Inventor and Photographer

Photography

Whenever we look at a photograph reproduced in a newspaper or magazine by the halftone process, which is used in THE SCIENCE NEWS LETTER, we should feel our indebtedness to Frederic Eugene Ives. Perhaps it wouldn't be quite accurate to say that without his work we would have no halftones, for someone else might have turned out the process. But, in the words of Max Levy, another pioneer in the industry, "Ives was the first to demonstrate that good halftones could be made."

The essential of the halftone process is the screen, a network of fine lines through which the original photograph is copied, and which breaks up the continuous lights and shades into the multitude of large and small dots that are seen when such a reproduction is examined with a magnifier. Mr. Ives invented the simple and ingenious method of making this screen by ruling parallel lines on two pieces of plane glass, and sealing these together, with the lines at right angles. Even more important, he worked out the optics of the screen, showing once and for all just where to place it between the plate and the lens in order to secure satisfactory results.

Mr. Ives discovered these principles in 1878, while he was in charge of the photographic laboratory at Cornell University. In that same laboratory he began his work on color photography. Combining it with his halftone process, he gave color printing to the world, by which method the color illustrations of our great magazines are made.

As he is an habitual inventor, these two great developments—color photography and the halftone—which might be supposed sufficient for the life of an ordinary mortal, are not his only contributions. He has found time on the side to invent a form of binocular microscope now in wide use, a method of making stereograms visible without a stereoscope, a form of colorimeter, and numerous other useful and interesting things.

FREDERIC EUGENE IVES

Mr. Ives is a Connecticut Yankee, for he was born in Litchfield, Conn., on February 17, 1856. Since 1878 he has been engaged in commercial enterprises, most of the time in Philadelphia. During this time nearly two dozen medals and awards have come to him for his achievements, including nine from the Franklin Institute, and the coveted Rumford Medal of the American Academy of Arts and Sciences. He still is actively at work in Philadelphia, mostly on color movies.

And last, but not least of his claims to the respect of men of science, is the fact that he is the father of Dr. Herbert E. Ives, famous physicist of the Bell Telephone Laboratories, and under whose direction the successful Bell method of television was developed.

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Machine Transplants Grain

Agriculture

A newly invented German machine, designed to do for Occidental grain fields what Chinese coolie labor has done for centuries in the rice fields of the East, is attracting considerable attention on the part of British agriculturists. Instead of sowing seed like an ordinary grain drill, it sets out sprouted and rooted seedlings at the rate of 12,000 plants per hour, one to every square foot.

It is claimed that this method of raising grain requires only one-thirtieth as much seed as now used, and that it will yield from three to five times as many bushels to the acre. This is said to be the result of the greater freedom each plant has to develop a more vigorous root growth beneath the soil, and especially to tiller, or "stool out," above its base. From 30 to 40 stalks per plant are usually developed.

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Alphabet from Miners?

Philology

Phoenician miners, digging for turquoises to bedeck an Egyptian pharaoh, are believed to have been the first users of the Phoenician alphabet—forerunner of our modern alphabet. Inscriptions found in the wilderness of Sinai, near the ancient turquoise mines, have been translated by Prof. Romain Butin of the Catholic University of America and are pronounced the oldest known writings in the Phoenician alphabet. The inscriptions were carved about 1900 B. C., he concludes in reporting his translations in the forthcoming issue of the *Harvard Theological Review.*

The Phoenicians must have made their great contribution to the world's civilization even before this early date, he says, because the first attempts at alphabet signs would be more like pictures than those of the Sinai tablets. It is believed, however, that the invention took place in this remote region, for the use of the Hebrew workmen who could not read the difficult Egyptian hieroglyphics.

These Semites, who came from Phoenicia and Syria to work for the Egyptians, were not oppressed, and Prof. Butin says that very likely an Egyptian official aided some Semite leader to evolve the set of signs with which Phoenician consonant sounds could be spelled out. The working model for the alphabet signs is traced to the Egyptian picture writing found on monuments in the same region. Even the crudities of some of the Egyptian workmen are reproduced in some the alphabet signs.

The miners used the alphabet system chiefly to set up commemorative tablets with petitions to the Egyptian goddess Hathor, Goddess of Turquoise. Fourteen inscriptions in the ancient alphabet system have been found, and seven of these were brought to Cairo last summer by the Harvard-Michigan expedition, so that scholars might study them at first hand. It was in Cairo that Prof. Butin examined the tablets and began his work of translation, which is now completed.

The Harvard-Michigan expedition has anounced that it will return to the region of the Sinai mines in 1929, hoping to find additional tablets, perhaps more ancient samples of the alphabet.

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