of the α-2 and β-1 peaks in hyperlipemia were caused by a lipoprotein with the solubility characteristics of β-1 lipoprotein. There are two possible reasons for the increase in the speed of electrophoretic migration of the β-1 lipoprotein after the intravenous injection of heparin: either combination with heparin (which has a high negative charge) increases the negative net charge of the β-1 lipoprotein molecules, or heparin by its lipolytic action (*3*) causes a decrease in the size of the β-1 lipoprotein molecules (*4*).

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The Metabolism of Niacin in Insects[1]

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A number of studies have demonstrated species differences in the metabolism of niacin. In carnivorous mammals the principal end product, as evidenced by urinary excretion, is N^1-methyl nicotinamide (NMN). In contrast, species of herbivora do not excrete appreciable amounts of NMN (*1*).

The present author has reported that the urinary excretion of NMN could not be detected following the subcutaneous injection of nicotinamide in the herbivorous insect, *Bombyx mori* (*2*). The urine analyses were done by the author's method (*3, 4*). The methylation of nicotinamide has not yet been demonstrated in other insects.

Hence the methylation of nicotinamide was looked for in the carnivorous insect, *Lucilia caesar*, L. which had been fed with fish protein in the larval stage. The urine of the last pupal stage before emergence was examined for NMN by paper chromatography (*4*), using a urea butyl alcohol solvent (*5*) and Dragendroff's reagent (*6*). No NMN was found in the urine. Control experiments indicated that 10 μg of NMN added/ml of Lucilia urine could be detected by the method used. The failure to find N-methyl nicotinamide in the urines of either a carnivorous insect or an herbivorous insect (*2*) suggests that the metabolism of nicotinamide in insects is different from that in carnivorous mammals.

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A Discontinuous Paper Drive

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A discontinuous paper drive for use with paper ionophoresis strips containing radioactive samples has been designed and built similar to that shown in Fig. 1. The apparatus pulls 3.5-cm-wide strips of paper

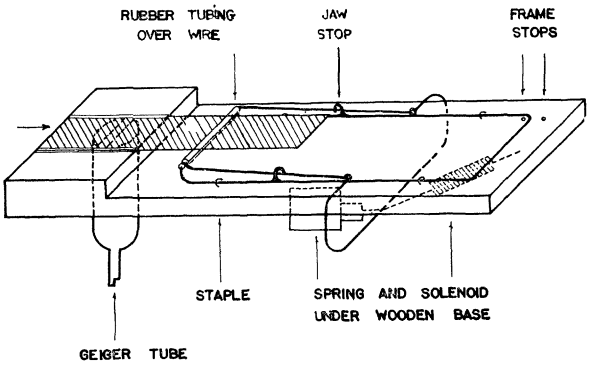

FIG. 1. Drawing of discontinuous paper drive.

over a thin window Geiger tube but could be used on various widths of paper. Construction of the paper drive was from clothes hanger wire, rubber tubing, nails, one solenoid, one spring, and ½-in. plywood. The wire jaw runs through loops in the wire frame and connects to the solenoid. The solenoid opens the jaws against the jaw stops and moves the frame backward. Then, the spring closes the jaws on the paper and moves the frame and paper any desired distance up to 1.5 cm, depending on where the frame stops are placed.

In use the solenoid is connected to a scaler such that any predetermined count will activate the solenoid. A pen, which makes a mark on a constant speed paper tape so that the exact cross section containing activity can be determined, is also connected in parallel.

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Survival of Irradiated Rats in Parabiosis with Hypophysectomized Partners[1]

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Brecher and Cronkite (*1*) first demonstrated that postirradiation parabiosis is a means of altering the effect of a lethal dose of x-irradiation to rats. Their results have been confirmed and extended during the

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last 2 yr (*2, 3*). Furthermore, it has been demonstrated that removal of either adrenal glands or spleen from the nonirradiated partner does not significantly alter the postirradiation protection afforded by parabiosis (*4*). In view of these findings it seemed pertinent to determine the influence of certain endocrine glands on irradiation protection by pairing irradiated rats with nonirradiated, hypophysectomized partners. If a parabiont without a pituitary gland were still capable of protecting its partner from irradiation death, much speculation concerning the role of the endocrine system in irradiation protection might be eliminated.

Holtzmann female littermate rats were used throughout this investigation and experimental procedures were carried out when the animals were about 40 days of age and had attained a weight of 120 ± 5 g. The parapharyngeal approach without cannulation of the trachea was used for hypophysectomy and the operation usually preceded the pairing by 2–3 days. All rats to be irradiated were placed in plastic boxes and exposed to ionizing radiation with the following physical factors: 250 KV, 30 ma, 0.25 Cu and 1.0 Al filtration, HVL 0.88 Cu, 50 cm FSD, 20 × 20 cm field, and an intensity of 127 r/min. The animals were exposed to a dose of 700 r which previously had been determined as the LD 98/30 days in this laboratory. The animals were divided into 4 groups and all consisted of parabionts except the first which was composed of 65 single irradiated controls. Parabiosis was carried out under Nembutal anesthesia, according to the method of Bunster and Meyer (*5*), within 3 hr after exposure to x-ray. Unless death intervened, animals were observed for a 30-day period, at which time surgical separation of the pairs was done under ether anesthesia. At the same time the hypophysectomized partners were sacrificed in order to determine completeness of the operation. Sella turcicas were checked grossly and microscopically.

Results are summarized in Table 1. Of the 65 single animals exposed to 700 r, only one survived the 30 day observation period and that one succumbed on the 75th postirradiation day. Twenty-three nonirradiated–nonirradiated pairs made up the 2nd group and of these 16 survived 30 days for a survival rate of 70%. A small group of irradiated–irradiated parabionts served as further controls for parabiosis and as was expected, mortality of these pairs was complete. In most cases deaths occurred somewhat earlier than in the single irradiated animals, presumably due to the added stress of the operation. Irradiated-hypophysectomized pairs make up the last group and of the original 22 pairs, 16, or 73%, survived 30 days or longer. Only those pairs in which the hypophysectomized partner showed no remnants of the hypophysis have been included. A significant difference exists between survival in the unpaired irradiated control group and survival in the group of irradiated animals with hypophysectomized partners ($P < 0.01$).

The effects of parabiosis are shown in the irradiated-irradiated and nonirradiated-nonirradiated parabionts. In the former group death was considered to be only a result of irradiation since it occurred within the first 5 or 6 days. Deaths in the latter group, which was not irradiated, were attributed primarily to parabiosis intoxication, a condition peculiar to parabiotic animals (*6*). In the irradiated-hypophysectomized group both factors were responsible for the mortality.

TABLE 1

Treatment*	No. of pairs	Survival at 30 days following irradiation
Unpaired irradiated	65	1 (2%)
Nonirradiated–nonirradiated	23	16 (70%)†
Irradiated–irradiated	10	0
Irradiated-hypophysectomized	22	16 (73%)†

* All irradiated animals received 700 r.
† Statistically significant difference from unpaired irradiated rats.

This experiment represents one of a series in which the mechanism of postirradiation protection by parabiosis is being sought. Previous work has shown that neither the adrenals nor the spleen are necessary in the nonirradiated partner to produce the protection. Now, good protection has been described when irradiated rats were paired with nonirradiated, hypophysectomized animals. Work of this nature tends to eliminate the role of the hypophysis and its dependent endocrine organs as critical factors in recovery from irradiation sickness.

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Accumulation of Acid-Soluble Nitrogen in the Brain Cortex of Cats During Stimulation

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In the experiments described below it is shown that trichloracetic filtrates of brain cortex frozen during stimulation contain considerably more nitrogenous compounds than those of homologous areas taken at rest.

Small increases in the concentration of ammonia in the brain during stimulation have been described by

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