Eising, who produced stencil designs on hermetically sealed X-ray films placed over irradiated petrolatum in a light-tight box, and by French.[3]

I wish to express my gratitude to Dr. Arthur C. Jones of the division of Physical Therapy for his valuable suggestions.

## 6314

## Further Purification of the Adrenal Cortical Hormone.*

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In studying the problem of further purification of the adrenal cortical hormone we have used the following 3 types of fractionation procedure on the active material obtained from whole beef adrenal glands by the usual permutit fractionation: (1) distribution between an immiscible solvent and aqueous alkali, (2) distribution between an immiscible solvent and aqueous acid, and (3) fractionation with organic solvent mixtures. The starting material and the various fractions obtained were assayed on adrenalectomized dogs by the technique previously described.[1]

Four hundred and seventy mg. of alcohol-soluble fraction obtained from 4000 gm. of beef adrenal glands and containing 8000 D. U. (dog units) were dissolved in ether and washed with 0.05 N NaOH. The aqueous alkaline solution was washed with fresh ether and the ether solutions combined. The ether-soluble fraction (200 mg.) was transferred to water (70 mg. water-soluble) for assay and was found to contain less than 500 D. U. The alkaline washings were adjusted to pH 5.6 and on assay contained between 500 and 1000 D. U. In this manipulation, therefore, about 6500 D. U. were apparently destroyed.

The above procedure was repeated on another aliquot of 470 mg. containing 8000 D. U. except that 0.05 N HCl was used instead of alkali. The ether soluble fraction (350 mg.) contained between 500 and 1000 D. U., while the aqueous acid washings after adjustment to pH 5.2 assayed between 6000 and 7000 D. U. The

[3] French, F. S., *Clifton Med. Bul.*, 1932, **18**, 21.

* This investigation has been aided by a grant from the Josiah Macy, Jr., Foundation of New York.

[1] Harrop, G. A., Pfiffner, J. J., Weinstein, A., and Swingle, W. W., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 449.

cortical hormone can apparently be transferred to aqueous acid without destruction. This fractionation step is being used in further studies.

One of the most potent fractions thus far obtained was prepared by hexane fractionation. An aliquot of 470 mg. containing 8000 D. U. was dissolved in 10 cc. of absolute ethyl alcohol and precipitated by the gradual addition of 9 volumes of hexane. The supnatant fluid was decanted, the precipitate dissolved in 5 cc. of alcohol and precipitated as before. The hexane-alcohol-soluble fraction (370 mg.) was transferred to water. The water-soluble fraction (150 mg.) assayed 8000 D. U. or approximately 50 D. U. per mg. of solids.

## 6315

## Actions of Dinitrophenol.

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Following the demonstration by C. Heymans[1] and others that $\alpha$-dinitrophenol (1-2-4) produces fever in experimental animals, we have attempted to determine the cause of the rise of temperature, the effects on various functions, and its possible therapeutic applications.

Dinitrophenol produces fever in pigeons, rats, rabbits, cats, dogs, and man, in doses of 5 to 40 mg. per kilo, the exact dose depending on the species and route of administration. After subcutaneous or intramuscular injection, the temperature begins to rise in about 10 minutes and steadily increases until the maximum of up to 4°C. increase is reached, in from one-half to 4 hours. Then there may be a subsidence of the fever with complete recovery, or, if a fatal dose has been given, a sudden stoppage of respiration and circulation, and death. Rigor sets in at once.

Preceding the onset of the fever, and throughout the entire febrile period, there is a marked respiratory stimulation, including both the rate and depth, so the total ventilation increases up to 10 times the resting values. The respiratory stimulation may be prevented or diminished by large doses of morphine. Conversely, dinitrophenol increases the ventilation to better than the normal values after it

[1] Personal communication.