

Corona Photographed in Daylight

Astronomy

Long and expensive expeditions of astronomers to distant parts of the earth to photograph the fleeting phenomena of a total eclipse of the sun may be avoided in the future. The sun's corona, which, until now, has only been observable when the moon obscures the bright solar disc, is now claimed to have been photographed in full daylight by Dr. G. Blunck, German astronomer.

In the past many experiments have been made by astronomers to achieve the photography of the corona without waiting for an eclipse, but they have all failed. For ordinary colors the brightness of the corona is just about the same as that of the sky itself around the sun, so that photographs cannot show where one stops and the other begins. The sky itself gives off light largely of blue and the shorter, invisible, ultra-violet, while a large part of the corona's light is in

the red, and the longer wave, invisible, infra-red. Accordingly, efforts have been made to take the corona's picture with red, or infra-red, light. So far, these have also been unsuccessful.

Dr. Blunck explains that the reason for these failures is that the previous experiments have been made with rays that were not long enough. For a wave-length of 7,000, which is in the visible red part of the spectrum, the corona is only eight tenths of a per cent brighter than the sky, he says. This is scarcely enough difference to permit a good picture. However, for infra-red light of 8,500, the corona is 1.7 per cent brighter than the sky, while at 9,500 it is 2.5 per cent brighter, which should be enough difference to permit a photograph to be made.

The difficulty comes in securing photographic plates sensitive to these longer waves. Ordinary plates are

most sensitive to the blue, hence they are developed in red light. Special plates sensitized before use by immersion in a dye called neocyanin are most sensitive to light of wave-length of 8,000. Dr. Blunck tells of a new dye, called procyanol, that he has used, with which the plate can be sensitized to light at 8,500, and it is with these plates that his efforts have been successful.

Photographs made last year by Dr. Blunck show details that make them appear to be of the actual corona. As a test of his method, however, it has been suggested that the method might be tried at a partial eclipse of the sun, while the moon obscures part of the sun and part of the corona. If Dr. Blunck's method is really successful, then he should obtain on his plates the outline of the moon, even where it is not in front of the actual solar disc.

Science News-Letter, March 24, 1928

The New Physics

Physics

In response to various inquiries as to where the reader can obtain information about the post-Einstein developments of physical theories with special reference to their bearing on philosophical, metaphysical and theological problems, Science Service suggests the following recent publications:

- BRIDGMAN, P. W.—*The Logic of Modern Physics*. New York: Macmillan, 1927. \$2.50.
 DARROW, KARL D.—*Introduction to Contemporary Physics*. New York: Van Nostrand, 1926. \$6.00.
 HEYL, PAUL R.—*Wave Mechanics*. *Scientific Monthly*, Jan., 1928. *The Inertia of Energy*, *Sci. Monthly*, Oct., 1925. *The Solid Ground of Nature*, *Sci. Monthly*, July, 1927. *The Present Status of the Theory of Relativity*, *Sci. Monthly*, July, 1926.
 LEWIS, G. N.—*The Anatomy of Science*. New Haven: Yale University Press, 1926. \$3.00.
 PUPIN, MICHAEL—*The New Reformation*. New York: Scribners, 1927. \$2.50.
 RUSSELL, BERTRAND—*The Analysis of Matter*. New York: Harcourt, Brace & Co. 1927. \$6.00.
 RUSSELL, BERTRAND—*Philosophy*. New York: Norton, 1927. \$3.00.
 WHITEHEAD, A. N.—*Religion in the Making*. New York: Macmillan, 1925. \$3.00.
 WHITEHEAD, A. N.—*Science and the Modern World*. New York: Macmillan, 1925. \$3.00.

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In tracing the careers of 100,000 automobiles, it was found that 5,000 of them had lasted 12 years.

Over two-thirds of the fatal cases of measles occur in children under three years of age.

Paintings on rocks, discovered in South Africa, bear a resemblance to the art of far away Egypt.

Intermittent Time and Space

Physics

By EDWIN E. SLOSSON

The opinion has often been expressed by philosophers and theologians that the reason why men of science were not bothered by the persistent problems of metaphysics was because scientists had accepted uncritically a superficial materialism and had not gone deep enough. Well, they are going deep enough now. Einstein and Planck, Schrödinger and Heisenberg, are forcing upon physics the fundamental questions that have been fought over for twenty-five centuries in the field of metaphysics.

In fact our traditional notions of time and space seem to be inadequate to fit the new facts. What can take their place it is too early to say. It seems to me a sort of motion picture philosophy. When you go to see the motion pictures you never see motion at all. You sit half the time gazing at a blank black screen. But sixteen times a second a still picture appears and you piece these together without noticing the blanks of time and space between and you call it continuity. The reason why the motion picture looks so much like the real world is because you see the real world in the same jerky fashion with unseen intervals between. You may think that you read a line of print continuously but you deceive yourself. You actually stop and look at a few words, and then you move on and stop to look at another group. Your conscious life is intermittent. Your consciousness is

suspended every night for several hours, if you are a sound sleeper. The universe might be annihilated and regenerated without your knowing it not only while your eyes are shut at night, but also for briefer periods while they are open. So if a physicist of the future should call upon you to admit that the external world is merely a succession of events, and that time and space are not continuous but rather like dotted lines, you can calmly reply to him "That is how they have always seemed to me."

I mention this because people are inclined to take a fright at the strange ideas advanced by science and to take refuge from novelty in the older forms of thought to which they are accustomed. Jonathan Edwards says that in his day men were appalled by the thought of the immense distances of the stars disclosed by the telescope of Galileo and the theory of Newton, and, as he says, they "turn to the antiquated Ptolemy his system to ease their imaginations." So I think that it is mostly "to ease their imaginations" that many are now disposed to revolt against the new conceptions of physical science and to exclude Einstein as well as Darwin from the schools as dangerous to faith and morals. When the new ideas become customary they seem no longer absurd but more simple and natural than the traditional notions, and they turn out to be helpful rather than harmful.

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