

made from the ordinary gelatine plate. Use a slow plate, as it gives greater contrast. Place the negative from which you wish to make the positive film side up in a printing-frame which does not have very stiff springs. Lay the gelatine plate film side down on the negative, put in the back press-board, and press the springs into place very gently, then hold it about two feet from the lamp and expose for from five to twenty seconds, according to the density of the negative. Develop and fix as for an ordinary negative.

Pyrocatechin as a Developer.

By C. F. FOWNSBEND, F.C.S.

Now that pyrocatechin is being produced on a commercial scale, it might be worth while to give it a fair trial as a developer. In appearance it is not unlike hydroquinone, and is very soluble in water, alcohol, and ether. In constitution it is isomeric with hydroquinone and resorcin, being the 1.2 or ortho-dioxybenzene, etc. (not the 1.3 or meta derivative, as wrongly stated in the *Revue Suisse*).

It may be interesting to note that it is produced by the distillation of catechu.

According to the statement of Poulenc Frères, in the *Revue Suisse*, pyrocatechin possesses the following advantages as a developer:

(1) Pyrocatechin gives the negatives the delicacy of pyrogallie acid.

(2) The solution only alters very slowly on exposure to air, its permanency being superior to that of hydroquinone, eikonogen, etc.

(3) The color of the negative is very favorable to printing, which proceeds more rapidly than with other developers. It gives brilliant prints without any hardness.

(4) The developer does not fog the plates, nor does it act on the fingers.

(5) Its actual price is equal to, if not less than, that of the products actually employed as developers, the same bath being capable of developing a considerable number of plates.

The following are the principal formulae:

SOLUTION A.

Water..... 1 oz.
Sulphite of soda..... 20 grs.
Pyrocatechin..... 10 grs.

SOLUTION B.

Water..... 1 oz.
Carbonate of potash..... 100 grs.

For use in ordinary rapid exposures in a good light, take one part A, one part B, one part water. For very under exposed plates take one part A and two parts B. For plates that have had a timed exposure the following one-solution developer is recommended:

Water..... 2 oz.
Sulphite of soda..... 25 grs.
Carbonate of soda..... 50 grs.
Pyrocatechin..... 10 grs.

To bring out contrasts a 2 per cent. solution of boracic acid is recommended instead of bromide.—*Photogram*.

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Correspondents should note that for an intelligent answer to be given to their inquiries, it is necessary in every case to give the following information relative to their patient: (1) Sex, (2) age, (3) occupation, (4) near point of distinct vision for small type with each eye alone, (5) how their eyes trouble them, i.e., their asthenopic symptoms, (6) vision of each eye at twenty feet alone without glasses, (7) best vision obtainable with glasses, naming correction.

Example.—J. S., male; age 18; book-keeper; can read small type to within five inches of each eye; complains of much headache through the day and evening; eyes feel sore and water a good deal, look red and inflamed, etc., etc.

R.E.V. $\frac{20}{20}$ with + 1.50 = $\frac{20}{20}$
L.E.V. $\frac{20}{20}$ with + 1.50 = $\frac{20}{20}$

The above example is taken to illustrate about how we desire inquiries to be made.

J.C.F.—I am a recent drug graduate with limited finances, yet I desire to acquire the optical knowledge necessary to fit spectacles. Would you advise me to accept a free course offered by an American optical firm?

Answer.—Most emphatically not! for the following reasons, viz.: (1) No optical firm can afford to give an optical course free unless they are in business just for amusement, recreation, and the good of their health, because a teacher who is efficient and able to impart this knowledge to students properly must have had a medical education previous to his optical studies, and men of this class cost money. So-called "free" optical courses are a snare and a delusion, because they are usually taught by some interested party of some optical firm whose object is, just to cover enough ground to induce students to purchase a bill of optical goods from this firm at high prices, the profits of which more than pay for the so-called "free course," and the student, upon arriving home with his beautiful optical outfit, soon finds out, from difficult cases that present themselves to be fitted, that his knowledge is unequal to the occasion, and unsatisfactory results accrue both to himself and his customers. What else could be expected from a "free" course, the object of which was, not honest efforts to impart optical knowledge, but to make the course pay, although it was "free"? A long experience as an optical instructor, and subsequent watching the career of students who have passed through our hands, have taught us many things, one of which is that a student seldom takes more than one course in

optics. How important, then, must it be that the course which he does take should be the best possible to obtain, when we know that there is no department of business which pays such handsome profits and which at the same time is such a positive pleasure when the work is properly done. To prove this, let me refer to a druggist who took a course with us over two years ago. He told me that the profits for the first year from the sale of spectacles were over \$1,000, and this, too, in a town of less than 3,000 population; and many others have given me similar testimony of their satisfaction from the small outlay of time and money to acquire "the thing" properly, and I repeat what was said in a recent issue of this journal, that anyone with a common school education and ordinary intelligence can secure this optical knowledge if they go "the right way about it," and it is with pardonable pride that I direct attention once more to the efficient equipment and commendable work the Optical Institute of Canada is, and has been, doing—optical instructor in which I have the honor to be—and as long as I hold this position honest endeavor will be made to impart as much optical knowledge as possible without any care or thought as to where optical goods shall be bought, simply because we are not either directly or indirectly interested in any optical firm. Intending students will, therefore, if they consider their best interests, be careful before practising "false economy," and accepting any "free course." Moreover, a diploma, to have any weight, must come from a reputable institution.

T. H. W.—Young lady aged 20—student, suffers from asthenopia. V in either eye = $\frac{20}{20}$ - but clock face chart does not look equally black, but which a minus .50 cyl. ax 180 improves perfectly but does not relieve the headache.

Answer.—The probabilities are in this case—that a plus cyl. of .50 axis 90 substituted would answer perfectly—because we have often found .50 of hyperopia in the horizontal meridian corrected by a minus .50 cyl. ax 180, thereby making the vertical meridian also .50 hyperopic, whereas it was emmetropic in the first place, and should have the hyperopic horizontal meridian made emmetropic by means of a plus .50 cyl. ax 90.

A. M. C.—What is meant by acquired hypermetropia? I have never clearly understood this.

Answer.—Let us take for an example an emmetropic eye. This eye possesses static refractive power by virtue of its t-ioptrics, and also dynamic refractive power by virtue of its accommodation. We know the near point of vision gradually recedes from the eye as we get older, simply because the accommodation becomes less owing to a gradual but constant loss of elasticity of the crystalline lens. The far point of vision does not change, because for sight in the E. eye is accomplished by the refractive power of