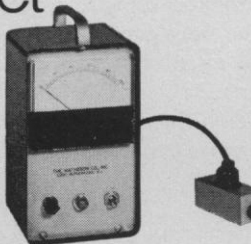


ASK MATHESON...

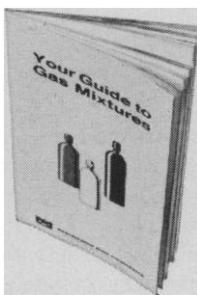
...about a new flowmeter that was made for laboratories on a budget

Flo-Tronic by Matheson costs little more than a rotometer. But a new thermal technique results in accuracy of 3% of full scale with changes in pressure and temperature having minimal effect on readings. Features: Fast response—2 sec. (0 to full scale)... Reproducibility—2% of full scale... Four flow ranges—0-300 to 0-10,000 std. cc./min.



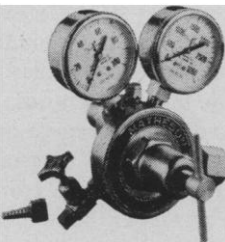
...to explain why it pays to leave the mixing to us

It pays because Matheson has the high load, high sensitivity analytical balances necessary to make gas mixtures gravimetrically (the gas is actually weighed). We call our gravimetric mixtures Primary Standards. They have accuracies equal to or exceeding 1% of the component value. At concentrations above 2%, accuracies are $\pm 0.02\%$ absolute. Costs a little more but these accuracies pay off for you in minimized errors and reduced overall costs. A final reason—our experience in making gas mixtures is unequalled in the industry.



...why the two stages in our Model 8 Regulator result in maximum control and longer life

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Florida. The seeds are ovoid, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, combining bright glossy vermilion with jet black. In old seeds the vermilion area may be dark red, reddish-orange, reddish-brown, or reddish-yellow. The black portion, restricted to the hilum end of the seed, occupies about one-third of the seed coat. The black area is not altered with age.

These seeds contain at least one deadly poison, the phytotoxin abrin, an albumin. Other physiologically active substances are also present. Deaths from ingestion of the seeds, when chewed and swallowed by humans and when fed without their seed coats to animals, have been recorded. Extracts from the seeds, given subcutaneously, are approximately 100 times more toxic than swallowed seeds (2).

I have conducted preliminary tests which indicate that germinating *Abrus precatorius* seeds have an adverse effect on germinating ryegrass seed (*Lolium multiflorum* Lam. and *L. perenne* L.). The Hazardous Substances Branch of the Food and Drug Administration also plans to conduct tests on the toxicity of *A. precatorius* seeds.

CHARLES R. GUNN

Crops Research Division,
U.S. Department of Agriculture,
Beltsville, Maryland 20705

References

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2. J. M. Kingsbury, *Poisonous Plants of the United States and Canada* (Prentice-Hall, Englewood Cliffs, N.J., 1964).

Einar Lundsgaard

Word has come from Copenhagen of the death, during the last days of 1968, of Einar Lundsgaard. In these times of rush and short recall, I am particularly keen to refresh the memory of the scientific community about his truly great discovery which is now slipping into the background. Personally and scientifically, I encountered Lundsgaard during my period of maturation and I owe him much. I was in Meyerhof's laboratory in Heidelberg when he came in 1930: tall, blond, and very Danish, with his handsome wife, Helle. There we first met and became friends, and later when I moved to Copenhagen in 1932 and stayed until 1939, we saw each other a great deal. In the fall of 1967, his friends and colleagues went to Copenhagen to celebrate the 40th anniversary of the discovery of what

he called the a-lactacid contraction of iodoacetate-poisoned muscle. When this startling news reached us in Meyerhof's laboratory, it was very upsetting to our group which looked upon glycolytic lactic acid as the link between metabolic energy generation and muscle contraction.

The interest in iodinated organic compounds which might have metabolic actions similar to thyroxin induced Lundsgaard to study iodinated acetic acid. Its injection into animals, however, yielded a rather unexpected effect: for a few minutes the animal behaved quite normally, but suddenly it turned over and its muscles became rigid. Such rigor was dependent on prior muscle activity since denervated or curarized muscles did not respond. But when rigor developed, the expected burst of lactic acid was missing. Lundsgaard elegantly solved the puzzle. He showed that: (i) iodoacetate inhibited glycolysis; and (ii) that poisoned muscle performed a limited number of normal contractions at the expense of dephosphorylation of creatine phosphate, then newly found in muscle and in need of a function. The rigor mortis-like condition developed when the limited supply of creatine phosphate was exhausted.

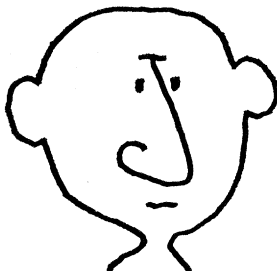
Lundsgaard had discovered that the muscle machine can be driven by phosphate bond energy, and he shrewdly realized that this type of energy was "nearer," as he expressed it, to the conversion of metabolic energy into mechanical energy than lactic acid. He was right, because it soon developed that the glycolytic reaction is a feeder of phosphate bond energy and not of acid. On the way, Lundsgaard also provided an enormously useful tool for studying enzyme mechanisms. Iodoacetate has become one of the standard reagents for SH-blocking in enzymes. Thus, iodoacetate inhibits glycolysis because it blocks the functional SH in phosphoglyceraldehyde dehydrogenase.

In the middle 30's, Lundsgaard became professor of physiology at Copenhagen University and trained many biochemists and physicians. Herman Kalckar was one of his graduate students. And, even though I did not formally work with Lundsgaard, I consider myself his pupil. My subsequent work was profoundly influenced by his discoveries which changed our concepts of metabolic energy transformation.

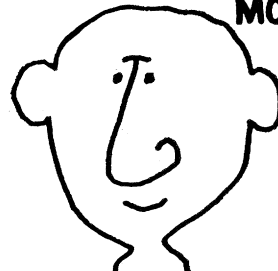
Fritz Lipmann

Rockefeller University,
New York 10021

**I USED TO INSIST
ON DOING
ALL pH MEASUREMENTS
MYSELF**



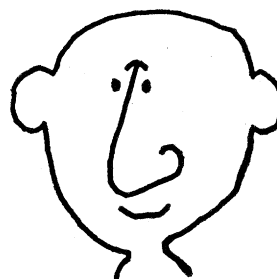
**I WAS RESPONSIBLE
FOR BUDGET AND FIGURED
I'D HOLD ELECTRODE
BREAKAGE DOWN TO ONE A
MONTH**



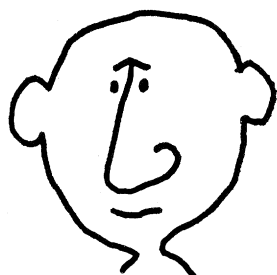
**THEN CORNING
OFFERED A SIX MONTH
ELECTRODE GUARANTEE
AGAINST PRACTICALLY
EVERY-
THING**



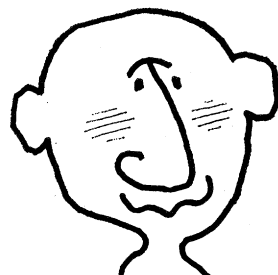
**SO I DECIDED
TO LET EVERYONE
USE THEM AS
HE NEEDED TO--**



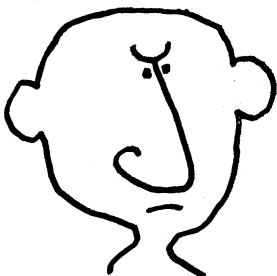
**SO FAR
ONLY ONE'S
BEEN
BROKEN**



**I
DID
THAT**



**AND IF
I CATCH THE GUY
THAT SNICKERED
I'LL BREAK HIS NECK.**



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