energy has been taken up.

The order of the units follows, in a general way, the usual order of the subdivisions of physics, namely; mechanics, molecular motion, heat, sound, electricity, light and modern physics, with the additional subjects on the meaning of science, astronomy, and chemistry, injected at the most logical places. There is, of course, always a question as to the logical order to be followed. Each unit, however, is complete enough to allow of any order of selection that may be adopted.

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The reflecting box was constructed out of a preparation board (wall board), ¼" thick, and was made with tight joints inside. The framing (F, Fig. 1) is all outside and was made of ½" × 24" pieces with lapped corners, nailed. (It could be so constructed as to fold up when not in use.) The inside dimensions of the box, which can be varied, are as follows (Fig. 1): front width, open end, ab, 30"; back width, closed end, df, 19¾"; front height, open end, be, 24½"; back height, closed end, cd, 19¾"; direct open depth, gh, 17¾"; de, 18½"; bc, 18¾". The drawing is not made to scale and the dimensions, as given, are all inside, even though some letters are placed outside the box for facility in drawing.

It might, also, be possible to modify the plan of this box and the method of observation of the image by building two boxes similar to the one described above, except that the two boxes, which would be placed back to back, would have a common partition between them. Then, by cutting an aperture in the common partition between the deep ends of the two boxes thus placed, and by covering this aperture with a translucent linen screen or with other translucent material, it might be possible to view the image through the open end of the box which faces away from the projector.

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FORCEPS DESIGNED FOR SKIN SUTURING

In suturing together skin edges after incisions for operations on laboratory animals such as guinea pigs and albino rats, it is often extremely difficult to penetrate the skin with the needle. When the skin edge is caught in the ordinary forceps, the skin tends to be pushed around the side of the forceps and the needle can not thus retain its right angle approach. It has been our custom to use Keith needles, which must be very sharp to pierce the tough dorsal skin in flank operations on the rodents mentioned above.

In using the forceps described herewith (see cuts), either one or both edges of the skin may be caught and the needle put through with ease, after which the forceps can be easily removed, the needle passing through the opening leading outward from the needle hole. Fig. 1 depicts an adaptation of an ordinary forceps, which has been found to work perfectly well. Fig. 2 is the proposed design of forceps of this type for the trade.

G. Lombard Kelly

A NOTE ON LEVEL CONTROL IN FUNNELS

In a recent issue of Science, Wean has described, with an excellent illustration, a flow control system which is almost an exact replica of an apparatus used by the writer during the world war for control of level in a funnel in filtration of solutions made from Ca(OCl)₂ suspension and Na₂CO₃ in preparation of Dakin’s hypochlorite solution. The apparatus was demonstrated to classes at the War Demonstration Hospital on the Rockefeller Institute grounds in New York City, but was made obsolete for the purpose by the chlorine gas method. While in no way wishing to detract from Wean’s contribution, it may be worth while to record this other use as such need may occur again. The device has been used also in the writer’s laboratory to control level in water thermostats. It is particularly valuable where suspended matter might clog a float-operated valve. The use of a Hoffman clamp on the return air-line for adjustments is sometimes helpful to minimize surges.

William R. Thompson

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