to the technique of Grigaut and of Autenrieth and Funk. Brown colors do not develop as with the Bloor method. An aqueous solution of naphthol green B, which is permanent, is used as standard.

Since the cholesterol esters give the color reaction, as pointed out by Bloor, saponification is unnecessary. With this method perfect duplicates and quantitative recoveries of added cholesterol and cholesterol esters may be had. The results are considerably lower than those obtained with the Bloor method.

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Morphin hyperglycemia as a test for pancreatic deficiency.

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We found that the subcutaneous injection of one or two milligrams of morphin sulphate per kilo in dogs whose pancreatic substance had been strongly reduced by coagulation *in situ*[1] or by partial resection, caused a much greater rise in the blood-sugar level than the same dose in normal controls.

The following table gives the results of some of our experiments. It will be seen that the animals in which the pancreatic tissue had been reduced (AK5, 32, 37, and BD3) showed an increase in the blood-sugar three to four times greater than that obtained in the controls after the same dose of morphin.

As these animals with deficient pancreatic tissue may legitimately be considered in a prediabetic state, the morphin hyperglycemia observed in them may be of importance clinically in detecting individuals with an impaired carbohydrate metabolism. That this impairment need not be great and yet yield a strong hyperglycemia to a small dose of morphin is indicated by the fact that our dogs whose pancreatic tissue had been largely coagulated nevertheless showed a surprisingly good tolerance for sugar. In six tests where 10 grams of dextrose per kilo were fed, and in two where 4 to 5 grams of dextrose per kilo were injected subcutaneously, the amount excreted was nothing in two tests; less than

[1] J. Auer and I. S. Kleiner, these PROCEEDINGS, 1917, XIV, 151.

0.5 gram per kilo in three; less than one gram per kilo in two tests; and 1.5 grams per kilo in one test.

MORPHIN HYPERGLYCEMIA.

No.	AK5.	AK32.	Control 1.	Control 2.	AK5.	AK37.	Control 3.	Control 4.	BD3.	AK40.	Control 7.	Control 8.
Dose per kilo..	2 mg.	2 mg.	2 mg.	2 mg.	1 mg.	2 mg.	2 mg.	2 mg.	1 mg.	1 mg.	1 mg.	1 mg.
Normal.....	0.130	0.192	0.112	0.108	0.111	0.109	0.101	0.090	0.125	0.109	0.104	0.114
0.5 hr. after morphin....	0.206	0.230	0.097	0.111								
1 hr. after.....	0.246	0.270	0.131	0.133	0.171	0.238	0.128	0.144	**0.213**	0.096	0.107	0.087
2 hrs. after....	**0.275**	**0.315**	0.128	0.151	**0.209**	**0.297**	0.124	0.138	0.197	0.141	0.136	0.115
3 hrs. after....	0.240	0.322	0.119	0.127	0.210	0.227	0.106	0.123	0.124	0.130	0.157	0.109
	All dogs fed 5 hours previously				Not fed to-day		Starved for 8 days		All dogs not fed to-day			

AK5: pancreas coagulated in situ with alcohol, 119 days before morphin test.

AK32: pancreas coagulated in situ with alcohol, 51 days before morphin test.

AK37: pancreas resected; uncinate process transplanted beneath skin 41 days before test.

BD3: five sixths of pancreas resected 90 days before; remaining sixth in connection with ducts.

AK40: uncinate process and tail of pancreas merely ligated 60 days before test.

Control dogs, normal animals, some were fasted.

Operated dogs all fed on regular *mixed* diet.

Blood samples from external jugular vein. Sugar determination by Myer's and Bailey's modification of the Lewis-Benedict method.

Whether the test will yield the same results in the human subject which we have obtained in dogs, can only be determined by trial, and such a trial we believe fully warranted by our findings. The procedure can easily be carried out with less than one cubic centimeter of blood if the Epstein method, for example, is used for determining the blood-sugar. The dose of morphin probably need not exceed 15–20 milligrams for an adult. The discomfort from the morphin will surely be considerably less than that following the ingestion of 1 to 200 grams of dextrose.

107 (1285)

Demonstration of the effects of castration on Seabright cockerels.

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Two years ago I demonstrated before this Society castrated F_1 and F_2 cockerels that had been hen-feathered, but which in