typical example of the Froehlich typus or the so-called dystrophia adiposo-genitalis of Bartels.

The patient was placed on the high protein diet of Folin and the following tables contain the data obtained in this study. The *high undetermined nitrogen* and *neutral sulphur* of the urine, can readily be noted, while the absorption of fat and protein was normal.

TABLE III.

Summary of data pertaining to total nitrogen and fat metabolism.

Date.	Total Nitrogen.			Feces.			Fat.	
	Ingested, Grams.	Excreted, Grams.	Balance, Grams.	Fat, Grams.	Total Nitrogen. Found, Grams.	Total Nitrogen. Per Cent. of Total N Ingested.	Ingested, Grams.	Percentage of Fat Absorbed.
6/26	18.2	17.9	+0.3	2.2	1.8	9.9	140	98.4
6/27	18.6	18.1	+0.5	2.2	1.8	9.7	140	98.4
6/28	18.3	17.5	+0.8	2.2	1.8	9.9	140	98.4
6/29	18.1	17.9	+0.2	1.8	2.1	11.6	146	98.8
6/30	17.6	17.4	+0.2	1.8	2.1	11.9	146	98.8
7/1	17.8	17.8	0	1.8	2.1	11.9	146	98.8
Total	108.6	106.6	+2.0	12.00	11.70	—	858	—
Average	18.1	17.7+	+0.33	2.00	1.95	10.8	143	98.6

69 (765)

The relation of pancreatic extract to the sugar of the blood.

By ERNEST L. SCOTT.

[*From the Department of Physiology of Columbia University.*]

In January, 1912, I reported a preparation of pancreas which when injected intravenously into dogs that had been rendered diabetic by pancreatectomy, lowered both the output of sugar and the D/N ratio. This preparation seemed to offer a ready means of attack for several of the problems bearing on the relation of the pancreas to sugar metabolism. Possibly the simplest of these is the relation between the amount of sugar present in the blood and the abundance of the pancreatic hormone present, and this is a preliminary report of my work on this subject.

Cats were killed and their blood was collected. The protein was removed and the blood was decolorized by a modification of the phosphotungstic acid method reported by Oppler. In deter-

mining the amount of sugar Munson and Walker's "Uniform method of sugar determination" was used and gave consistent results. In order to test its efficiency the method was controlled by division of a sample of blood into two portions. In one of these the glucose was estimated directly. To the other a known amount of glucose was added and then this amount was subtracted from the total recovered, leaving a remainder which should equal the amount found in the portion estimated directly. The results of one such control are shown in Table I.

TABLE I.

Blood sample 6 (two cats). Total blood used 190.05 gm.

	a	*b*	*c*	*d*
Gm. blood in sample	47.51	47.51	47.51	47.51
Gm. glucose recovered	0.0314	0.0328	0.0501	0.0497
Gm. glucose added	———	———	0.0178	0.0178
Gm. glucose in blood	0.0314	0.0328	0.0323	0.0319
Gm. glucose per 100 gm. blood	0.0661	0.0690	0.0680	0.0671
Average for *ab* and *cd*	———	0.0676	———	0.0676

It was necessary next to determine the amount of sugar in the blood of normal cats. The results for a series of ten cats are given in Table II. It will be noticed that with the exception of the cat which gave 76 mgm.—obviously an anomalous case—the greatest variation from the average is 4 mgms. The starred numbers indicate controls such as are reported in Table I. The results are calculated to grams of glucose per hundred grams of blood.

TABLE II.

0.0676	*
0.0676	
0.0618	
0.0760	
0.0653	
0.0628	
0.0627	
0.0646	*
0.0646	
0.0691	*
Average	0.0662

TABLE III.

	0.1026
	0.0783
	0.0719
	0.0811
	0.0692
Average	0.0806

The extracts of the pancreas that were used in the following experiments were prepared as reported previously, except that the

temperature was at all times kept below 50° C. instead of being allowed to go to 65° as before. So far five cats have been injected with the extract, the first three with two injections each and the others with one each. All injections were made beneath the skin of the back. The results are shown in Table III and are calculated to grams of glucose per hundred grams of blood as in Table I. The average for the injected cats is over 21 per cent. above that for the normal ones, and moveover the amount of sugar is greater in each injected cat than for any normal animal except the one that gave 76 mgm. This increase is very surprising and of peculiar interest. At present I am not willing to venture any explanation. There are however several possibilities which are amenable to experiment and I hope that further work will throw some light on it. In any case it would seem to put in grave doubt the idea that the pancreatic hormone always tends to increase the storage of glycogen in the liver at the expense of sugar in the blood.

There are a number of factors entering into the experiments so far performed that might cause the individual variations in the experimental results. Some of the more probable are: the length of time intervening between the injection and the death of the animal; the amount of extract injected; the age of the extract; the number of injections and the time intervening between them, etc. At present I am trying to find some of the optimum conditions.

70 (766)

On some blood pressor substances and adrenal separations in experimental immunity.

By J. P. ATKINSON and C. B. FITZPATRICK.

One of us in a work[1] on "The Preparation of Diphtheria Antitoxin" endeavored to demonstrate by charts of the systemic reaction following injections of cultures of the bacillus of diphtheria and its toxin that the real crux of the process of immunization was to determine when to re-inject. This question is still unsettled; in short, of two animals treated the same, upon being re-injected the one, which may apparently be the better prepared, dies and the other recovers.

[1] Fitzpatrick, *N. Y. Medical Journal*, April 27, 1895.