of dermatitis or rustiness could be cured or prevented by addition of 4 gm of potato to the daily diet.

In the second experiment 20 μgm of pantothenic acid and 20 μgm of pyridoxine were added to the supplement and the choline was increased to 20 mgm. Again rustiness was noted in 5 to 6 weeks.

In the third experiment pantothenic acid was increased to 40 μgm, keeping the rest of supplement the same as in the second experimnt. No rustiness was found.

In a fourth experiment the pantothenic acid was increased to 80 μgm, and again no rustiness developed. This experiment extended over 13 weeks with no untoward symptoms developing in that time. However, if the choline was omitted from the diet, rustiness developed in 6 weeks regardless of the high level of pantothenic acid.

The conclusions that can be drawn from these experiments are that rustiness can be produced with the albino rat provided choline or pantothenic acid is omitted from the diet and that it can be prevented if the diet is supplemented by at least 40 μgm of pantothenic acid and by 20 mgm of choline (this may be well above the actual requirement). The implication is that no matter what the factors are that prevent development of rustiness in albino rats, the liver must play an important role in their metabolism. Our observations on pantothenic acid agree with those of Györgyi and his coworkers. In a communication from Dr. Györgyi it is stated that he included 1 gram of choline per kilogram of the diet used in the experiments reported by him and his coworkers.

We wish to acknowledge our indebtedness to Dr. R. J. Williams for a generous sample of sodium pantothenate and to Merck and Company for generous samples of calcium pantothenate and pyridoxine. We also thank Dr. Paul Györgyi and Dr. R. R. Williams for their suggestions and criticisms.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

AN APPARATUS FOR PRODUCING CONSTANT GAS MIXTURES[1]

STUDIES on anoxia have often been limited because of the prohibitive cost and variation in composition of commercial gas mixtures. With these facts in mind, an apparatus has been designed by means of which constant mixtures of atmospheric air and nitrogen can be made economically.

As seen in the diagram, two wet gas meters of three-liter capacity[2] are connected by means of ladder chain G and sprocket gears H and H′. Nitrogen from a cylinder is introduced into the first meter A after passing through bottle C. Water manometer E acts as a safety valve. The nitrogen originates as compressed gas and passes through meter A, creating enough mechanical force to turn meter B at a corresponding speed. Air, drawn into meter B as it revolves, passes into bottle D, where it mixes with nitrogen from meter A. Any change in rate of flow of nitrogen through meter A causes a similar change in

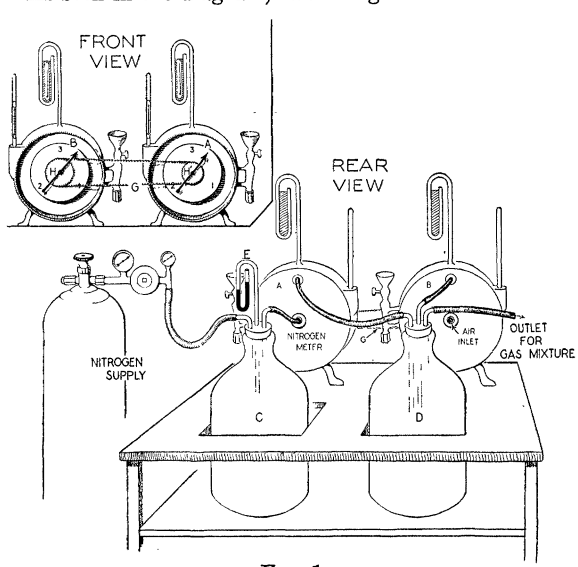

FIG. 1

TABLE 1

ANALYSIS OF GAS MIXTURES FROM THE APPARATUS (HALDANE HENDERSON METHOD)

Gear Ratio H : H′	Observed O_2, Vol. Per cent.	Observed CO_2, Vol. Per cent.	Observed N_2, Vol. Per cent.	Expected N_2, Vol. Per cent.
4 : 3	11.82	0.05	88.13	88.02
4 : 3	11.72	0.07	88.21	
1 : 1	10.33	0.01	89.66	89.51
1 : 1	10.22	0.01	89.77	
1 : 2	6.94	0.04	93.02	93.03
1 : 2	6.89	0.03	93.08	
1 : 3	5.35	0.01	94.64	94.75
1 : 3	5.38	0.03	94.60	
1 : 4	4.17	0.03	95.80	95.80
1 : 4	4.18	0.02	95.80	

[1] This study was aided by a grant made to Dr. G. W. Thorn by the Committee on Research in Endocrinology, National Research Council.

[2] American Meter Company, Model A L 18–3 (3 liters).

rate of rotation of meter B, keeping the composition of the mixture constant at all times. The apparatus is not designed to work against a large back pressure. Excess moisture can be removed from the gas mixture by passing it through a bottle immersed in cold running water.

Table 1 shows the composition of mixtures of nitrogen and atmospheric air produced with various gear ratios (H:H′) at a rate of flow of 2–8 liters per minute. An advantage of this apparatus is its ability to produce gas mixtures of constant composition, despite fluctuations in the rate of flow.

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SIMPLE FLOOR-NET FOR CATCHING THE ESCAPED LABORATORY RODENT

To save considerable time lost through the employment of many inefficient devices to capture animals that have escaped from their cages, I have constructed a simple net which may be used for the common laboratory rodents, rat, mouse and guinea pig, and in a larger size for rabbits.

Rats and mice, as well as guinea pigs to a lesser extent, are negatively phototropic. For example, I have seen escaped rats and mice kill themselves because of this tendency. By spying solid, black objects such as table legs or iron stoves and by considering these to be darkened holes in their momentarily confused landscape, they have crashed headlong into them. Therefore, the object into which the rodent should run ought to be black and preferably of soft material such as cloth.

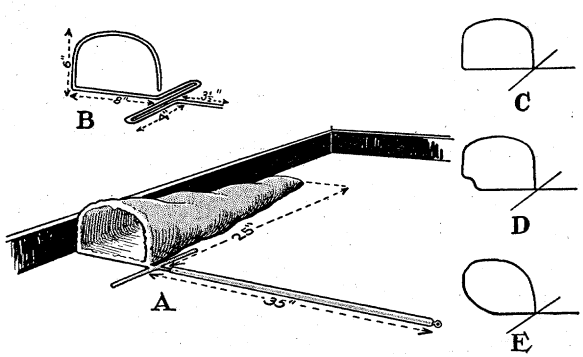

FIG. 1

Except on rare occasions laboratory rodents run along the walls, gauging their distance from the wall with their vibrissae. Therefore the device for catching them should fit snugly to the wall.

With a consideration of these special demands made upon such a device by rodent behavior, I have constructed a net as represented in Fig. 1 A.

A frame of 5/32″ galvanized iron wire is bent as shown in Fig. 1 B to form net opening shape (8″ wide × 6″ high), supporting arms (4″ long) and handle insert (3½″ long). To render the frame solid it is soldered or brazed together where the net-opening shape, supporting arms and handle insert come together.

The net-opening shape will vary in size with the animals for which it is employed, but for rats, mice and guinea pigs the dimensions given here will be satisfactory. The contour will vary with the profile of the laboratory wall where it joins the floor. Hence the net-opening shape may be of forms such as those shown in Fig. 1 C, 1 D and 1 E. The handle is 35″ long and the net bag 25″ long, as represented in Fig. 1 A.

A black cloth bag is sewed to the net-opening frame.

To use the floor-net, it is merely laid on the floor with the end of the net-opening at right angles to the wall and fitting the wall profile. The net-opening is maintained in a solidly upright position by the supporting arms. The animal is driven into the bag and the net-opening is closed by turning it under or over the net bag. If the animal is being driven from the direction opposite to that toward which the net-opening is oriented, merely turn the net inside out and proceed as before.

If wild rats are being housed in Wistar Institute 2-compartment-type cages, a smaller net of similar design but lacking the supporting arms may be held over the intercompartment door in one compartment and the rats readily driven through the door into the net when specimens are wanted for experimental purposes.

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