

# Meetings

## The Pancreas

A symposium on the pancreas, sponsored by the Mallinckrodt Foundation, was held from 23 to 25 May at Endicott House, Dedham, Mass. The discussion covered several phases—first, the pancreas as a whole with its anomalies, its injuries and infections and its tumors, both benign and malignant. The comments and conclusions may be summarized as follows. Most of the clinical tests for pancreatic function are relatively inaccurate. Pancreatic disease,

once initiated, tends to be progressive. The volume of secretion from the pancreas is surprisingly large, amounting to several hundred cubic centimeters per day. There is no known disorder due to overfunction of the pancreas as an exocrine organ, although probably the reason alcohol makes pancreatitis worse is that it increases the amount of secretion produced by the still functioning portions of the pancreas.

Mucus is an important constituent of the pancreatic secretion, and disturbance in mucus secretion as part of a generalized disease process leads to the development of cystic fibrosis. The basic unit for exocrine function seems to be

protein particles associated with the microsomal portion of the cell, which are concerned with making the enzymes. The key units probably come from the endoplasmic reticulum of the acinar cells. There is evidence that some type of feedback mechanism exists whereby the output of the proper enzyme is maintained to meet dietary needs. The particles of enzyme apparently require magnesium ions to maintain structural integrity. The enzyme particles form in the Golgi region, grow larger, and take up additional liponucleoprotein to become zymogen granules. The formed zymogen granule is from 0.5 to 1.5 micron in diameter. The nucleus seems to have a gene-governing function but does not participate directly in the process of enzyme formation. The zymogen granules pass by lacunar spaces through the cell membrane. The reaction of the fluid within the ducts is quite alkaline. It is possible that the bicarbonate which helps to maintain this alkalinity is secreted by the centro-acinar cells.

Among other diseases that affect the pancreas as a whole are hemosiderosis and hemochromatosis; these are difficult to distinguish from one another and perhaps are the same disease process basically. The effects of the disturbed iron metabolism are apparent in the pancreas as well as in other organs of the body, and there is damage to practically all the cells of the islands indiscriminately, except that the alpha cells seem to be relatively free from iron pigment. When the beta cells are sufficiently involved in hemochromatosis, diabetes results.

Decrease in pancreatic exocrine function is largely due to inflammatory or obstructive processes. Obstruction is probably the most important in bringing about loss of exocrine function, and obstruction always leads to infection, which, in turn, tends to destroy additional pancreatic tissue. In general, the islands of Langerhans resist inflammatory and neoplastic processes. Administration of crude extracts of the pancreas in general constitutes satisfactory substitute therapy in the event of loss of exocrine function. While ectopic pancreatic tissue may take over to some extent for a damaged pancreas, the occurrence is rare and the mass is usually small. Usually ectopic pancreas carries ductal, acinar, and insular elements. Under certain conditions new formation of islands may occur, even in the diabetic patient. This has been observed both in man and in experimental animals. The new formation comes chiefly from the epithelium of the ducts. Under normal circumstances, cellular turnover in the islands is extraordinarily slow. With acute damage, as in alloxan poisoning and acute toxic diseases, the beta cells may be particularly damaged



### A NEW IMPROVED MAGNETIC STIRRER

for VACUUM-PRESSURE  
or ATMOSPHERIC WORK

### The "LEW"-STANDARD

U.S.P.\*

- ENABLES SIMULTANEOUS MIXING, HEATING OR COOLING OF LIQUIDS IN A HERMETICALLY SEALED CONTAINER.
- PREVENTS BREAKAGE OF GLASS CAUSED BY FRICTION BETWEEN THE MAGNETIC STIRRING ROD AND FLASK . . . as in older types of magnetic stirrers.
- STURDY CONNECTION BETWEEN INSIDE STIRRING ROD AND MOTOR IS EASILY ACHIEVED . . . MAGNETICALLY!

The unit consists of a "Pyrex" Brand glass adapter having a  $\frac{3}{8}$  24/40 joint to fit flasks, an Alnico magnet with nylon-bearing surface to fit in adapter, an Alnico magnet with shaft to fit chuck of stirrer, and a stainless steel stirring rod and paddle, or "Pyrex" Brand glass stirring rod.

Contact between motor and lower magnet is readily made through the rotating magnetic field which takes place above the vessel proper thus enabling liquids to be mixed in a hermetically-sealed container, and simultaneously heated or cooled if desired.

Liquids up to a consistency of glycerine can be agitated with this magnetic stirrer. Stirrer is supplied without flask, motor or stand.

**Catalog No. 593491 "LEW"—STANDARD STIRRER**  
6-Pole Assembly—Consisting of upper and lower magnets, glass containers with cap, and a stainless steel stirring paddle. Container has  $\frac{3}{8}$  24/40 ground joint . . . Each \$51.25

**Catalog No. 593492 "LEW"—STANDARD STIRRER**  
Complete with 115-volt A.C. motor, 2 l. flasks with  $\frac{3}{8}$  24/40 joints, stand and clamps . . . Each \$92.00  
\* U.S. Pat.



PLAN NOW...  
to visit our  
**PARADE of  
SCIENTIFIC  
INSTRUMENTS**  
See New Instruments, New Apparatus,  
New Techniques . . . displayed by the  
world's leading manufacturers.  
**HOTEL NEW YORKER**  
34th St. & 8th Ave., New York, N. Y.  
**NOVEMBER 7, 8 and 9**



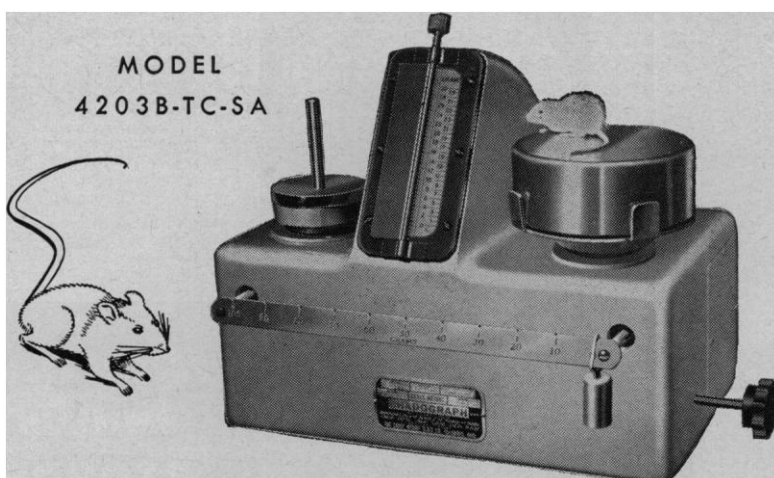
## STANDARD SCIENTIFIC

Supply Corp.

808 BROADWAY  
NEW YORK 3, N. Y.

LABORATORY  
APPARATUS  
REAGENTS  
AND  
CHEMICALS

## Positive stop readings in 1.13 seconds



# SHADOGRAPH®

small animal balance provides  
visible accuracy to 350 milligrams

Model 4203B-TC-SA Shadograph is designed especially for high-speed, precision weighing of mice, chicks, frogs and small rats. It can reduce tedious weighing operations by hours . . . give you more time for other work. Light-projection indication is fast . . . provides sharp shadow-edge reading on frosted glass dial. Parallax reading eliminated. Capacity 1500 grams. Dial graduated in two columns: 0-30 grams and 15-45 grams. Shutter closes dial column not in use. Beam 100 grams in 1 gram graduations. Weighs accurately in out-of-level positions. Other models up to 3 kilos for rats, hamsters and guinea pigs.



### TISSUE AND TUMOR BALANCE

Model 4142 recommended for fast, precision weighing of cancer tissue and tumors. Weigh-pan is shielded from air currents by clear plastic door . . . easily removed for sterilization. Rated capacity 15 grams; visible sensitivity to 5 milligrams. Movable viewer for 5-column dial, each column 3 grams with 5 milligram graduations. 5-notch beam corresponding to dial columns.

VISIT US AT:

THE NATIONAL INSTITUTES OF HEALTH SHOW  
Bethesda, Md., October 4-7

AND:

ANIMAL CARE PANEL SHOW  
St. Louis, Mo., October 26-28

**THE EXACT WEIGHT SCALE CO.**  
901 W. FIFTH AVE., COLUMBUS 8, OHIO  
In Canada: 5 Six Points Road, Toronto 18, Ont.

Sales and Service Coast to Coast



and regeneration may occur promptly.

The insular tissue makes up about 2 percent of pancreatic mass in normal tissue and may make up as much as 3 percent in obese persons. Insulin plays a role in stimulating pinocytosis in certain fat cells. The ratio of alpha to beta cells is approximately 1 to 3 in man. In the diabetic patient, the average weight of the island tends to be about one-third that of the normal island. If there are not qualitative evidences of damage to the island in diabetes mellitus, there is almost always a quantitative reduction. The first evidence of disease in the islands is hydropic or glycogenic vacuolization, which may progress to fibrosis or hyaline deposition. The pancreas of the young diabetic contains much less insulin than does that of a person who becomes diabetic later in life. Interestingly enough, the insulin requirement of the totally depancreatized individual or animal is somewhat less than that of the diabetic.

Insulin is clearly related to the beta cell, glucagon to the alpha cell. Insulin may properly be considered a growth hormone as well as a regulator of carbohydrate metabolism. Insulin tends to build glycogen and reduce fat. Unless special precautions are taken, insulin contains glucagon. Glucagon increases the metabolic rate and causes ketosis even before glycosuria develops. Glucagon may induce diabetes in some animals. After prolonged administration of glucagon to the experimental animal the alpha cells decrease in number.

SHIELDS WARREN

*Cancer Research Institute,  
Boston, Massachusetts*

### Forthcoming Events

#### September

20-23. Conf. on Pure Food Laws, London, England. (Secretariat, Pure Food Centenary 1960, 14 Belgrave Sq., London S.W.1)

20-24. Aeronautics, 4th European cong., Cologne, Germany. (Wissenschaftliche Gesellschaft für Luftfahrt, Eberplatz 2, Cologne)

20-7. International Atomic Energy Agency, 4th general conf., Vienna, Austria. (IAEA, 11 Kärntner Ring, Vienna 1, Austria)

21-22. Industrial Electronics, 9th annual symp., Cleveland, Ohio. (G. E. Hindley, Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17)

21-23. National Power Conf., Philadelphia, Pa. (A. B. Conlin, Jr., ASME, 29 W. 39 St., New York 18)

22. Society of Plastics Engineers, Binghamton, N.Y. (T. A. Bissell, SPE, 65 Prospect St., Stamford, Conn.)

22-23. High Temperature Resistance and Thermal Degradation of Polymers, symp., London, England. (Symposium Subcommittee, Plastics and Polymer Group,