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.

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Actions of Dinitrophenol.

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Following the demonstration by C. Heymans[1] and others that α-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.

has been decreased by toxic or fatal doses of morphine, chloral, alcohol or barbital. The stimulation compares favorably with that caused by caffeine. The improvement in respiration does not prevent death, if otherwise fatal doses of these hypnotics have been given; thus indicating that the respiratory depression *per se* is possibly not the primary cause of death from the hypnotics. During the period of maximum respiratory stimulation, there is little or no change in blood pressure and pulse rate, and the sugar, pH and CO_2-combining power of plasma are unaltered. Hence the increase of temperature and respiration is not accompanied by an acidosis or the appearance of appreciable amounts of fixed acid in the blood. The rise of temperature is not prevented by destruction of the brain and spinal cord or by complete curarization, so that the mechanism of production would appear to be a peripheral one. When fever-producing doses are given repeatedly to dogs at intervals of 3 days over a period of 6 weeks, constant febrile responses are elicited, with little or no evidence of toxicity, either grossly or on microscopic study of the tissues. The other available isomers of nitro-, dinitro- and trinitrophenol are less effective in producing fever, or cause it only in fatal doses. Even with the α-dinitrophenol the margin between the febrile and fatal dose is narrow.

Experiments are being made to elucidate the mechanism of the fever production, the details of the pharmacologic action, and the cause of death, and to determine possible antidotes, and therapeutic usefulness, of this drug in man.

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Studies in Ageing Eggs. Changes in Permeability of Egg Membrane.

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The volume of unfertilized eggs of *Arbacia punctulata* aged in sea water at 19 to 22° C., pH 8.2, is not constant. The volume increases slowly and progressively during approximately the first 23 hours after shedding. The increase in volume of eggs from different females ranges from 1.8 to 3.2%. With further ageing the volume decreases progressively.

Samples of such ageing eggs were placed at successive ages in the