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COLOR PHOTOGRAPHY HOW A CHICAGO GENIUS SOLVED THE PROBLEM.

Spent a Fortune and Experimented For Many Years, but Finally Succeeded and Then Died—Method of the New Process.

Color photography is said to be an assured fact. By a process invented by a Chicago genius anything in nature may now be photographed in its own colors, with all the varying tints and shades imaginable. The fleeting glory of the sunset, the transitory fascination of fields of grain, October woods and even the pink of a young girl's cheek may be caught and held in all their charm and glow long after the originals have faded.

The Chicago river, that black, murky stream of ill smelling fame, furnished the inspiration which led to the discovery. Mr. James W. McDonough, the inventor of the new process, was looking at the colors made by oil floating on the water, when he thought what a beautiful spectacle the river would present if its whole surface could be thus covered. Next he wondered how a photograph of such a river surface would look. This led him to the problem of color photography, and eventually he began his experiments. He was a wealthy and retired merchant and had decided to devote the rest of his life and fortune to scientific inquiry. In the end he laid not only his fortune, but his life, on the altar of science, for he died a year ago. His experiments in color photography were so complete, however, that before he died he had demonstrated his success, and now his friends and business associates are carrying on the enterprise.

The process that he created is a color photograph which is purely mechanical. The ordinary camera is used, and the negatives are produced and developed by the usual processes, but before exposing the negative in the camera a transparent



JAMES W. McDONOUGH

screen ruled with the three primary colors is interposed between the negative and object to be photographed.

After developing the negative a positive plate is produced from it, which, viewed by itself, does not differ from the ordinary black and white plate, but when it is laid upon a viewing screen, ruled with the primary colors, a duplicate of the tabling screen used in the camera, the colors in the object photographed appear.

The principle of color photography is a mixture of colored lights on the retina. A transparent medium is ruled in fine colored lines, 300 to 600 to the inch. These lines are red, blue and green, commonly speaking. They are the fundamental colors of the spectrum—the yellow of school days now being rejected—and their mixture produces white light. In other words, the color of each is such as to absorb the remaining two and transmit only its own light.

To make a picture it is necessary to place one of these ruled screens in immediate contact with the sensitive surface of the dry plate and expose the same in ordinary photographic manner. The sensitive plates must be what is known as achromatic plates—that is, sensitive to all the colors of the spectrum.

After a negative is made a positive is also made by contact printing, as in the usual manner. This positive is then placed over the ruled screen and the dark lines on the positive are made to register with the colored lines on the screen. When this is done, the picture is seen in its natural color.

Color photographs are made by printing in the usual manner on the sensitive paper ruled with the three colored lines, as on the screen. Half tone pictures in color are also made by printing with black ink—from a half tone plate made from the original—upon paper having the three colored lines ruled on its surface, the same as a screen.

A majority of his experiments for years were absolutely failures. One effort after another was rejected until he came to the correct principle, which was to cover a plate with very fine lines and then to endeavor to reduce these lines to grooves or less angles, so as to give off the colors from a picture photographed on their surface.

His perpetual assumption was that the sun would reproduce nature as it is if the receiving plate was of the proper kind. His work was to find that plate. The plate or block which he finally determined to be the proper one is what is known technically as a diffraction grating and gives off colors when a beam of light strikes its surface at an angle.

The first experiments with such a plate were more than discouraging, and his further efforts seemed useless. McDonough was about to cast it aside. The day that he determined to do so he accidentally noticed on the surface of the block what seemed to be spots of different colors. The thought came to him instantly: "Why not stipple on the colored spots, photograph through them and try and get some color results?"

He purchased an air brush, and after securing such colors as red, green and blue, began blowing them in small particles and attempting to secure an evenly grained plate. But, previous to placing these colors, McDonough made a series of tests to secure the least number of fundamental colors possible whose combination would produce white light or a neutral tint.

Those were only a few of the obstacles which he had to overcome. For more than 25 years he kept at his work until finally he was able to take photographs in which objects were given their true colors. FRANKLIN TRICE.

A MONCTON LADY Cured of Weakness, Nervousness and Heart Trouble.

Several years ago I had an attack of La Grippe, which left me in a very weak condition, my health being much impaired. Ever since then I have suffered from nervous prostration, heart trouble, and pain in the left side, so that at times I was unable to move about.

The least exertion distressed me and at times I could scarcely breathe, having to sit down after taking up stairs and rest for some minutes. I also had a fluttering sensation around my heart, so much so that I was sometimes unable to attend to my household duties.

After the use of many remedies, and of the best medical skill, I obtained no relief until I finally tried Milburn's Heart and Nerve Pills. I had only taken a few doses when a marked improvement took place in my condition. I began to relish my food, and gained in strength every day.

My return to health and vigor followed, as naturally, as night follows day. I do not suffer now from any of the troubles which formerly made me miserable for me. If sufferers from heart or nerve trouble will only give these pills a trial they will have a rich reward for so doing in the restored health and vigor which I believe will always result from their use.

MRS. B. BEAUMONT, Cor. West and George Sts., Moncton, N.B.

AN OTTAWA LADY.

Milburn's Heart and Nerve Pills cured her of Heart Palpitation—Invigorated her Nervous—Enriched her Blood and Brought Color to her Pale Checks.

For five years I was very miserable with heart trouble and nervousness. My entire system was run down, and I suffered from impoverishment of the blood, which made me thin, pale and weak. My heart would beat so that I could not walk; and I would rather have difficulty in catching my breath. I was in a very bad state indeed, and thought that my remaining time on earth would not be very long. Both doctors and medicines failed to give me relief.

Hearing of Milburn's Heart and Nerve Pills, my husband got some for me. From the first I got better and better, and am now like another person. Palpitation of the heart is gone; the blood has returned to my cheeks; my system is invigorated and my blood has been enriched. I no longer suffer from the neuralgic nervousness and smothering feeling and am in fact better than I have been for years. Needless to say, I heartily recommend Milburn's Heart and Nerve Pills as the only medicine in the world which I believe could have acted so promptly and well in my case.

MRS. PASCAL LIBERTY, 215 Cathcart St., Ottawa, Ont.

MILBURN'S HEART AND NERVE PILLS

are the most certain and satisfactory remedy in the world for weak, palpitating or throbbing heart, nervousness, sleeplessness, faint spells, dizziness, weakness, debility, dyspepsia, anamia, run-down condition of the system, after-effects of Gripe, etc. Sold by medicine dealers everywhere at 50c a box or three boxes for \$1.25, or sent by mail on receipt of price. T. MILBURN & CO., Toronto, Ont.

THEY WERE ENGLISH.

And that is why they believed Mrs. Hetherington's Fairy Tale.

"Take Gordon into the smoking room with you, George. I'll go out here on the porch and finish the book I began about a week ago." Saying which Mrs. Hetherington seated herself on the broad piazza of a certain hotel in Mount Vernon. Gordon Hetherington is 35 years old and as bright a little chap as you ever saw. Mrs. Hetherington knows his over-aching admiration for his father and she likes it. "She doesn't forget the youthful word on over on the paternal side of the house to get rid of him—she is too good a mother for that—but stupidly because she knows the child had rather bo with his father than with her.

But to resume. Mrs. Hetherington sat in one of the high perch rockers just outside the smoking room window. She could see Gordon inside with his father, the latter puffing lustily at a black birch pipe and playing with the child.

A little way from Mrs. Hetherington sat two women. Their eyes had a density of expression and their faces a rigid countenance that showed they were not vegetarians. They were stiff and woefully proper in their quiet deportment, and before opening her book Mrs. Hetherington observed them keenly. She motioned to Mrs. Green, who sat a little way off and called her attention to them. Mrs. Green smiled as though she understood and whispered one word.

Mrs. Hetherington nodded. After half an hour or so the two long faced women rose from their chairs and turned to enter the hotel. The one in advance caught sight of little Gordon Hetherington in the smoking room. Her jaw dropped, and with horror depicted on her face she pointed him out to her companion and said: "Just think of it! That child in such an atmosphere of smoke and vulgarity! I would no more allow a child of mine to enter that room than I would cut my hand off. It is shocking. What can his parents be thinking to allow him to sit in such a place!"

Mrs. Hetherington heard, and lowering her book to her lap, she turned toward Mrs. Green and with a half concealed smile of mischievousness or her face said: "My little Gordon does so like to frequent smoking rooms with his papa. And you

know Mr. Hetherington is teaching him to smoke! It makes him a little sick now. He's only 6, but my husband says he'll leave him smoking a cob pipe before he's out here's very much mistaken. It is so funny to see hip try to puff like his papa."

Mrs. Hetherington said that loud enough for the two horrified women to hear. They gave her one look, held up their hands in utter amazement and with pale faces went into the hotel.

When they had disappeared, Mrs. Hetherington laughed heartily. "They took that speech in the greatest seriousness," said Mrs. Green. "Of course they did," answered Mrs. Hetherington. "they're knishish." Detroit Free Press.

APREACHER'S NERVE.

Will Break Under the Strain of Indigestion—Here's the Testimony of the Preacher and His Wife—Recklessly From Good Health Reclaimed by the Power of the Great South American Nerveine.

Rev. W. S. Barker, of Peterboro, says: "I was greatly afflicted with indigestion and nervous prostration, and my wife was all run down and suffering much from general debility, and we heartily join friends in giving testimony to the great relief and curative powers of South American Nerveine. Special results followed the taking of the first bottle, and a few bottles have cured us both, and we cheerfully recommend it to our fellow sufferers." Sold by W. H. Medley.

Grow Pretty.

When ladies grow sallow-faced and wrinkled it is a sign of blood poverty. "Climax" Iron Tonic Pills contain the four greatest known and give color to the face by enriching the blood. 50 pills in a box for 25 cents. The Dr. Hall Medicine Co., New York. Sold at Wald's drug store.

In accordance with the recommendation of the board of education a cadet corps has been organized in the collegiate institute under the instruction of F. S. Selwood, B.A. The corps starts out with a membership of forty-eight on its roll. The officers are: Captain, W. Gordonier; second lieutenant, Frank Barrowe; second lieutenant, Alexander Derocoe.

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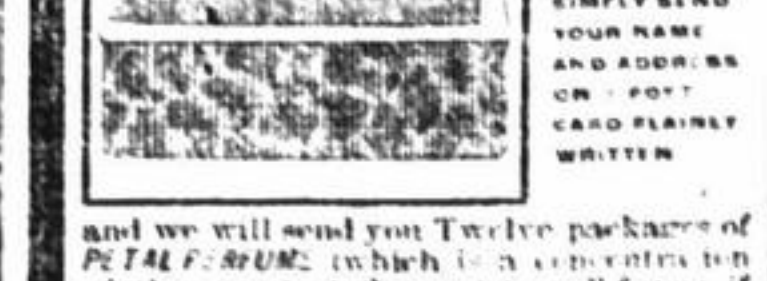
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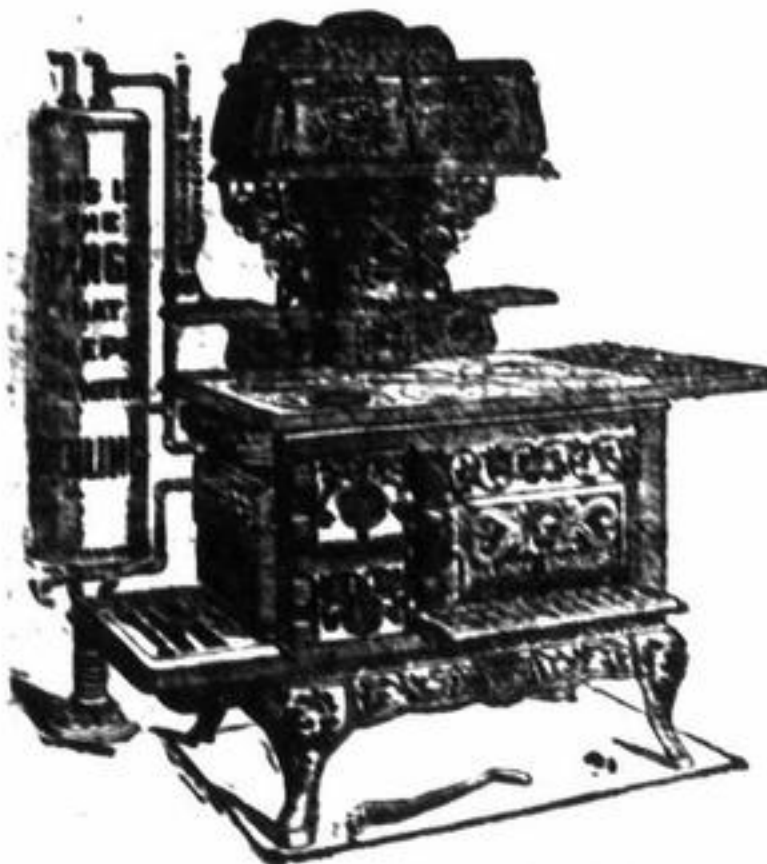
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