

January



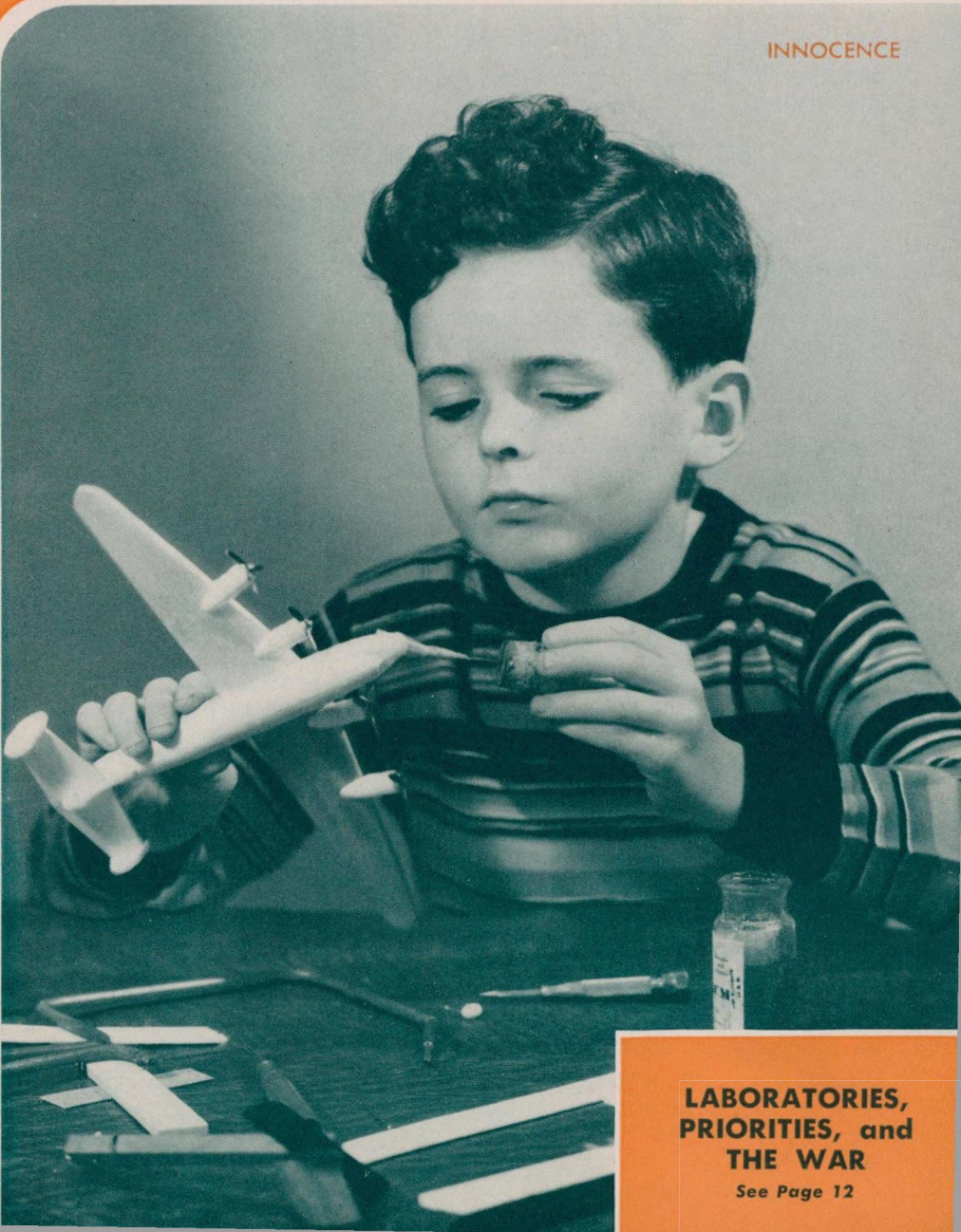
Lab ORATORY

Published by SCHAAR & CO.

INNOCENCE

J
A
N
U
A
R
Y

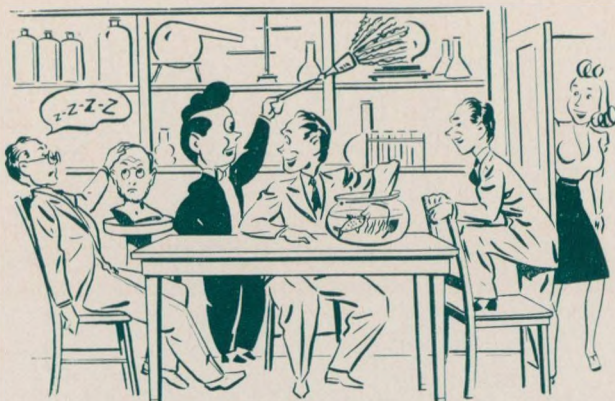
1
9
4
2



Vol. II
No. 1

**LABORATORIES,
PRIORITIES, and
THE WAR**

See Page 12



AN EPOCHAL
CONFERENCE

33 YEARS OF LABORATORY ORATORY— PRESTO: "LAB-ORATORY"

Many of our readers have asked how Lab-ORATORY came to be, and how Ermintrude and I got our jobs. It was like this: both of the Schaar customers were in the office one day, asking about deliveries. "You know," one of them observed, "Schaar and Company has been in business for thirty-three years, and a lot of people don't even know who you are!"

Our other customer knew what to do about that. "Write a book," was his advice. "Murgatroyd, here, is quite a dispenser of laboratory oratory; get him to write it up. Tell 'em all about yourselves, too." So I got promoted from office boy to office boy and editor.

The first conference was epochal. E. H. Schaar had the floor. "Murgatroyd," he said, "you've got to tell them that we sell laboratory supplies—glassware, balances, chemicals, instruments, and I don't know what all. Keep reminding them."

C. E. Schaar chimed in, "You've got to keep them laughing," he proclaimed. "Even chemists are human—sometimes."

Then it was B. E. Schaar's turn. "Don't forget, these men are scientists," he warned. "They want to read about things scientific."

Our instructions were clear. Ermintrude volunteered to help, and we went to work . . .

And here already is our second issue. To judge by all the nice letters we got after the first issue was published, we'll just have to keep on. We're grateful to all of you who wrote, whether your letters were complimentary or not! (A lot of them were not!) Well, we can't please everybody all of the time, but we'll keep on trying! Jokes, history, puzzles, science—we do hope you'll find something in it to read and enjoy!

Murgatroyd



MURGATROYD BLOWS
HIS OWN HORN . . .

ANTOINE LAURENT LAVOISIER

(1743-1794)

GODFATHER OF MODERN CHEMISTRY



"PHLOGISTON", said Lavoisier, "is a vague principle which adapts itself to any required explanation." It was all very unscientific, so he set out to disprove what had become the basic theory of all chemistry.

For centuries man had sought to discover the nature of burning. What happened when something went up in smoke? Finally, Becher and Stahl hit upon "phlogiston". Phlogiston, they said, was an inflammable earth that was a part of everything that burned. As a substance burned, it gave up phlogiston, and lost weight accordingly. When it was pointed out to Becher that the ashes (calx) of a metal weighed more than the original metal, he had to think fast. Phlogiston, he explained, could also weigh less than nothing! This strange theory flourished.

Phlogiston was endowed with innumerable, often contradictory properties. Every new discovery was viewed in the light of this "basic" principle, and was made to conform!

In place of the old theory, Lavoisier put forward his idea of "caloric", or heat. Heat, he said, was a material

substance, a fluid that could enter into anything combustible. Lavoisier did not endow "caloric" with all the wonderful properties of phlogiston, nor did he claim that it was the basic principle of science. Actually, the "caloric" idea never really satisfied him, but he felt that anything was better than phlogiston.

Lavoisier performed his classic "twelve day experiment" of heating mercury in a furnace for twelve days. At the end of that time, he collected the red substance (oxide of mercury) which had formed. He heated this and recovered all of his original mercury plus the oxygen. As a result, Lavoisier was able to state that burning was a combination of a gas from the air, which he later named oxygen, with a burning substance. The phlogiston myth was completely exploded.

Lavoisier was a versatile man. He had a clear and logical mind. For centuries man had believed that water was "transmuted" into earth and rocks. Van Helmont had planted a small tree in a pot containing 200 pounds of dried earth. For fifteen years he had carefully watered it; nothing else was added. In that time the tree gained 164 pounds and the soil had lost two ounces. Therefore the water had been changed into the tree!

Lavoisier did not agree. He performed a simple experiment. He boiled rainwater for one hundred days, in a flask so shaped that the

(Continued on Page 7)



ELECTRIC *Multiple Unit* MUFFLE FURNACES



TYPES 51,
52, 54, 56



Replaceable
**HEATING
UNITS**



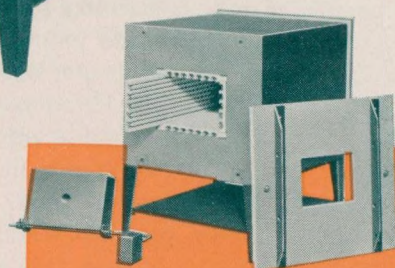
Electric **HEATING ASSURES UNIFORM HEAT**

Temperatures up to 1750° F. can be reached in 50 minutes or less. For short periods, the furnace can be operated at 1850° F.

Types 62, 64, and 66 furnaces are provided with a special rheostat, mounted in the furnace housing.

Types 51, 52, 54 and 56 furnaces can be furnished with a separate rheostat; several models are available.

All types can be furnished with indicating pyrometers, at an additional cost of \$30.00. Furnaces are available in four muffle sizes.



**TYPES 51, 52,
54 AND 56**

\$35⁰⁰ AND UP

**TYPES 62, 64
AND 66**

\$90⁰⁰ AND UP

SCHAAR & COMPANY

754 WEST LEXINGTON STREET

CHICAGO, ILLINOIS

SPEAKING OF VITAMINS



These days, vitamins are a very popular subject of discussion and debate. Almost everybody has something to say about them. The men who first talked about them knew that minute quantities of the *amines*, or related substances, were essential to proper nutrition and growth. Some of them added the Latin word for life (*vita*), and started all this talk about vitamins. Of course, we know now that only a few of the vitamins actually contain nitrogen, but the name has not changed.

Vitamin research seems to have begun in the late 1800's. In 1881 a Belgian, Lunin, demonstrated that the known constituents of milk were incapable of supporting life. Therefore, he postulated that it must also contain small quantities of unknown substances which were essential to life. Since that time, the relation of vitamins to many diseases has been shown. As each new vitamin was isolated (or as its presence was sus-

pected) it was given a letter of the alphabet, to distinguish it from its cousins.

With the growing importance of vitamins in our daily diet has come increased necessity for measuring them accurately. One of the early methods of analysis was the biological assay. But lately has come the realization that these tests, involving specially-developed animals, are too slow and too costly. And, too, many authorities have questioned their accuracy. The search for better methods has led to the development of colorimetric and fluorometric procedures, and the photoelectric colorimeter and fluorescence meter is now an indispensable piece of equipment in the vitamin-assay laboratory.

Needless to say, the very small quantities to be measured (B₁, for instance, is generally in solution in about one part in ten million) demand extreme sensitivity and accuracy in the measuring instrument.

Editor's note: Information on many phases of vitamin research may be had by writing to Lab-ORATORY, 754 W. Lexington St., Chicago, Ill.

ERMINTRUDE INTRUDES

"You add nothing to your height
by standing on your dignity"





WE DID!

Getting out this page is no picnic. If we print jokes, people will say we are silly. If we don't, they say we are too serious. If we clip things from other magazines, we are too lazy to write them ourselves. If we don't, we are too fond of our own stuff. If we don't print contributions, we don't appreciate true genius. If we do print them, the column is filled with junk. Now, like as not, someone will say we swiped this from some other magazine . . . WE DID!

Travelers Health Bulletin.

YOUR ORDER

Keep your temper, gentle Sir,
Writes the manufacturer.
Though your goods are over-due . . .
For a month, or maybe two.
We can't help it; please don't swear.
Labor's scarce and metal's rare,
Can't get steel, can't get dies,
These are facts—we tell no lies.
Harry's drafted, so is Bill.
All our work is now uphill,
So your order, we're afraid,
May be still a bit delayed.
Still you'll get it—don't be vexed—
Maybe this month, maybe next.
Keep on hoping, don't say die,
We'll fill your order bye and bye.
"PURCHASING".

OH, FOR GOODNESS SAKE!

The depression made for cold-blooded business methods . . . When an Eastern firm received word that one of its salesmen had been found dead in Chicago it immediately wired as follows: "Send samples back by freight, and search the body for orders."

"Through the Meshes," put out by The W. S. Tyler Company, is a great consolation. Here are a few of the "nifties" we have "demeshed" by straining them "through the meshes":

A BIT STRAINED, BUT FOOD FOR THOUGHT, NEVERTHELESS

They do not doubt, say the editors, that the Americans spend more on book-cases and book-ends than we do on books.

IT'S STILL BREAD, NO MATTER HOW THIN YOU SLICE IT

They claim its only the old-timers who can remember when every household had a bread knife!

GYPSY ROSE A COMIC, TOO?

They feel that only the comic strip and the sporting news are left to remind us of the good old days, as far as the newspapers are concerned.

BLUE OVER BLUEPOINTS

They like oysters. But they point out that fourteen are not as good—from the food-value point of view—as an egg. And 225 are about as good as a pound of beef.

TELLS ONLY HALF THE STORY

Hotel Guest: "Please send up a full length mirror."

Clerk: "But there's a HALF length mirror in your room already."

Hotel Guest: "Yes. And twice I've gone out without my trousers!"

The New SPENCER POLARIMETER

Its Low Cost Makes This New Polarimeter Available for Classroom Work and "Lab" Routine

- LIPPICH Half-Shade Polarizer, same as in more expensive instruments.
- Polaroid Elements make the use of high-priced Nicol Prisms unnecessary.
- Careful workmanship and high quality materials insure accuracy.
- Simplified design and rugged construction mean long service.

Write for Bulletin S32 for additional information

SCHAAR & COMPANY

Complete Laboratory Equipment
754 WEST LEXINGTON ST., CHICAGO

No. 8143C
Complete with Orange Filter and 200 mm. Sample Tube.
\$87.50 PLUS TAX

ANTOINE LAURENT LAVOISIER (Continued from Page 3)

boiling liquid fell back into it. At the end of the hundred days, there was just as much water as at the beginning. He had shown that water could not be "transmuted" into earth, rocks or anything else.

His many activities included a plan for lighting the streets of Paris. He served, with Benjamin Franklin, on a committee to investigate the activities of Dr. Friedrich Mesmer, and had some harsh words to say on the subject of hypnotism. He was the moving spirit behind a plan to modernize the language of chemistry and wrote a popular book using the new terminology. This was received with scorn at first, but gradually his new language was accepted. Many of our present-day terms were first used by Lavoisier; his work did much to strengthen the effort Berzelius made

later to introduce simpler symbols and formulae.

Lavoisier's family was well-to-do; he never had to struggle for education or food, as did so many of the immortals. As did most of the aristocracy, he bought the privilege of collecting taxes, which he was allowed to keep. Yet he had a deep sympathy for the hard lot of the masses, and urged reforms. In the many positions of public trust he held, over many years, he did much toward putting these reforms into practice. But always he remained an aristocrat as well as a scientist. As the former, he was beheaded on the guillotine of the French Revolution. As the latter, he had to be dragged from an experiment, to appear before the tribunal that voted his death.



AN INSTRUMENT OF UNUSUAL ADAPTABILITY FOR MEASURING LIGHT TRANSMISSION OR FLUORESCENCE



LUMETRON MODEL 402E

for
ANALYSIS OF

- FOODS
- VITAMINS
- BLOOD
- WATER
- METALS
- OILS
- PAINTS

and hundreds of
other products, by
measuring

COLOR
FLUORESCENCE
TURBIDITY
CONCENTRATION

SELECT FROM THESE FOUR MODELS

MODEL 401

Self-contained with built-in pointer type galvanometer. For general colorimetric determinations with broad-band or tricolor filters. Sample holders up to 1" long.....

\$215.00

MODEL 402E (Illustrated Above)

For general colorimetric determinations and for use with monochromatic filters. External lamp-and-scale galvanometer. Sample holders up to 6" in length for accurate measurement of extremely transparent liquids.....

\$275.00

MODEL 402EM

For colorimetric determinations comprising all applications of Model 402E and including transmission measurements in the ultraviolet region, with mercury vapor lamp and quartz optical system

\$418.00

MODEL 402EF

For all applications of Model 402E and 402EM, including fluorescence measurements; with multiple reflection galvanometer and special multiple-photo-cell fluorescence pick-up unit.....

\$525.00

Above prices include tax.

Lumetron

PHOTOELECTRIC COLORIMETER
and FLUORESCENCE METER

Flexibility and Precision in the Use of Light for Chemical Analysis

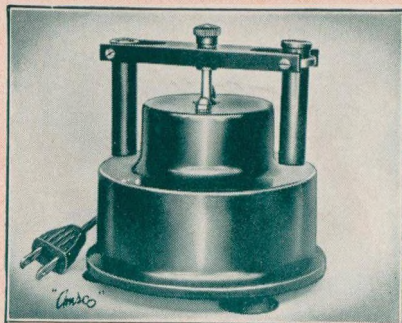
Wherever colorimetric analysis is carried on—in the range of visible light or in the range of ultraviolet light—the LUMETRON will do the job, quickly, easily and accurately. Here are but a few of the reasons why the LUMETRON gives you the greatest flexibility with the greatest precision: Sample holders from 1/16 inch to 6 inches in length—or test tubes. Fourteen monochromatic filters—four broad band filters—tricolor filters—neutral filters—or a filter made to meet your own individual needs. Incandescent light source and glass optical system—or mercury vapor light source and quartz optical system.



WRITE FOR INFORMATIVE BULLETIN
FOR FURTHER DETAILS

SCHAAR & COMPANY
754 WEST LEXINGTON STREET CHICAGO, ILLINOIS

AMSCO MICRO-CENTRIFUGE FOR SEMI-MICRO QUALITATIVE ANALYSIS



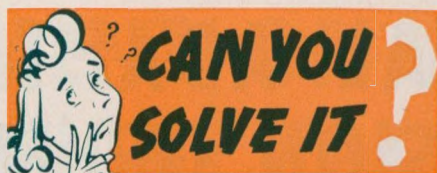
MADE FROM A NEW
THERMO-PLASTIC

A PRACTICAL CENTRIFUGE FOR CLASSROOM WORK

The AMSCO MICRO-CENTRIFUGE meets the demand for a low-priced centrifuge that can be used in demonstrating the micro-chemical technique. An increasing number of schools are adding courses in micro-chemistry to their curriculum; many teachers consider the method far superior to the older macro methods. The Amsco weighs only 29 ounces! Its sturdy motor operates on either A.C. or D.C. current, at a speed of approximately 1500 R.P.M. under full load.



SCHAAR & COMPANY
754 West Lexington Street
CHICAGO, ILLINOIS



THE DILEMMA OF THE DIMINUTIVE DORY



Murgatroyd, Ermintrude, and Dr. Deadwood, the famous explorer, were returning from the wilds of Cannibaland, with three exhibits for the circus. They had managed to capture a whole family of ferocious Eatemalivi—Poppa Eatemalivi, Momma Eatemalivi, and Junior Eatemalivi. As long as the three explorers were not outnumbered, they were safe. But if two cannibals happened to catch one explorer alone, it would have meant meat for dinner. Shortly there came a time when they had to cross a stream. The only means of transportation was a boat, just big enough for two.

Six pebbles—three red and three white—near the bank, gave the smart Ermintrude an idea that got them all safely across. How? (See page 14)



\$10,000.00 REWARD

Two unhappy Americans were struggling through the desert, lost, tired, and all but dead from thirst. At last they couldn't move another step. They were found by another American, who described himself as a sporting gentleman. Seeing their predicament, he offered \$10,000.00 to the one whose camel should arrive at the oasis—10 miles distant—last. Each man wanted the \$10,000.00, so they dawdled about. Finally the sporting gentleman whispered something to each man; each one jumped on a camel and dashed off! What had he said? (See page 14)

New! MULLITE COMBUSTION BOATS

- Non-porous
- Low-cost
- Usable several times
- Need no refractory lining

Per 100
\$7.50



Per 1000
\$45.00

SCHAAR & COMPANY

754 WEST LEXINGTON ST.
CHICAGO, ILLINOIS

A NEW FILTER FABRIC

A new "Varnitized" filter cloth has recently been announced for use in Buechner funnels. It is made of a DuPont Cellulose material, and is treated to withstand the action of alcohol, acetone, ether, and nearly all organic solvents. It is also resistant to water, dilute acids, and alkalis.

This new filter fabric can be used over and over—it is washable and dries quickly. It permits rapid filtration, and will peel off the filter cake.

Write for Prices.



Murgatroyd Moans

"Saying the wrong thing is a misfortune; trying to explain is a disaster."

JUST in JEST

A BOBTAIL STRAIGHT

A group of big oil men in Washington were discussing government taxation one evening.

"There is no telling where we will land by the time the tax bill is settled," said one. "Our status is as uncertain as that of an old Negro slave I once heard of. Somebody asked him whom he belonged to. 'I don't know, suh,' he replied. 'Old Marse, he's upstairs playin' pokah.'"

JUST ANOTHER DRIP

A Scotchman had been presented with a flask of rare old Scotch whiskey. He was walking briskly along the road toward his home, when along came a car which he did not sidestep quite in time. It threw him down and hurt him badly. He got up and limped down the road. Suddenly he noticed that something warm and wet was trickling down his leg. "Oh, Lord," he groaned, "I hope that's blood!"

LOW LYING LINKS

The visitor paid his greens fee, fixed up a match, and went out to the first tee. Taking his stance, he gave a wild swing and missed completely.

"By Jove!" he said to his opponent. "It's a good thing I found early in the game this course is at least two inches lower than the one I usually play on."

THE THREE "UPS"

Advice to after-dinner speakers: Stand up to be seen, speak up to be heard and shut up to be appreciated.

LABORATORIES, PRIORITIES, and THE WAR



For the past six weeks we have been at war. As never before, the place of the scientist and his laboratory is recognized in the National Defense Program. As never before, the importance of certain strategic materials, and the necessity of directing their distribution, are demonstrated. In these tragic times we have turned more and more to the system of priorities to assist and to speed our defense industries. Laboratory supplies, as well as nearly all material and consumer goods, have inevitably come within its scope.

We must ever bear in mind that the purpose of the priorities system is *ONLY* to assure that defense production is speeded as much as is humanly possible—that every available resource be utilized—that final victory be made sure and swift.

We need not dwell here on the place which the scientist and the laboratory occupy in our wartime scheme of things. Too great are the problems of modern warfare, too delicate the operations of modern industry, to ever think that they could be carried on without research or control. But perhaps it would be well to consider how the scientist has been assured the tools of his trade, how the priorities system aims

to provide a never-ending flow of supplies to the laboratory.

In an earlier issue we discussed the Research Laboratories Supply Plan, which assigned an A-2 rating to research laboratories. Since then, a new plan has been put into effect which assigns an A-5 rating to producers of laboratory equipment and reagent chemicals. We need hardly say that this new plan will prove a great boon to all laboratories, yet certain shortcomings may be pointed out: first, a manufacturer who wishes to apply his A-5 rating to secure raw materials must wait until all higher priorities have been satisfied; second, the plan does not fully provide for the supply houses which must keep stock on hand at all times if they are to give prompt service to the laboratories; third, voluminous records must be kept, which will eventually increase production costs. It is to be hoped that these shortcomings will, sooner rather than later, be overcome, but it is hoped that the plan in its present form (which expires March 31, 1942) will do much toward cutting the red tape which has so often hindered the efficient working of the priorities system.

Laboratory workers everywhere may well be proud of the part which their profession enables them to play in these days when our country so needs the service of every man and woman.

We share in this pride, inasmuch as we are privileged to contribute directly to the defense program through the instruments and materials that we supply to government and industrial laboratories.

The MOB MURMURS



A SAD MISTAKE

The mistake that's most deplorable
Is not to read Lab-ORATORY.

This is from the pen of our true friend from South Bend, Ind., R. F. Wilson. We can heartily second the motion.

NO PLAY BOY

Dr. W. S. Hoffman told us about a radio character named Murgatroyd, whom he heard on the air three or four years ago. Our Murgatroyd admits he has been on the radio, but doesn't remember ever being a character in a play.

MAKETH YE ED TO GLOW

We were agreeably surprised at the number of people who wrote in,

asking that we send them Lab-ORATORY. There is nothing, positively, that makes an editor (and his fair assistant) feel better than to have his efforts so appreciated that people ask for copies. Oh, happy day!

NO WHIMSY, PLEASE

Mr. Arthur Besley Smith of Chicago has come forward in favor of scientific and historical articles, and is strongly opposed to our jokes, puzzles, whimsy and cartoons. How many of you are in agreement? Don't try to spare our feelings, either.

SEND IN YOUR PHOTOS

A \$5.00 bill goes to the reader sending in the photo ERMINTRUDE says is the one to use on the cover.

Ainsworth ANALYTICAL BALANCE

for

EDUCATIONAL LABORATORIES



TYPE L C

Capacity 200 Grams
Sensitivity 1/10 Mg.

\$95⁰⁰

A LOW-PRICED BALANCE THAT WILL GIVE LONG SERVICE

The Ainsworth Model LC, designed primarily for student use, is also ideally suited for the industrial laboratory, when a high degree of accuracy is not required. Like the more expensive Ainsworths, it has a handsome aluminum case, finished in crackled black lacquer.

This balance is well and sturdily constructed, to give long service with a minimum of attention. It answers the demand for a low-priced balance, combined with accuracy and efficiency.

SCHAAR & COMPANY
754 WEST LEXINGTON STREET
CHICAGO, ILLINOIS

MURGATROYD MUMBLES



WE'RE STILL ASKING FOR IT!

In our last issue we invited readers of Lab-ORATORY to write to us about matters of interest — hobbies, short cuts, routine, experimentation, people, observations, jingles, "wise-cracks," philosophic musings, etc. The response was a bit short of overwhelming, although we did receive many interesting letters. Parts of several are printed on the preceding page. Keep 'em coming. We'll give space to those we like the best.

ANSWERS TO "CAN YOU SOLVE IT" BRAIN TEASERS ON PAGE 10

"DORY DILEMMA"

First, Murgatroyd and Poppa Eatmalive rowed over, and Murgatroyd went back. Then Momma and Junior rowed across, and Junior came back. Murgatroyd and Ermintrude went over then, and Murgatroyd and Poppa E. rowed back. (Score: Murgatroyd, the good doctor, Poppa and Junior on the near side, Momma E. and Ermintrude across the stream.) Now, Murgatroyd and Dr. Deadwood went to join Ermintrude, and they sent Momma E. on two trips, to bring back Poppa and Junior. (Editorial note by Murgatroyd: If you know a faster way to cross that stream, please let me know.)

"\$10,000.00 REWARD"

All he said was, "Ride your friend's camel."



$$\frac{\pi r^2}{\sqrt[3]{xy^4z}}$$

ERMINTRUDE ELUCIDATES

"Whether Health or Wealth is the greater blessing depends on which one you lack."

ADDING INSULT TO INJURY

Years ago, while making an overnight trip on a small railroad, your editor, Murgatroyd, retired early. A disturbing itch at once assailed him and kept him tossing and squirming. In desperation, he turned on the light and was horrified at the sight of a full battalion of the bug brigade. Dressing in haste, he fled to the smoking room, where he spent the rest of the night.

Next morning, weary but vengeful, your editor mailed a withering masterpiece of vituperation to the railroad president, demanding instant reparations. Back by return mail came a letter so humbly apologetic that your editor was filled with remorse for his ill-tempered invective. He was on the point of penning a note of regret for his hasty words. Then suddenly he stopped, aghast. There, attached to the railroad's letter, by mistake, was his original blast, and across it was scrawled, with a heavy crayon: "Send this guy the bedbug letter."

WANT THIS NEW MERCK BOOKLET?

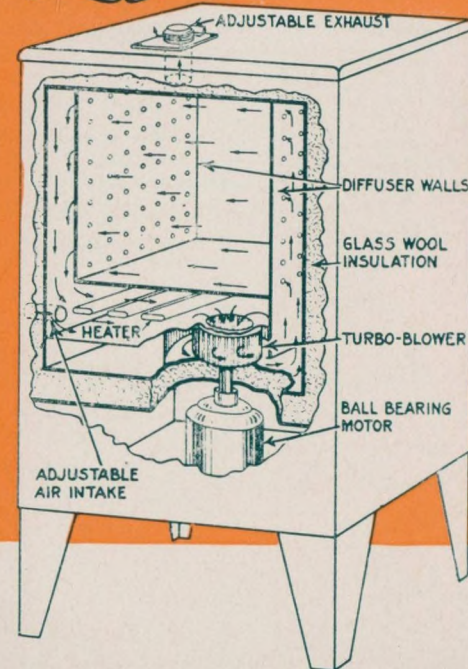
Merck and Co. has recently published a booklet describing each of their more than 600 laboratory chemicals. This handy catalog includes much useful information, as well as listing the size packages in which each item is available and giving the analysis of each of the CP chemicals. If you'd like a copy, send a postcard to Schaar and Co., 754 W. Lexington Street, Chicago, Illinois.

PRECISION FREAS

Constant Temperature

LABORATORY EQUIPMENT

STANDARD OF QUALITY
FOR 34 YEARS



INCUBATORS, OVENS, STERILIZERS, VACUUM OVENS, IN A WIDE VARIETY OF MODELS AND SIZES, DESIGNED TO FIT EVERY NEED

All-metal, double-walled cabinets, finished in rust-resisting iron. Stainless steel at slightly higher cost.

Glass wool insulation three inches thick between the inner and outer walls.

Interiors - - - walls, shelves, racks and fastenings - - - are of stainless steel.

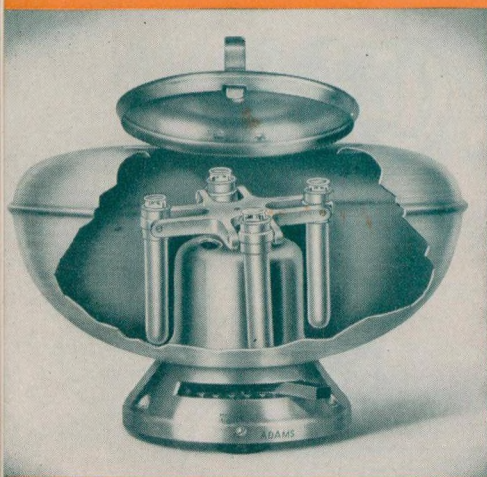
WRITE FOR COMPLETE BULLETINS

SCHAAR & COMPANY

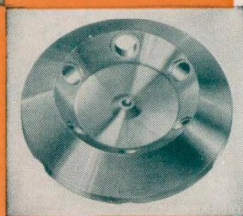
754 WEST LEXINGTON STREET

CHICAGO, ILLINOIS





THESE ADAMS STANDARD
AND ANGLE TYPE HEADS
ARE INTERCHANGEABLE



ADAMS *Centrifuges*

- All test tubes up to 15 ml. are interchangeable
- Universal Hi-Speed Motor operating on both A.C. and D.C.
- Six Point Rheostat for flexible speed control
- Rubber Suction Feet cut down vibration and prevent "creeping"

*Operating Speeds
as High as
4900 R. P. M.*

Here is one of the best known and most widely used lines of laboratory equipment in the entire field. Adams approved construction and interchangeability offer you a variety of types, speeds and capacities that makes them readily adaptable to the requirements of any laboratory, from simple qualitative analysis in the school "lab" to the exhaustive experimental routine of the most elaborate industrial research department.

Write for Additional Information.

PRICED AT

\$52⁰⁰

AND UP

SCHAAR & COMPANY

754 WEST LEXINGTON STREET

CHICAGO, ILLINOIS