

Spend \$800 on an electric calculator or buy this \$89 German machine

- A 3-lb., 15-oz. portable mastermind (8 x 7 x 3 1/2")
- Ten-digit keyboard—fifteen digit read-out
- Multiplies, divides, adds, subtracts
- Extracts square roots
- Provides automatic read-out of negative balances
- Capable of automatic re-entry
- Many other features found only in the most expensive calculators

There are basically just two kinds of calculators that make economic sense. If you can keep one of those \$800 electric machines whirring a good part of every working day then anything less is no bargain. But if you are a businessman, engineer, a shipping clerk or plant foreman (who figures bids and such), a doctor, storekeeper — anyone who spends even 30-minutes a day writing figures on paper — then this last word from Germany can definitely save you expensive time and costly mistakes, without making a major capital investment. The MULTATOR-4 not only multiplies and divides at a brisk clip, but it can perform tricks only a few of those very expensive machines have been taught: such as automatic re-entry* and read-out of negative balances (bookkeepers take note!). This compact wizard from Hamburg naturally extracts square roots, but then, quite a few of those expensive machines can do that also.

Buy a calculator by mail? Sight Unseen? It may be unorthodox, but it is the only way to buy the MULTATOR-4, and to buy it for \$89. Because we are the only link between the manufacturer and you (the exclusive importer/retailer), you save the usual distributor/dealer/salesman markup.

Our Guarantee: It's simple. You may return the MULTATOR-4, for whatever reason (or for no reason at all) within two weeks. After that, the Guarantee covers material and workmanship for a full year. Needless to say, we maintain a complete spare part and repair service.

SAVE TIME. AVOID ERRORS. ORDER THE MULTATOR-4 FOR A TWO-WEEK TRIAL.

Mail to: HAVERHILL'S
526 Washington St., San Francisco, California 94111

- Please send me the Multator-4 (\$89.00 plus \$2.00 for postage and insurance).
- Please send me the carrying case (metal faced vinyl, foam lined), \$10.00.
- My check is enclosed.
- Bill Amer. Express Acct. # _____ (California residents add 5% sales tax)

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LETTERS

To the Editor

From a Student

Sir:

I would like to express my admiration for the fine variety, reporting and brevity of the articles in SCIENCE NEWS. Since I am an honor student and am carrying a 20-credit hour program, I do not have much spare reading time, and your magazine is a godsend to the collegian trying to keep abreast of the latest scientific events. The Life Sciences department is a welcome addition, since my major is biology.

Monica Barron,
Detroit, Mich.

Nauseated

Sir:

Congratulations to you and to him or her (Faye Marley) who wrote the article "Inroads in the Meat Jungles" (SN: 8/5).

I got nauseated and sick to my stomach reading it.

It is unbelievable that in this day and age such abominable conditions could still exist in some intrastate abattoirs.

It takes a lot of courage to expose such low standards in Public Health inspection and regulation where perhaps vested interests and dirty politics are in cahoots (see p. 239).

If it is possible I would like to get another copy of the Aug. 5th issue, as I gave my copy to a doctor friend.

Joseph W. Miller M.D.
Miami, Fla.

(A copy has been sent. Ed.)

Earth's Water Balance

Sir:

I am sure that you do not know that you embarrassed me, a teacher of general science. Here's what you did:

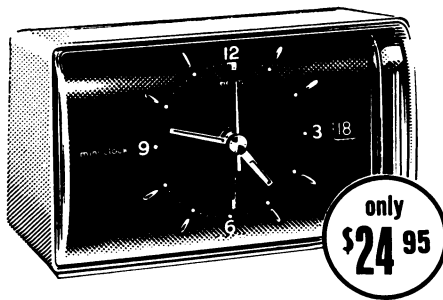
In an article (SN: 10/1/66) you state:

"One of the great wonders of this planet is . . . the total water supply has neither diminished nor increased . . ."

I keep telling my students that new water is being made daily through the combustion of hydrocarbon fuels. In fact, the Ethyl Corporation says that, for every gallon of gasoline that is burned, a gallon of water (liquid) is formed. My own estimate is that over 110 billion gallons of new water is made every year by this means.

I am ready to admit that this 110 (See p. 224)

SOME PEOPLE WILL THINK YOU'RE CUCKOO TO PAY \$25 FOR "JUST" A CLOCK



They're the same people who don't mind living with "the approximate" time or walking into a Five-and-Dime every six months to buy another new \$8.95 wind-up tick-tock.

Also, this clock is not "just" a clock. It is a most elegant tabletop timepiece from West Germany with the following attributes:

There is the calendar. When you wake, you'll know what day it is! (This sometimes comes in handy!) Around back you will see no handle for winding... no cord for plugging-in. An ordinary flashlight battery powers the mechanisms—for a good year or more. When it begins to lose its juice, red appears under the number "12". Now, about the alarm. It's not the alarming kind. Just effective. Reveille begins with four short but insistent signals. If you don't shut off the alarm, there will follow a continuous bzzzzzzzz that would stir Rip Van Winkle.

Furthermore, this timepiece is in excellent taste. Quite handsome. Designed to "go" anywhere. You will think so, too. The works of this TwelveMonth Clock are so precise and perfect that you can adjust it to within two seconds of being on-the-dot every 24 hours. It's a rare wristwatch that can time itself to such a fine degree. The usual Haverhill's 10-day money-back Guarantee applies (if you are not impressed in every way). Beyond that, there is the Manufacturer's Warranty covering parts and workmanship. This extends over a full year. So if you can afford to indulge your appreciation of fine

Haverhill's goes to the ends of the earth to bring you the finest things. This Diehl TwelveMonth Clock is no exception.

things, this indeed is the timepiece that should bid you "Good Morning" each day. This is also a pretty wonderful gift to a son and daughter with early morning classes.

NO TIME LIKE THIS TIME

Mail to: **HAVERHILL'S** SN-0902
526 Washington St.,
San Francisco, Calif. 94111

Please send me the Diehl TwelveMonth Clock. Satisfaction or refund guaranteed.

I enclose check for \$24.95 plus \$1.00 for postage and insurance.
(California residents add 5% sales tax.)

Bill AmExp. Acct. # _____

Name _____

Address _____

Zir _____

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Searching the World to bring you the Finest

(Continued from p. 220)

billion gallons is but a drop compared with the 326 billion cubic miles total of the earth's water; yet I am sure that this new water should be mentioned.

This new water should be considered right along with the increase in the atmosphere's own burden of carbon dioxide as a factor in our continuing research into our weather.

B. A. Noel,
Oakdale Boys' Home,
Pittsburgh, Pa.

(In this apparent contradiction, everyone is right. It is quite true that the total water supply of the earth is neither diminishing nor increasing. And also you are quite right in telling your students that water is being produced daily through combustion of hydrocarbon fuels. The key is in the concept of the "total water supply"—the fact that masses of water exist in the hydrologic cycle, whether in free circulation, or "locked up" in various processes. The water resulting from combustion is really not "new"—it is merely being unlocked from hydrocarbon molecules and put again into the water cycle. The process is only a miniscule part of the entire hydrologic cycle. Water is also being unlocked in other processes, such as volcanic eruptions which release tons of water vapor into the atmosphere. At the same time, water is being withdrawn from the world circulation in processes such as the weathering of hydrated rocks which "lock up" water molecules, thus removing water from the water cycle. Yet the total supply remains the same—Ed.)

Films of The Week

Listing for readers' information of new 16mm and 8mm films on science, engineering, medicine and agriculture for professional, student and general audiences. For further information on purchase, rental or free loan, write to distributor.

PLANETARY CIRCULATION. 16mm, b&w, sound, 25 min. Model analogues of simplified circulations are used to demonstrate that the basic features of the planetary circulation result from the interaction of three factors: unequal solar heating of the earth's surface, the force of gravity transforming this temperature differential to a vast convection cell, and the deflecting "force" associated with the earth's rotation. Audience: high school science. Purchase \$130 from Modern Learning Aids, 1212 Avenue of the Americas, New York, N.Y. 10036 or regional offices.

TAKE A DEEP BREATH. 16mm, b&w, sound, 25 min. Documents air pollution problems in Philadelphia with emphasis on health effects. Dramatizes threat of air pollution on a young boy's lungs, and portrays the crippling illness of a 62-year old victim of emphysema. Discusses need for voluntary action by industry and the public. Audience: general. Free loan from Public Health Service, Audiovisual Facility, Atlanta, Ga. 30333.

THE VERTEBRATES. Series of six films. 8mm (standard or Super-8, color, silent (with captions), 4 min each. Includes vertebrates, fish, amphibians, reptiles, birds, and mammals. Audience: grades 4-6. Purchase series \$107.50 or each \$20 from Coronet Films, 65 E. South Water St., Chicago, Ill. 60601.



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