

quires to be again and again sharpened. This arises from the small crystals of carbonate of lime covering the surface of the wood, and also from their having insinuated themselves into the pores of the wood; the plane coming in contact with these has its edge taken off. Were the wood, prior to being put into the pond, smoothed with the plane, this objection of the carpenter would be prevented.

**Photography—The “Instantaneous Process.”**

“It is always desirable that the photographer should have at his command the means to take that limited class of pictures or views in which there are moving objects—such as street views, vessels in motion, &c. For this object, different methods, called ‘instantaneous processes,’ have been devised. The following is one that has never been published, and gives very good results:—The first thing to be done is to make a very sensitive alcoholic collodion, as follows:—To 4 fluid ounces of sulphuric ether (sp. gr. .720), add 4 fluid ounces of 95 per cent alcohol; in this, dissolve 140 grains of soluble cotton made in rather weak acids, so that it has a short structure, and, when all dissolved, add 12 fluid ounces more of alcohol which finishes the plain collodion. To 20 ounces of this collodion, add 2 fluid drachms of a saturated solution in water of iodide of potash and 30 grains of bromide of cadmium: allow the undissolved particles held in suspension to subside, and the collodion is complete. Use a neutral 45-grain nitrate of silver bath; develop with water, 16 ounces; protosulphate of iron, 1 ounce; acetic acid (No. 8) 1 ounce; alcohol, 1 ounce. Fix the picture, as usually done, with cyanide of potassium. When the picture has been thus far complete, it lacks the required degree of intensity for a negative, and the following method is resorted to for this object:—After it has been fixed and well-washed, pour over the plate a saturated solution of bi-chloride of mercury, after which wash the plate well; then pour over it some water in which 2 or 3 grains of iodide of potassium or iodide of ammonium, (which is the best) have been added to the ounce, when the plate is to be again well-washed. If the intensity is not sufficient, this process is repeated until the required intensity is obtained.”—(*Humphrey’s Journal of Photography*, by L. M. Dornach.)

**MISCELLANEOUS.**

**Proposed Private Telegraph Extension.**

The establishment of private telegraph wires in the United Kingdom is rapidly rising in public estimation. In order to obtain privacy of information and almost instantaneous communication between public or private offices, the Universal Private Telegraph Company has been instituted in London.

Instead of having wires as in ordinary cases, they suspend from posts a rope containing a multitude of wires—perhaps thirty, or, if that is not enough, forty or fifty, or more. One feature of such a plan is, that all parties can have a telegraphic communication at a very reasonable rate. The expense of erecting telegraphs according to the patent system, is about £65 per mile; but by the plan proposed by the new company, of multitudinous wires, parties were enabled to rent a wire at a sum of £4 per mile per annum. Therefore, merchants residing, one, two, or three miles from their places of business, or having places of business so far apart, can have private communication at either £4, £8 or £12 per annum. Another great feature connected with the establishment of this company is this, the apparatus is so simple, that parties require no instruction in the use of

it. To send a message it is only necessary to press the key opposite any of the letters of the ordinary English alphabet, which are marked on the index, and by turning a little handle the message is immediately transmitted to a corresponding instrument at the other end. Another thing connected with the instrument is the total absence of battery power, the current being produced by turning a piece of soft iron near a magnet. The power being so generated, and the magnet not being liable to deteriorate, the instrument is at all times in perfect order. People might leave their houses for six months, and when they went back they would find it in order.

In Manchester, Mr. W. Fairbairn, the eminent engineer, had consented to carry out the principles of the company, and Professor Wheatstone had undertaken the management in London. Mr. Reuter also intended to have wires erected between his office in the Exchange and all the principal newspaper offices in London; and it was also contemplated to lay wires from the Houses of Parliament to the several newspaper offices in the same way. In London all the stations were being connected, and lines of communication were being extended in every conceivable direction. In Glasgow many of the leading firms had already consented to co-operate with the police, and no fewer than twenty-three of these firms had become shareholders in the company, not only because they approved of the system, but also on public grounds, that there might be no doubt of its being carried out.

**Lighting Picture Galleries by Gas.**

The Commission consisting of Professors Faraday, Hoffman, and Tyndall, Mr. R. Redgrave, R. A. and Captain Fowke, R. E., appointed for the purpose of reporting to the Lords of the Committee of Privy Council on Education *On the Lighting of Picture Galleries by Gas, and on any precautions (if necessary) against the escape of Gas, and the products of its combustion, report as follows:—*

There is nothing in coal gas which renders its application to the illumination of Picture Galleries objectionable. Its light, though not so white as that of the sun, is equally harmless; its radiant heat may be rendered innocuous by placing a sufficient distance between the gas jets and the pictures, while the heat of combustion may be rendered eminently serviceable in promoting ventilation.

Coal gas may be free from sulphuretted hydrogen compounds, and in London is so at the present time; it then has little or no direct action on pictures. But it has not as yet been cleansed from sulphide of carbon, which, on combustion, yields sulphurous acid gas capable of producing 22½ grains of sulphuric acid per 100 cubic feet of present London coal gas.\* It is not safe to permit this product of the combustion to come in contact with pictures painted either in oil or water colours; and the Commission are emphatically of opinion that in every system of permanent gas lighting for Picture or Sculpture galleries, provision should be made for the effectual exclusion or withdrawal of the products of combustion from the chambers containing the Works of Art.

The Commission have examined the Sheepshanks’ Gallery as an experimental attempt to light pictures with gas, and are of opinion that the process there carried out fulfils the conditions of effectually illuminating the pictures, and at the same time removing the products of combustion. According to the indications of the thermometer required and obtained, it does this in harmony with and in aid of the ventilation, and does not make a difference of more than one degree Fahrenheit at the parts where the pictures are placed between the temperatures before and after the gas is lighted.

\* Hoffman.