TABLE II.
Distribution of Nitro Compounds Between Plasma and Red Cells.

Compound	Theoretical conc. (μg/ml)	Incub. (min.)	Packed cell vol. (%)	Conc. of nitro compounds: Plasma (μg/ml)	Red cells (μg/ml)	Whole blood (μg/ml)	Ratio: red cells/ plasma
I. Chloramphenicol	120	30	32.6	100	153	123	1.53
		60	32.6	98	157	118	1.60
II. Amino diol hydrolysis product	49	30	31.1	39	61	47	1.56
		60	33.7	33	68	46	2.06
III. Glucuronide derivative	179	30	39.3	274	55	168	0.20
		60	40.6	290	38	172	0.13

Plasma, red cells and whole blood were analyzed for nitro compounds following equilibration at 38° for 30 and 60 minutes, as described in the text. Values were corrected for recovery from each fraction as indicated in Table I. The ratios of concentrations found in red cells and plasma are given in the last column.

I to serum albumin.(6) In most cases, the amount of drug accounted for by the separate analysis of plasma and cells fell within 5 per cent of the actual amount of drug added. The observations presented here may assist in the interpretation of published data on the renal excretion of chloramphenicol and its inactive metabolic products.(2) The excretion rate for the glucuronide derivative III is no doubt greater than if it were bound to the cellular elements of blood, while the excretion of unchanged chloramphenicol is probably retarded by adsorption onto the erythrocytes, which would lower the effective concentration of freely diffusible drug in the plasma. The binding of chloramphenicol on the red cells, and possibly on the cells of other tissues, may constitute a reservoir of antibiotic which is in equilibrium with the body fluids. The existence of a different mechanism for producing active chloramphenicol by enzymatic hydrolysis of the inactive glucuronide has been described elsewhere.(2) These two factors may well be responsible for the maintenance of therapeutic levels of chloramphenicol in the blood stream over long periods of time.

Summary. Chloramphenicol and one of its hydrolysis products appear to be partly bound to the cellular elements of blood, while the glucuronide derivative of chloramphenicol remains almost entirely in the plasma. Observations are also presented on the recovery of these aromatic nitro compounds from trichloracetic acid filtrates of plasma, cells and whole blood by colorimetric methods.

6. Vandenbelt, J. M., cited by Smith, R. M., Joslyn, D. A., Gruhzit, O. M., McLean, I. W., Penner, M. A., and Ehrlich, J., *J. Bact.*, 1948, v55, 425.

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A Simple Means of Producing Obesity in the Rat. (17513)

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The effects of overfeeding and of obesity have been little studied in the laboratory. Voluntary hyperphagia in rats has been stimulated by insulin(1) and by lesions in the hypothalamus.(2) In this laboratory, we have produced marked obesity in rats by

1. MacKay, E. M., and Cullaway, J. W., PROC. SOC. EXP. BIOL. AND MED., 1937, v36, 406.

2. Hetherington, A. W., and Ranson, S. W., *Anat. Rec.*, 1940, v78, 149.

force-feeding.(3) There is a simple method for the production of obesity in the rat, new in the laboratory, but representing a principle known throughout the history of medicine and animal husbandry. The development of obesity is related to the level of energy output as well as to the level of food intake. Restriction of the activity of the rat combined with the *ad libitum* eating of a diet which is appetizing to the animal, is a reliable means of promoting gains in weight in excess of the values regarded as standard for albino rats.

Male rats of the Sprague-Dawley strain were maintained on a stock diet of Archer Dog Pellets until they reached a weight of 325 to 375 g. They were then transferred to cages of one-half inch mesh screen 9 inches long, 4½ inches wide and 4½ inches deep. They were given a fluid diet to eat *ad libitum* (Table I). The room temperature was 74° to 78°F. Six rats were studied under these conditions. All of them gained in weight more rapidly than active stock animals or active animals on the same diet. We have never recorded a weight greater than 550 g among active adult male rats on the stock diet nor have we recorded a weight greater than 600 g for similar active animals fed the fluid diet in the large series of animals which we have observed during the past 10 years. After all of the 6 inactive rats were in excess of 700 g weight, 4 were killed for tissue studies, one reached a weight of 946 g and died and the 6th rat attained a maximum weight of 1090 g at which time it began to lose weight slowly and was killed for tissue studies. The weight chart of this animal is compared with the record of a typical active rat on the stock diet in Fig. 1. Insofar as we are aware, this is the greatest weight that has been reported for an albino rat.

TABLE I.
Medium Carbohydrate Diet.

Constituent	g
Cellu flour (Chicago Dietetic Supply)	120
Osborne and Mendel salt mixture	40
Diet yeast (Pabst)	100
Wheat germ oil	10
Cod liver oil	10
	mg
Vit. K (2-methyl-1,4-naphthoquinone)	100
Mazola oil	200
Casein (Labco)	160
Starch	200
Dextrin	190
Sucrose	200
	cc
Water to make total of	2000

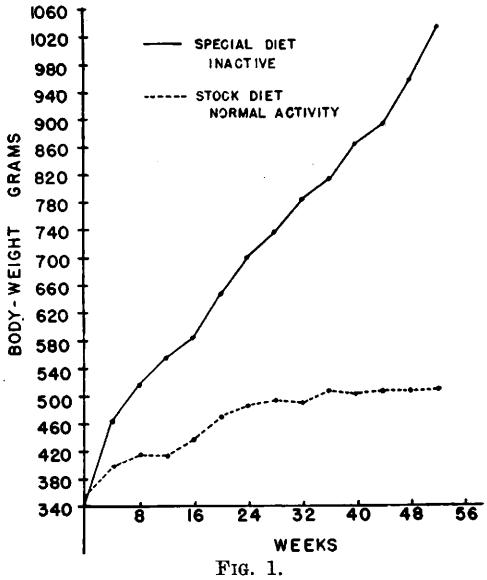

FIG. 1.
Changes in weight of two normal rats.

Summary. Obesity can be produced in the albino rat by restriction of activity and by the *ad libitum* eating of a diet which is appetizing to the animal.

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3. Ingle, D. J., *Endocrinology*, 1946, v39, 43.