

Bringing down the giant

For 30 years, DDT, dichlorodiphenyl-trichloroethane, has protected crops, killed disease-bearing insects and in general has contributed to the health and well-being of millions of people throughout the world.

But since the 1950's, critics concerned about its biological and ecological effects have whittled away at it, until last week a decision by Health, Education and Welfare Secretary Robert H. Finch finally brought the giant down. Together with the Secretaries of Agriculture and the Interior, Finch banned the use of DDT in the United States by 1971 except where "essential to the preservation of human health and welfare."

Finch did not specify the percentage by which DDT would be reduced, but he indicated that it could range from 40 to 90 percent. He also disclosed that he was going after other persistent pesticides, such as aldrin, dieldrin and endrin, and those containing lead and mercury.

Actually, DDT will not be sorely missed in the U.S. In recent years a slew of pesticides have been gradually easing it out of the picture. The pesticides, largely organophosphates and carbamates, do not have the drawbacks of long persistency and accumulation in fat tissue that DDT has.

Finch's ban, which also included DDD, a relative of DDT having one less chlorine atom, came about because of recommendations made by the secretary's Commission on Pesticides (SN: 5/3, p. 423) headed by Dr. Emil Mrak, chancellor emeritus of the University of California at Davis. The commission itself was set up in the spring because of the excessive concentrations of DDT found then in coho salmon.

But its recommendations were based on accumulated evidence in the areas of carcinogenesis (cancer production), teratogenesis (birth defects), mutagenesis (inheritable genetic changes) and drug-pesticide interactions.

The commission regards the most significant of its findings to be in the area of carcinogenesis.

"Some pesticides (in mouse experiments) have led, in large doses, to increases in tumors of the liver, lymph glands and lungs," says Dr. Ian A. Mitchell, assistant director of the National Cancer Institute and a member of the Mrak commission.

He points out that of the 110 pesticides studied, chlorinated compounds, of which DDT is one, were prominent in carcinogenesis. "The doses were very large," he emphasizes, with each pesticide tested on 72 to 80 mice.

As for teratogenic effects, commission cochairman Dr. William J. Darby of Vanderbilt University noted that one weed killer—a chlorinated compound related to DDT—under proper conditions of pregnancy injured mouse fetuses.

Dr. Darby points out that the effects of drug-pesticide interactions were caused by enzyme changes. A drug, for example, could stimulate or inhibit an enzyme's production, leading to the increase or decrease of pesticide residues in the body.

The weakest area, as far as concrete evidence was concerned, was mutagenesis. Dr. Albert C. Kolbye, staff director of the commission, reports that "no pesticide has been found mutagenic," but other chemical agents similar in action to some pesticides have produced positive effects in laboratory tests. Dr. Kolbye cautions about extrapolating to man, adding, "Much testing needs to be done. Knowing that chemicals can have positive effects is reason to explore this field thoroughly."

The report insists that there was no real evidence of damage to man. "The data available relate only to experimental animals or lower forms of life," it says. "At the present time, we do not know whether or not such results are

applicable to man."

Dr. L. Eugene Cronin, director of the Natural Resources Institute at the University of Maryland, points out that it was only "within the last two years that really conclusive evidence was obtained in ecology." He cites numerous instances such as declining bird populations among hawks, eagles and the peregrine falcon (SN: 2/22, p. 189), thin egg shells that cracked when incubated by the mother (SN: 1/11, p. 41), parents eating their young and increased pesticide concentration in higher animals.

Unlike these creatures, DDT is not threatened with extinction. Besides the continued, limited uses to be allowed, most of the DDT manufactured in the United States is sent abroad, where it will continue to be used because the danger from malaria is seen as a far greater threat than a 12-parts-per-million concentration of DDT in the body.

"Since the bulk goes overseas, it is unlikely that the ban will have too great an effect," says a spokesman for the National Agricultural Chemicals Association. He is backed up by Dr. M. G. Candau, director general of the World Health Organization. "If it is easy for certain countries to stop using DDT," he says, "it is practically impossible for other countries to do so." □

BAHAMA PLATFORM

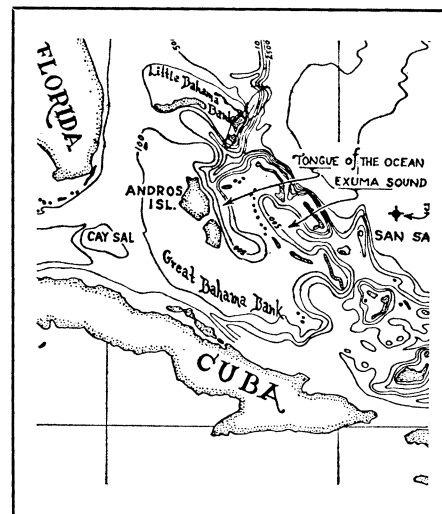
Origin of an obstacle

For years marine geologists have been intrigued by the huge foot-shaped, mostly underwater plateau jutting southeast from Florida known as the Bahama platform.

The origin of this elevated region of half a million square kilometers, extending from the Grand Bahama Islands to a point just north of the Dominican Republic, has been more than a mystery; it has been one of the major remaining obstacles to a clean topographical fit of Africa, North America and South America before continental drifting—now a widely accepted theory—began.

"The Bahamas-Blake region has always been an embarrassment to the drift theory," notes Dr. Robert Dietz of the Environmental Science Service Administration's Atlantic Oceanographic and Meteorological Laboratories in Miami. The Bahama platform spoiled the fit, overlapping onto Africa. As a result, says Dr. Dietz, many geologists "arbitrarily omitted the Bahamas from their fit, but the logic for doing so was left unspecified."

The most common explanation for the platform is that it was once a part of the North American continent that somehow broke off and sank. But this



R. S. Dietz

Bahama platform from a cookie mold.

idea presented difficulties.

That it could have been built from scratch by natural processes seemed also unlikely, until Drs. Dietz, John C. Holden and Walter P. Sproll developed a model that might explain such a phenomenon. Their explanation fits, rather than confounds, continental drift theory, giving it additional credibility.

The Bahama platform, they sug-

Share the Thrills of Exploring Outer Space!



\$194.95

All DYNASCOPES, including this superb RV-6, 6-inch available on easy terms!

Now it's easy to join the thousands of serious amateurs who have discovered the excitement of exploring our mysterious universe. Your enjoyment begins right from the start, yet the challenges and rewards go on for years! And it's a hobby that can be shared at modest cost.

Choose from a Full Range Of DYNASCOPES® 4" Starting at \$49.95

Picking a telescope to fit your needs and your pocketbook is simple when you select a DYNASCOPE — the same instruments used by more than 150 schools, colleges and observatories. Prices begin as low as \$49.95, and your satisfaction is guaranteed by a full-refund warranty.

FASCINATING GUIDE YOURS FREE!

Read these valuable facts before buying any telescope. Mail coupon or postcard for your complimentary copy of this helpful guide.



Criterion Manufacturing Co.
331 Church St., Hartford, Conn. 06101
© TM Registered U.S. Pat. Office

CRITERION MANUFACTURING CO., Dept. NL-47
331 Church St., Hartford, Conn. 06101
Please send your free Telescope Guide.

Name _____
Address _____
City _____ State _____

FREE 50 PAGE OBSERVER'S GUIDE



With artificial satellites already launched and space travel almost a reality, astronomy has become today's fastest growing hobby. Exploring the skies with a telescope is a relaxing diversion for father and son alike. UNITRON's handbook contains full-page illustrated articles on astronomy, observing, telescopes and accessories. It is of interest to both beginners and advanced amateurs.

CONTENTS INCLUDE:

Observing the sun, moon, planets and wonders of the sky • Constellation map • Hints for observers • Glossary of telescope terms • How to choose a telescope • Astrophotography

UNITRON
INSTRUMENT COMPANY • TELESCOPE SALES DIV.
66 NEEDHAM ST., NEWTON HIGHLANDS 61, MASS.

Please rush to me, **FREE** of charge,
UNITRON'S OBSERVER'S GUIDE and TELESCOPE
CATALOG #N-5

Name _____
Street _____
City _____ State _____

gested at last week's meeting of the Geological Society of America in Atlantic City, did not exist before the Atlantic Ocean was opened. Rather it was created on top of oceanic crust in a complex process triggered by the rifting that first split apart the northern supercontinent. They believe as well that the southern third of Florida and the Blake plateau off the coasts of Florida and Georgia were probably also created in the same process.

"I think our solution is the only way to go," says Dr. Dietz.

The process he proposes is complex, and so far rests on some assumptions.

Nevertheless, it is likely to take root in scientific theory, though not without some further modification or verification.

Dr. Robert E. Sheridan of the University of Delaware, for instance, credits the general idea, but is less than certain about the details. He says the ESSA group's suggestion that the crust under the Bahamas was probably formed after Africa and North America parted is undoubtedly correct and in fact supports conclusions he has recently been preparing for publication. He feels, however, that the crust is probably not purely oceanic but an intermediate type, such as is found beneath the Red Sea.

The most unusual feature of the Bahama platform is its uniformly thick cap of carbonates, generally estimated to extend downward about 5 kilometers. The total volume of carbonate rock over the entire platform is then about 1.5 million cubic kilometers—one of the largest carbonate deposits on earth.

Carbonates are deposited by certain kinds of shallow-water marine organisms. Since this deposition process occurs only at or near the surface, the bottom of the carbonate layer now capping the platform must once have been at the surface, the scientists reason. As the carbonate cap grew thicker the base of the platform must have gradually sunk. This allowed the deposition to continue in shallow water for millions of years until the cap reached its present thickness and the base of the platform its present depth.

But marine geologists had no ready explanation for how the base of the platform could have reached sea level in the first place. If they invoked the idea that it was once part of the North American continent, they had another problem—continental areas resist subsidence. This made the great sinking of the platform, necessary for the creation of the carbonate cap, difficult to understand.

But oceanic crust, in contrast to continental crust, does tend to sink when loaded. And if the Bahama platform

is underlain by oceanic crust, the sinking can be understood. But this still left unexplained the geological situation that could account for the prior rise of the platform to sea level.

Invoking a special geological history, the ESSA scientists propose:

The rift that split apart the huge supercontinental mass in the Triassic Period, a little more than 200 million years ago, began just southeast of Florida. This created a small ocean basin entirely surrounded by continents and probably isolated from the world ocean rimming the supercontinent. This new mediterranean would include the Bahama platform of today, the southern tip of Florida and the Blake plateau.

New oceanic crust would well up from the mantle. An ocean basin more than 5 kilometers deep would result.

As a central hole within an enormous supercontinental mass, this new mediterranean would be an excellent trap for sediments. New rivers would dump their vast loads into this sea. The interior edges of the continental mass would serve as a giant cookie mold, trapping and shaping all the material poured into it. The sedimentation, they say, could have been so intense the entire basin would have filled up in roughly 30 million years.

Throughout this time, they propose, sea-floor spreading was temporarily in abeyance. There is some evidence to support such halts. Then rifting began again, and the continental mold began expanding, leaving behind a 5-kilometer-high platform of solid sediments reaching to within a few meters of sea level. Ecological conditions would then be perfect for carbonate deposition. Carbonates would begin to be laid down on top of the previously deposited inorganic sediments. The upbuilding process would continue, maintaining the Bahama platform near sea level, just offsetting the slow subsidence.

HEARING AIDS

Results from NBS

Consumers Union has won its battle over the hearing aids (SN: 5/24, p. 508). The Veterans Administration, because of agreements made with the manufacturers, refused to divulge the raw data developed by the National Bureau of Standards that enabled it to evaluate various brands. The consumer organization took the VA to court to get it to release this information. So successful has the campaign been that not only has it gotten the data, but this week, the VA released to the public the names of the hearing aids that did not measure up to Government standards. Of the 88 models tested, 23 were rejected. □