drugs, I would personally guarantee that the medicines dispensed in prescriptions and sold over my counter conform to recognized standards. I also informed them that I would charge accordingly, for standardized medicines cost more than other medicines; and if they wanted cheap drugs not to come to my store for them. I kept hammering away until I educated physicians and their patients to discriminate in favor of standardized products. Standardization is the secret of my success. The future of pharmacy depends upon drug standardization."

Read up on the different preparations of the pharmacopœia and tell the doctors and the people about them. Physicians would prescribe more ointments if you would show them the difference between carefully prepared ointments and those made by careless manipulation. Enlighten people about the difference between properly prepared U. S. P. ointment of rose water and the miscellaneous brands of commercial cold creams.

The time at my disposal will not permit me to tell all of the things you can tell the physicians and the people about the preparations of the Pharmacopœia. Be sure and tell them how the Pharmacopœia itself is prepared so they may realize that it is the product of the concentrated brain work of a committee of high class drug experts representing the entire medical and pharmaceutical professions of the United States.

Then come here to this section and relate your experience. Give us papers with the information written in simple language so the busy physician can readily comprehend it. Get the editor to furnish you some reprints of your paper and send them to the physicians in your neighborhood. If you continue to do that kind of work, giving the doctors the kind of information they want, you will be surprised to see how your business will grow.

Now if a number of you will undertake this kind of work the JOURNAL of the A. Ph. A. will contain many pages of fresh information concerning the materia medica, new and old, and it will not be long before the doctors will commence to subscribe for the JOURNAL. I can conceive of nothing that will do more to popularize the materia medica and decrease therapeutic nihilism than this.

I would therefore move that the chairman appoint a committee of three to formulate a set of queries along the lines of the above suggestions, the list to be published in the JOURNAL sufficiently in advance of the next annual meeting to permit you to study the list to do some original work, and to contribute to the section such information concerning the materia medica of a character suitable for the physician to use as a guide in prescribing. If you will do this I am sure that you will forgive me for reading such a long paper.

## AN IMPROVED FORM OF KYMOGRAPH.

PAUL S. PITTENGER, PHAR. D.

The ever increasing number of routine samples sent to the laboratory for physiologic tests, together with the desire to economize space, has induced me to increase the efficiency of the various apparatus employed sufficiently to enable us to handle comparatively large amounts of routine work without interfering markedly with our experimental or research work.

Among the various methods employed for physiologic standardization, blood pressure tests consume comparatively the greatest amount of time. This is especially the case with the blood pressure method for ergot, as it is necessary to check the results on two or three dogs, and, due to accumulative action, it is also necessary to allow from one to one and one-half hours to elapse between injections. With the usual method of using one manometer and kymograph it is possible to work with only one animal at a time, and it therefore requires the greater part of two days to assay one sample of ergot in duplicate. The frequency with which we receive at one time four or five samples of ergot led to my devising the following apparatus with which it is possible for one man to run blood pressure tests on four animals at the same time, and record all the tracings on one kymograph without their interfering with each other. This enables one operator to assay at one time with one kymograph two samples of ergot in duplicate, or, he can assay at the same time one sample of ergot in duplicate and one sample of adrenal extract.

The following cut shows the arrangement of the apparatus:

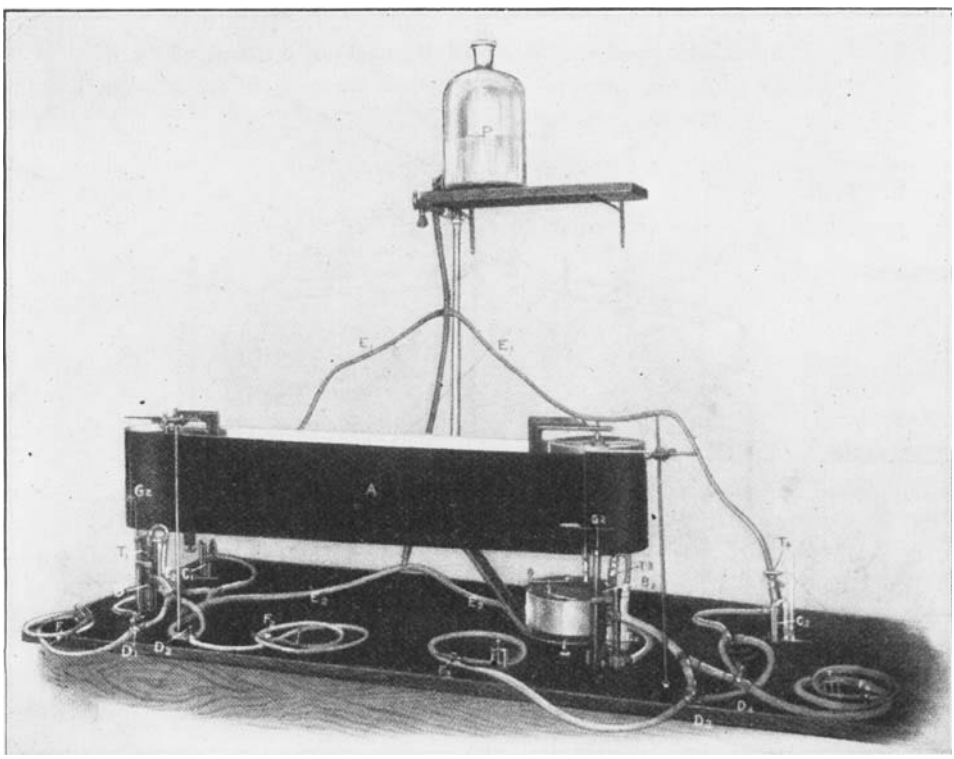

FIGURE 1.—Kymograph arranged for making blood pressure tests on four animals at one time. A.—Long paper Kymograph; B1 and 2, Manometers, with writing points; G1 and 2, writing points; C1 and 2, Dummy manometers, without writing points; D1, 2, 3, and 4, Three-way stopcocks; E1.—Tubes used for securing pressure in manometers C1 and 2, from pressure bottle; E2.—Tubes used for securing pressure in dummy manometers B1 and 2 from pressure bottle; F1, 2, 3, and 4,—Canulas; H1, 2, 3, and 4,—Connecting tubes; T1, 2, 3, and 4,—Stopcocks.

*Description of Method.*—First completely anesthetize the animal. Any of the volatile anesthetics, such as ether or chloroform, may be employed, but, since it

is of great importance that the blood-pressure should not fluctuate from the action of the anesthetic, it is better to employ one of the following methods for this purpose:

1. Inject subcutaneously 0.01 gm. of morphine sulphate for each kilo of body weight, and supplement by the use of such a quantity of ether as may be necessary to prevent the pain of the operation. After connecting the artery with the manometer the animal is allowed to come from under the influence of the ether. No experiments should be begun until at least ten minutes have intervened after the withdrawal of the ether.

2. Inject subcutaneously 0.01 gm. of morphine sulphate per kilo body weight of animal, and 45 to 60 minutes later give by mouth 1.5 to 2 gm. of acetone chloroform (1.5 gm. for animals weighing 6 to 7 kilos, 2 gm. for those weighing 10 to 12 kilos, and intermediate weights accordingly). The acetone chloroform is prepared for administration by shaking it with 4 cc. of alcohol until dissolved and then adding 4 cc. of water and again shaking.

The latter method is especially valuable for this work, as it is easily carried out, and under its influence the blood-pressure and heart action remain practically constant for hours. I find, however, in many cases, that the animal does not react in such a way as to give concordant results immediately after the administration of this anesthetic, and therefore advise that an interval of two hours be allowed to elapse after the administration of the acetone-chloroform so that the effects of the anesthetic may partially pass off.

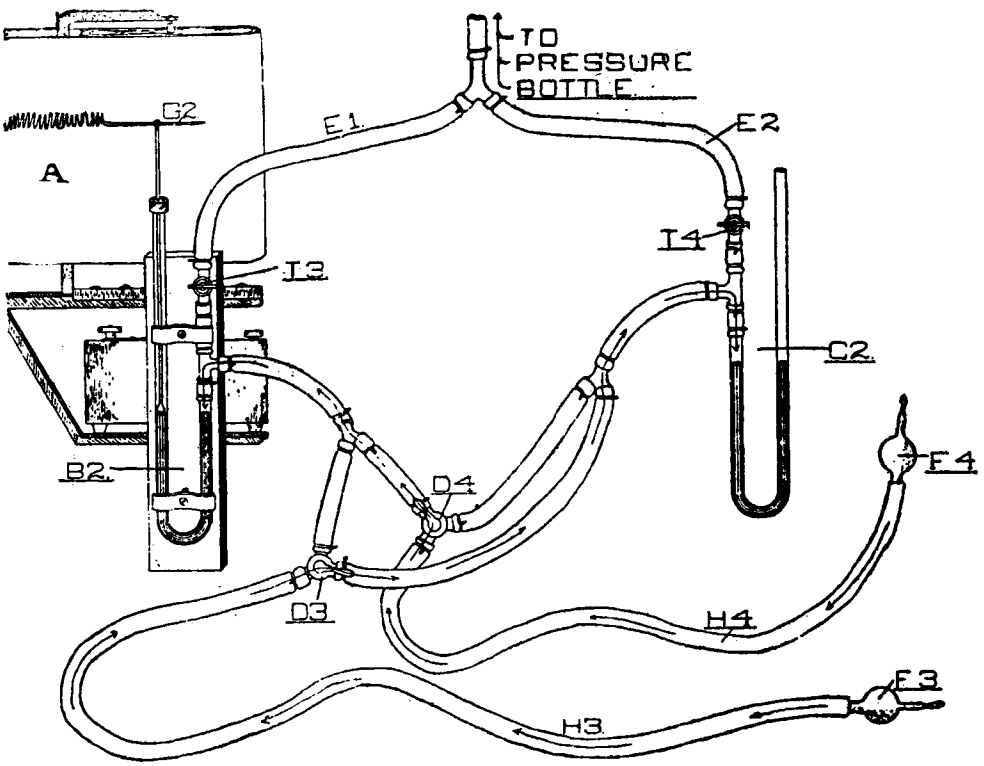


FIGURE 2.—A graphic illustration of the arrangement of one-half of the apparatus. The letters and figures used in this illustration correspond to those used in Figure 1.

Each of the four canulas (Fl, 2, 3, and 4) is then tied into the carotid artery of a dog. Pressure is obtained within the various tubes from the pressure bottle (P) by opening the cocks, (Tl, 2, 3, and 4) (T2 invisible). It will be noted from Figure 1 that each connecting tube (Hl, 2, 3, and 4) terminates in a three-way stopcock which enables the operator to connect it with either a manometer which writes on the smoked drum, or with a "dummy" manometer.

To assay two samples of ergot it is merely necessary to use two dogs on one end of the kymograph for one sample and two on the other end for the other sample. The three-way stopcocks are arranged in such a manner that one dog on each end records its pulsations upon the revolving drum, while the other pulsates against a "dummy" manometer. Inject the proper dose of fluid extract of ergot into the dog which is recording its blood pressure on the right-hand side of the kymograph; allow the drum to revolve five, ten and fifteen minutes after the injection. Then by merely reversing the stopcocks (D3 and 4) the dogs can be interchanged, or in other words, the dog which was recording its blood pressure on the smoked drum will pulsate against the mercury in the "dummy" manometer, and the one which was previously pulsating against the "dummy" will record its normal blood pressure upon the smoked drum. After taking a normal tracing of several inches in length, stop the drum; then check the former results by injecting this dog with the same preparation given to dog No. 1; again, take tracing five, ten and fifteen minutes after the injection. Repeat operation by injecting, in a similar manner, the other sample into the dogs on the left-hand side of the drum. This will consume about one hour and fifteen minutes. It is then necessary to wait only about fifteen minutes or until the one and a half hours have elapsed since the first injection was given when the entire procedure can be repeated. This is continued until each dog has received three or four injections. The charts are then measured and the average rise of pressure produced by each preparation is taken as its figure of potency.

To assay one sample of ergot in duplicate and one sample of adrenal extract it is necessary to employ only three animals, two on the one end for the ergot and one on the other end for the adrenal extract.

PHYSIOLOGY LABORATORY OF H. K. MULFORD COMPANY, July, 28, 1913.

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## BETHABARA.

OTTO RAUBENHEIMER, PH. G., BROOKLYN, N. Y.

A few years ago at a meeting of a State Pharmaceutical Association, a highly scientific paper was followed by a rather ordinary one on "Fishing Tackle." What a contrast! From the sublime to the ridiculous! Perhaps I will be also criticized by reading before the Scientific Section of our great A. Ph. A., a paper on "Bethabara," which is the name of the wood used in the manufacture of fishing rods.

The vegetable kingdom abounds in dye stuffs which have been made use of from the oldest times. The ancients well knew how to prepare, how to extract,