

Just Published!

Use it to supplement any standard physics textbook—

WORK-TEST BOOK in PHYSICS

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Features that make for progress and interest

Each unit is headed by a challenging title to motivate the pupil's work.

Sociological objectives are stated for each unit (health, social, avocational and vocational).

Each activity given is designed to accomplish primarily a particular immediate objective (see C in 2).

Each activity is followed by an uncompleted statement, space for an original statement, lines for lists, and space for diagrams. This indicates the nature and extent of the response by the pupil.

A list of tests for all pupils is given first in each unit.

A supplementary list of suggested projects is next given in each unit (to care for individual differences).

A list of text references is placed at the beginning of each unit, and a list of supplementary references at the close.

A test for each unit is included.

Suggestions for pupils are given in the introduction.

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Forthcoming

EVERYDAY PHYSICS

A revision of
PHYSICS OF THE HOUSEHOLD
By Carleton Lynde

In this new edition much of the material of the former edition has been rewritten, and new illustrations are introduced. Material and illustrations are drawn from modern appliances such as electric and gas meters, motor driven machines, heating systems, the talking moving pictures, new processes of photography, and other interesting time and labor saving devices. Will be equipped with teaching and study to be published soon

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all portions of the heavens. Photographs of the trails of close polar stars no brighter than the eleventh magnitude were obtained without clockwork. Stellar spectra were obtained of the brighter stars without clockwork, in which all the principal lines were well shown. In 1885 the investigation was resumed with a telescope having an aperture of 8 inches. With this, 117 stars within one degree of the pole, one of them no brighter than the fourteenth magnitude, left trails. The average deviation of the measures of the brightness of these stars on different photographs was less than a tenth of a magnitude, a greater accordance than is given by any other photographic method. A similar result was obtained from the Pleiades, of which group over fifty left trails. Similar trails are now being obtained of the stars north of -30° in all right ascensions. This work began in the autumn of 1885 at 23^h , and has already been completed for more than half of the sky. By photographing on the same plate polar stars near their upper and lower culminations, material has been accumulated for determining the atmospheric absorption on each night of observation. A study has been made of the application of photography to the transit instrument. Measurements of the trails show that the position of a star may be determined from its trail with an average deviation of $0^s.03$,

which is about one-half the corresponding deviation of eye observations.

Charts may be constructed 5° square, having the same scale and dimensions as those of Peters and Chacornac. A single exposure of one hour is required, and it is not necessary that the observer should remain with his eye at the telescope to correct the errors of the clock.

By placing a large prism in front of the object-glass, excellent stellar spectra have been obtained. An exposure of five minutes gives the spectra of all stars brighter than the sixth magnitude in a region 10° square. About half of the region north of -25° , beginning at $0^h 0^m$, has been photographed in this way. With an exposure of an hour the spectra of stars no brighter than the ninth magnitude are shown. Over a hundred stars have thus been taken simultaneously on a plate by a single exposure. Means have been provided for carrying out this work on an extended scale, as a memorial to the late Dr. Henry Draper.

Miscellaneous observations have been secured of the Pleiades, of the Nebula in Orion, of Jupiter's satellites, and of various other objects; also of the new star in Orion and of its spectrum, and one plate showing that this star must have been much fainter on November 9, 1885, than when discovered, five weeks later.

Science News Letter, November 1, 1930

PHOTOGRAPHY

New Apparatus Makes Talkies With Amateur Size Film

PORTABLE sound movie equipment, using the narrow 16 millimeter film now standard for amateur cameras and projectors, has been developed by the Westinghouse Electric and Manufacturing Company. The Society of Motion Picture Engineers, at its recent meeting in New York, heard an account of this equipment, for which C. R. Hanna, P. L. Irwin and E. W. Reynolds are responsible.

The only difference between the sound film and the ordinary kind of the same size is that in the former one row of sprocket holes is omitted to make room for the sound track, the record being made right on the film

as in most of the theater methods. Like the large film equipment, the light from a small lamp shines through this sound track, then it is analyzed by a photoelectric cell, and converted into electric impulses. These in turn operate the loud speaker.

The entire equipment can be carried in three cases, one for the projector, one for the amplifier and one for the loud speaker and screen. Together they weigh 120 pounds, so that talkies have not yet been simplified quite as much as the tiny home silent projectors. However, the new apparatus is seen as a step nearer successful home talkies.

Science News Letter, November 1, 1930