

## Tricks of the Trade

IVA WARD MANLEY

Maryville High School, Maryville, Missouri

### OCEANS OF FUN WITH OCHNS

My favorite demonstration is stored in a box on a shelf from year to year. It consists of three wide-mouthed bottles tightly stoppered and labeled oxygen, hydrogen and nitrogen respectively, a large stick of charcoal, and a lump of roll sulfur.

When discussing the composition of protoplasm we display these elements, and usually ask,

"Now if we empty all these elements into this large jar and stir them thoroughly, what will we have?"

Some pupil usually answers, "Protoplasm." The amusement which follows this answer launches us into a discussion of elements, compounds, mixtures, chemical changes and living matter.

Later in the year, during the study of foods, the same materials are brought out with the addition of an iron nail and strips of copper, zinc and magnesium. Three small bottles also exhibit small pieces of phosphorus, sodium, and potassium, each element covered with the appropriate liquid in which it is kept, and labeled with safety instructions. Another small bottle contains a lump of calcium.

We set out a large plate, and say,

"Suppose your mother knows the elements you must obtain from your food and she wants you to be well nourished. Suppose she should put on this plate the bottles containing hydrogen, oxygen, and nitrogen and this lump of sulfur and this stick of carbon. Then knowing you need minerals also, she puts on these lumps of phosphorous, sodium, potassium and calcium, and this iron nail, and these pieces of copper, zinc and

magnesium. Would it make you a satisfactory meal?"

This furnishes a starting point for the discussion of foods, chemical changes during food manufacture by plants, and digestion and assimilation of foods by animals.

At the end of the discussion some pupil always asks, "Do you really have oxygen, nitrogen and hydrogen in those bottles, or is it just air?"

He is invited to make the tests to identify these gases, and, as he suspected, it seems to be just air. The class always agrees that there would be no advantage in having the actual gases in the bottles, but that it would be a good idea to say nothing about this to the other division. "Let them find it out for themselves."

## BIOLOGY LABORATORIES

By "The Old Fossil"

At Lane Tech, Chicago

GOLDFISH FOOD used last winter was purchased at a pet store. This food was ordinary dog food, compounded as a balanced ration in granular form, with a shagreen surface. Some of the pellets were the size of a pea but most of them were smaller. The food is handy, cheap, and easy to feed. We have several hundred goldfish in the greenhouse in three large horse watering tanks. These are aerated. We rarely lose over two or three fish per week; which is a low per cent. Since five pounds of rolled oats came through the science supplies I have used most of this with the granulated food.

GUPPIES enjoy a piece of beef tied on the end of a string and suspended in the water. The junior member of the firm feeds her brood about twice a week in this manner.

The unused food is removed at the end of an hour to prevent spoilage, and water contamination.

HER RED RAMSHORN SNAILS prefer lettuce, curled parsley, cabbage, and onion tops in that order. The green food should be fresh and renewed twice a week.

WOOD ROT AND TERMITE ATTACK may be retarded with chemicals. We have purchased five gallons to be used during the next few months for preservation of greenhouse benches, seed flats, and soil storage bins as they become empty. One gallon (painted on) covers 300 square feet of surface. On the farm we use crankcase oil to preserve the wooden covering of the wells. Two or three applications on the dry wood gives us several years more durability. I see no reason why the same could not be used around a greenhouse.

HUMAN BIOLOGY for high schools is the interest of Maurice Finkel of Colorado. He feels that this phase of biology is neglected in the smaller schools operating under a limited curriculum. He desires the comments of TOF. TOF believes that every student should receive more information and in greater detail than most students receive today. Human biology is not too far afield. The Old Fossil has followed this swing of the pendulum in his teaching. Thirty years ago he was teaching physiology (the only biology subject taught in that high school) in New Mexico. Three years later he was teaching Health Education in Indiana (the only biology subject taught in that high school). Two years later he was teaching Zoology, General Science and Botany in the southern part of Illinois. His present Certificate to teach biology in the Chicago Public Schools is a little more than half a score of years old and it was the first of its kind issued. Concluding; the human biology course is no more nor no less than the course outlined by the individual teacher. If the teaching biologist uses a human biology theme and instructional aids and materials supporting this premise, he will be headed in the right direction.

PLANT SHADING is accomplished by using camouflage cloth which was developed by the Army in World War II. This cloth is sus-

pending and stretched from the ceiling and side walls of the greenhouse. This gives partial shade of about thirty per cent. The cloth has different percentages of shading. It comes in 84 and 108 inch widths. For twenty-some dollars we purchased 50 yards of the narrower width. Be sure to get the nontoxic cloth as the "Victory Cloth" is treated chemically to prevent rot and is toxic to plants. Any surplus may be used for fish seines, or insect nets made by the pupils.

KROFT LILIES were purchased last fall in the bulb stage. Six dozen were potted in five inch pots (bulb type) with a mixture of five parts loam and one of peatmoss. These were left in the clocktower storage room, which is next to the greenhouse, for a period of several weeks. There is no heat in this room and the temperature generally is slightly warmer than the outside. In early November they were brought into the greenhouse and run at room temperature. The Big Freeze (February) caught half dozen growing tips which were above the soil. We wanted them to come in by Easter for a display but we were unsuccessful.

HYACINTH BULBS purchased in the fall were a complete fizzle. The growing tip would develop a rot and the flower would blast. A letter, in a circuitous route, from the importer informed us that this was a common occurrence, possibly due to too close trimming. We tried dusting them with the common fungicides, but no successful results were evident. Imported bulbs, especially prewar Japanese bulbs, were trimmed very closely to decrease shipping space.

AMARYLLIS BULBS started in the fall were also nipped in The Big Freeze. About four of the three dozen were sticking their growing tips out of the bulb at the time. These were a complete flower loss but they will bloom this year. Be sure and buy top size bulbs and get some of the new hybrids for flower color. The spent plants are left in the pots, fed occasionally and plunged in the garden during the summer until fall. They are then thrown under the bench for a period to rest. Later they are repotted and ready for winter flowering again.

THE BOARD OF EDUCATION furnishes all textbooks. In place of supplying a copy of the text to each student, sets of the book (sufficient for a class) are kept in each classroom. The individual classrooms may have as many as ten different text sets for that room. The students have access to these several different texts in their classroom; however, copies do not circulate out of the room. In the library ten copies of each text are kept on the shelves, in addition to these sets. Students desiring to make up back work or to do extra credit work can go to the library for these books. Copies may be withdrawn the same as other books in the school library. This is a Lane innovation; not an administrative or board rule.

ONE OF MY STUDENTS vacationed for a time in Florida, a few years ago. This week he brought in two pecks of specimens that his mother could no longer house in their small apartment. The collection consists of many whelks an inch long to some which were twenty inches in circumference; starfish; and sundry bivalve shells. This is an excellent example of an activity which could initiate creative work in the future.

GREEN THUMB INHIBITOR. Mother, living in Indiana, comes up with this deduction. She has found that plants watered with "softened" water will not thrive. The chemical treatment given their household supply of water adds something harmful to the plants. She now waters her plants with water which bypasses the softener.

HAROLD M. AUGUST of Pennsylvania writes: "Congratulations from a new member . . . Your column is very helpful and your comments are both humorous and human." Seriously, thanks, HMA. To you other guys and gals, if you are still disturbed with something in your mental craw, get out your writing iron and fire away at "The Old Fossil," 5061 North Saint Louis Avenue, Chicago 25.

## REVIEWS

SACKS, JACOB. *The Atom At Work*. The Ronald Press Company, New York. xii + 327 pp. illus. 1951. \$4.00.

Dr. Sacks offers two reasons for the writing of this book. They are: "To remove the mystery surrounding atomic energy from the minds of all of us who are interested; and to show the constructive and hopeful side of the story of atomic energy." Had the author limited his work to either objective, the book would still be a desirable accomplishment.

Historically, there is included an informative résumé of the Curies' discovery of radioactivity and the many events, people, and machines which contributed to atomic fission and the production of radioactivity. In addition, the book tells the current story of how isotopes and artificial radioactivity are used in the fields of chemistry, biology, industry, and medicine in an effort to better understand, among other things, disease, fertilizers, penicillin, photosynthesis, the elimination of static, the location of defects in metals, and to make better rayon and tires.

The high standard physical features, clear illustrations, excellent literary style, and nontechnical language combine to make this book one of the best in this field.

LEE R. YOTHERS,  
*High School,*  
*Rahway, New Jersey*

LWOFF, ANDRE. *Problems of Morphogenesis in Ciliates*. John Wiley & Sons, Inc., New York. ix + 103 pp. illus. 1950. \$2.50.

This is a monograph of a highly specialized nature. In it the author considers certain self-reproducing granules of ciliates, the kinetosomes, in their relations to such processes as differentiation, development, morphogenesis, evolution and reproduction. The author presents evidences: that kinetosomes have a morphogenic force; that they are frequently segregated in some cells and not in others; that this irregular distribution