water bath for 5 min. This treatment served a double purpose: (a) to stop the enzymatic reaction and (b) to avoid emulsification of the solvent. If an emulsion is formed, a mechanical carrying over from the thimble ensues, and the extracted phenol is contaminated with interfering substances.

When using tissue slices (200 mg of rat liver), it is possible to precipitate the proteins with trichloracetic acid without loss of phenol. In this case it is necessary to neutralize the trichloracetic acid before extraction; otherwise, the phenol will not be completely extracted. The neutralization is carried out by addition of 20% potassium hydroxide until the fluid remains slightly acid and is completed by addition of approximately M phosphate buffer pH 7. At pH 7 the phenol is free and can be extracted, whereas at higher pH it may be partially or completely bound.

If, after extraction of free phenols, one desires to determine conjugated phenols, the thimble and funnel are removed. Conjugated phenols are hydrolyzed by placing the thimbles in a boiling water bath for 15 min after addition of 0.25 ml of concentrated hydrochloric acid. If no trichloracetic acid has been used, the thimble and funnel are replaced in the extractor, and the extraction and determination are carried out as indicated for free phenols. If trichloracetic acid was used, the sample must be neutralized as indicated above.

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A Convenient Apparatus for Recording the Blood Pressure of Small Animals

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For physiological and pharmacological investigations it is often more convenient to use small animals, such as rats and guinea pigs, since the food and housing problems are less than for larger animals. It is often desirable to measure the blood pressure of these animals, but application of currently used methods to small animals is sufficiently difficult that this aspect of many research problems is neglected. The Hamilton (*2*) optical manometer is a precision instrument that will measure the blood pressure of the smallest animals (*5*) and avoids the error introduced by the cuff methods sometimes employed for rats (*4*). However, the instrument is difficult to set up and maintain by unskilled personnel, it must be used in partial darkness, and, since it records on photographic paper, there is a considerable time lag between administration of a drug and observation of the results. Recently, the use of strain-gage manometers recording through a string-type electrocardiograph galvanometer has been suggested (*1*), but this also suffers the difficulties inherent in any method of photographic recording.

If only changes in mean blood pressure are desired, these can be obtained easily by the use of Lambert-Wood (*3*) strain-gage manometers,[1] with current supplied by a 7.5-v A battery[2] and recording in ink on a continuous strip chart by a General Electric photoelectric recording microammeter (Model 8CE1DJ15 or 8CE1DJ11). The apparatus is simple and rugged, and can be operated in any location with 110-v, 60-cycle current. The record is always visible, and annotations can be made on it in ink or pencil at any time (Fig. 1). It is not subject to de-

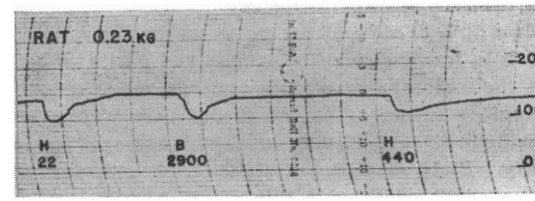

FIG. 1. Record of male rat: 250 mg of Na barbital/kg; 22-gage hypodermic needle in carotid artery. Injections of drugs made into external jugular vein. Blood pressure in mm Hg, ordinate; time, in minutes, abscissa. Twenty-two μg of histamine base/kg given at H, followed by 2,900 μg of diphenhydramine hydrochloride ("Benadryl")/kg at B, followed by 440 μg of histamine at second H. Record shows that this dose of diphenhydramine is able to antagonize the vasodepressor activity of 95% of a dose of histamine.

struction by folding, warmth, or scratching with fingernails or gritty substances, as are some of the electrolytic and plastic recording papers, and it can be mounted easily with glue or rubber cement. Although the GE instrument is a high-speed recorder, the electronic circuit is slow enough that damping of the systolic-diastolic pulse to mean blood pressure occurs. If systolic and diastolic blood pressure and contour slopes of the arterial pressure curves are needed for a given research problem, only the optical recording, small-diaphragm manometers of the Hamilton type are adequate; but if only information concerning mean blood pressure is desired, as is often the case in the bioassay of drugs, this apparatus provides an improvement over existing methods.

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[1] P8–8–350 manometer, Statham Laboratories, 8222 Beverly Boulevard, Los Angeles 36, California.

[2] Burgess G5, Burgess Battery Company, Freeport, Illinois.