

# SCIENCE

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## AMATEUR PHOTOGRAPHY AND ITS POSSIBILITIES.

AN opportunity is furnished by photography for beautiful picture-making, not only in original conception, but in imitation.

Take some fine head painted by an old master, study the light and shade upon it, the character of the face, the quality of the background. Then choose from among your friends one whose type is somewhat like that of the one in the picture, and arrange with great care the light on head and face, and neck and shoulders. The arrangement of each detail of the drapery is also important; and, with such care, there is nothing to prevent your getting an interesting negative. If there is a dimness over the picture, and you want to carry out even that idea, you can do so by putting your lens slightly out of focus. That will eliminate some of the detail, and produce the desired softness and dimness.

Try the same person in many poses, if you can get some one to sit for you who will willingly lend himself for a time to your experiments. Try a head somewhat like the one in Fig. 2 in various positions, — bent down, as is this, as if in meditation or prayer, with a strong side-light on the face, no reflected light on the head, and the whole against a gray background. Then try the same head upturned in profile, with no reflected light, and with a black background. Then, again, try a full face, with strong light and shade, and with a different background still, and see how much you have made from the same person.

You can produce quite different effects by the careful management of the light from one high side-light, either using the upper half of the window by curtaining the lower half, or using the lower

half and having a direct side-light upon your sitter; or, yet again, by leaving the whole window uncurtained. You must always be very careful about reflected lights, which are an important part of picture-making. One way of reflecting is by arranging a screen on the shadow-side of your sitter, and throwing over that a sheet. By putting the screen, so arranged, very near to the sitter, you will get a full, even, reflected light. By moving it away, a lesser light will be cast over the shadow of the face. Sometimes a looking-glass is used; but that produces an unnatural light, which is not so desirable as the reflection from a duller surface. There is a very easy way of throwing a little light under the brow and nose and chin. It may be done by laying a card or an open book in the lap of the sitter, or by asking him to hold one in the right position. Do not be afraid, however, of shadows. Learn to manage them skilfully, making them heavy enough to give force and character where needed, and light enough to bring out delicate lines in their places.

Try now to imitate, in part or in detail, a Holbein portrait of a child. Arrange your light as in the chosen picture; and if the

child have a fair, smooth skin, a most charming effect of finished surface can be made with a mellow, rich light flooding the little



FIG. 1. — PORTRAIT OF A CHILD, AFTER HOLBEIN'S METHOD.

face. Fig. 1 is somewhat after Holbein's method, although no particular picture was chosen for imitation. This photograph was taken in a bay-window with a great deal of light. The child's skin was very fair and smooth, the eyes a hazel, every feature very clearly cut. An old-fashioned dress was chosen; and were it not for the shadow on the neck, which is much too dark, the idea I had in mind was quite fairly carried out. Always there is danger that some point will be overlooked in the arranging, some spot of light or shade forgotten, and there is where much thought is needed. Think your picture well out beforehand, so as not to keep the sitter unnecessarily long. When the time arrives for the taking, arrange quickly and deftly your subject, having the means

was developed and I took it out into the light of day, "Oh! ain't I a pretty little thing?" She was surely a very smiling, good little child, as she sat for the picture.

It is not necessary to keep to heads in this matter of imitation. Try figures and groups, if you like. But the more you have in your picture, the more difficult it will be. The best way is to begin with a head, simply lighted, and work with that until you get a fair imitation of some good picture.

If you have a quick-working lens, try a picture with a baby in it. This is an ambitious thing to do. But take one of Andrea del Sarto's pictures of the "Madonna and Child," and plan to make a photograph as nearly like it as possible. One sometimes sees

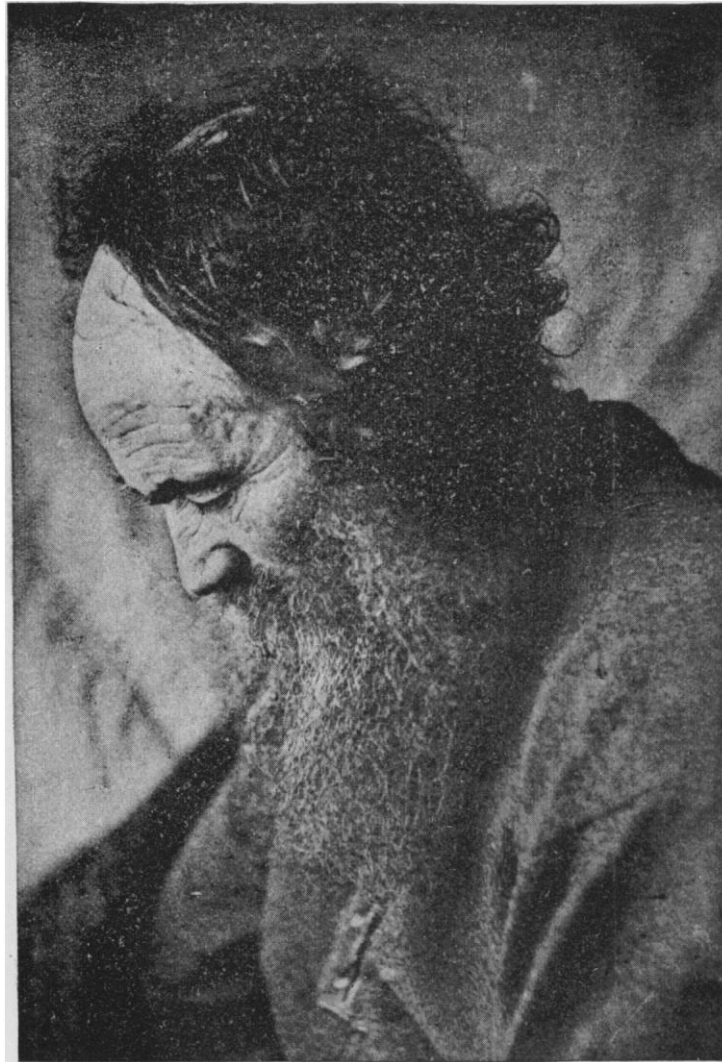


FIG. 2.

of reflecting light and darkening background near at hand, your camera in good order, your lens clean. Then hope for the best, and take off the cap. Always there are disappointments in store. It would be strange were there not. But also there is the certainty of making the disappointments less by sufficient care.

From the older painters, come down a few centuries to more modern ones. Take, for instance, one of Sir Joshua Reynolds's pictures of a child. Here, indeed, is a charming field for you to enter upon. Fig. 3 is taken somewhat after the manner of Sir Joshua. It is by no means a direct imitation, but some of his pictures were in my mind at the time, and half seriously it has been called "After Sir Joshua" by several friends. It was hastily taken, in a poor side-light. The dress was improvised at the moment. The child was an amiable little sitter, and, in a quite unconscious way, much pleased with the result, remarking, when the negative

faces of the Madonna type, — gentle, mild-eyed women, with pure, delicately cut features. Have the woman dressed like the one in your picture; the lights, backgrounds, and all accessories carefully arranged, except the little child, who should be introduced at the last moment, and posed as nearly as possible like the child in the picture. Then focus quickly, and take your picture. You should do this thing very well, or not at all. It needs great skill; and a careful study of composition and light and shade should go first.

There are charming Van Dykes to imitate, Rembrandts, Holbeins, Andrea del Sartos, Copleys, and Stuarts. There are also some exquisite modern pictures which it would do you no harm to study. If you are an art-student, you can help your art very much by studying pictures in this way. You will learn how persons far wiser than you, have managed their light and shade, how beatifully

they have posed their subjects, how they have taken thought of every important line.

This of which I have written is a branch of photography which has been but little attempted, and it is certainly worth notice; worth entering upon, if your taste leads you in this way, with earnestness and enthusiasm.

LAURA M. MARQUAND.

#### IMPROVEMENTS IN THE BENTLEY-KNIGHT ELECTRIC RAILWAY SYSTEM.

IN *Science* of Jan. 18 we described the electric railway on Observatory Hill, Allegheny City, Penn., equipped by the Bentley-Knight Company, and illustrated the motor trucks in use on that line. In this number we give a plan and elevation of a double-

from the wheels. The spring support makes the wear less, while allowing the motors to give a yielding impact to the load at starting. The commutator-brushes are fixed in position when the motor is first adjusted, and need no further adjustment.

While the Bentley-Knight Company has paid considerable attention to conduit construction, and has laid and operated successfully such systems, and claims to control that system by many patents, it is a mistaken idea to believe that it confines its attention to such lines; the Allegheny City line being, in part at least, an elevated-conductor road. The grades, curves, and general difficulties of that road we have already referred to. In Boston, the Bentley-Knight motors, while running over three miles of conduit, are also running over twelve miles of elevated conductors. This company has lately taken the contract for the Port Chester, White Plains, and Tarrytown Street Railway, crossing Westchester



FIG. 3.

motor truck, which is considered an improvement on that previously described, and which is now in use on the West End Street Railway Company's line in Boston (see p. 374).

Each motor is of fifteen horse-power. The trucks are the heaviest yet built and operated for electric tramway service, and are used to pull two cars on week days, and three cars on Sundays. They are equally well adapted for use with elevated conductors or with the conduit system, although our illustration shows them as equipped for the latter. The insulation has been carried to a high point. The truck is independent of the car-body, and goes under any ordinary car without alteration and without raising a car above its ordinary height. Control is effected by a lever on the front platform. The reversal of the car may be instantly effected, and during this reversal the current is automatically cut off.

As is seen by the illustration, the motors themselves, together with all gearing, are supported outside between the spaces of the axles of the car, giving ease in getting at the wearing parts, and enabling the motors to be carried in a position where they are least in the way, and least exposed to splashes of mud and water

County, upon which line heavy double-motor trucks, similar to the one described in this number, will be employed.

THE June number of *The Chautauquan* presents a wide variety of topics in its table of contents. William P. Trent, M.A., of the University of the South, discusses "The Position of Women in Ancient Greece;" the ninth in the series of Greek biographical sketches by Thomas D. Seymour, M.A., of Yale University, has for its subject "Ptolemy Soter;" Russell Sturgis finishes his two-part paper on "The Archæologist in Greece;" the Rev. J. G. Wood describes some "Odd Fishes;" Albert Shaw, Ph.D., contributes an article on "European Town Life;" Professor Charles J. Little, LL.D., of Syracuse University, concludes his two-part paper on "The Paris Mob and its Achievements;" the Hon. A. B. Richmond denounces the "license curse" in "The Relation of Rum to Crime;" Mrs. Carl Barus writes entertainingly of "Oriental Legations at Washington;" and Ripley Hitchcock recounts his experiences "At the Head of the Rails" in the Black Cañon of the Gunnison.