

## A whole new organization



U.S. Geological Survey  
*Taking samples: research comes first.*

From an accurate appraisal of its contents, the ocean would be an important source of future minerals and fuels and a supplement to the natural resources of the land. The ocean does have a tremendous natural resource potential and even though the Government has allocated only \$516 million for all marine sciences in its budget for this year, and little, if any, more is expected next, tapping the oceans is on the docket to assume national and worldwide importance.

**Nevertheless**, those who look to the ocean as the imminent great provider of man's mineral and fuel needs are in for a disappointment. The image of the ocean as a replacement for vanishing land resources is unrealistic, according to reassessments of the sea's potential in a major policy document just delivered to President Johnson and the Congress.

Since the outgoing Administration will not be able to act on its recommendations, the report, which urges a complete revision of present marine policy, will become new business for the Nixon Administration. Mr. Nixon himself is waiting for the report before proposing major action in the marine field.

The 200-page report, prepared by the Commission on Marine Science, Engineering and Resources, makes sweeping recommendations for a national marine program and a Government organization to administer the program. The actual funds to be handled would be little more than is being spent now, at first, since research, rather than subsidized exploitation, is the major theme of the report.

As for a Government organization, the report proposes abandoning the present semi-formal coordination of

efforts in a score of Federal agencies, and lays the base for the establishment of a new independent agency to control and coordinate marine and atmospheric research. Such a recommendation would have heavy sledding in the Congress, where Federal agencies and the committees which oversee them react jealously to attempted inroads on their traditional activities.

Nevertheless, it lays the base on which the incoming Administration can build a major national effort, if it chooses to. But it will have to be a step-by-step effort.

**At present**, only six percent, or \$1.3 billion, of U.S. mineral and fuel production is offshore. Though the figure is rising, most of it represents oil and gas production from near-shore wells.

Indications are that after petroleum, gas, sulfur and sand and gravel, there is very little to be gotten economically from the sea at present, and not much chance of more very soon.

The problem is one of economics and technology combined. To extract the ocean's mineral and fuel wealth, the technological means to do it must be economically competitive with those on land. Right now, technology for mineral extraction is in a primitive state, acknowledges John G. Vedder, deputy chief of the U.S. Geological Survey's office of marine geology. Deep ocean technology has just begun to develop, he adds.

Of all the minerals dissolved in seawater, the only ones that can be extracted economically now are magnesium, bromine and salt. Nearly all the nation's magnesium and most of its bromine come from seawater while terrestrial mines produce most of the salt.

Manganese, which has been discovered in many ocean floor areas, has engendered considerable interest. Mixed with other metals, such as nickel, cobalt and copper, it is found in nodules,

crusts and pavements. But because of the high cost of mining and processing, recovery prospects in the near future are dim. Presently, it is the possibility of economic recovery of the associated metals which has aroused industry's interest rather than the manganese itself.

**Terrestrial shortage** is apparently only a secondary motivation to would-be developers of the sea's resources. As Dr. Vincent McKelvey, research geologist with the U.S. Geological Survey, puts it, "As far as the next decade is concerned, there are adequate mineral sources on land. There is not a single mineral on land for which all conceivable sources have been appraised and you can say, 'That's all there is.'"

The impetus for obtaining fuel and minerals from the sea appears to be profit rather than shortages. Dr. McKelvey points out that real shortages of some minerals, such as gold, mercury and silver, have not resulted in a drive toward technology for obtaining them from the sea.

And, as the technology for developing new techniques to mine the seas advances, so will the technology for mining the land. It would be unrealistic to expect one to advance while the other stands still.

**A recommendation** in a preliminary report to the Marine Sciences Council, echoed by the commission, is that the present role of Government should not be to mine, discover or develop the ocean's resources, but to concentrate instead on basic research on the geology of the continental shelf.

Of special importance is the making of adequate undersea maps to aid exploration. This in turn is dependent on tools and techniques for underwater observation. The report notes that although there is great progress in developing these tools and techniques, there are still formidable handicaps. ◇

### TAX INCENTIVES

#### Slim hope for research, ghettos

The deeper involvement of American business in programs ordinarily dominated by the Federal Government has been a major tenet of President-elect Nixon's policy statements, both before and since his election. It will be re-emphasized in his inaugural message next week.

On the list are efforts in such fields as the support of basic research, the elimination of water pollution and such social engineering projects as low-cost housing and job training.

The problem is that these programs, while costly in both money and sophisticated manpower, cannot be considered

profit-making enterprises of the kind in which industry ordinarily invests. Incentives will have to be provided, probably in the form of tax incentives—rapid depreciation write-offs of capital investments or the even more controversial tax credits: the deduction of a part of a cost from a final tax bill.

And that's the rub.

Mr. Nixon's ability to deliver industrial participation in these areas will depend in large part on his ability to induce a heretofore reluctant Congress to consider tax incentives to industry.

The key to the process is Representative Wilbur D. Mills (D-Ark.), power-

ful chairman of the tax-writing House Ways and Means Committee. Mills, in the past, has been the principal obstacle to the employment of tax incentives as a stimulus to industry to make social investments. Mills objects in principle to the manipulation of the tax structure for nonrevenue-related ends. He also would insist that tax credits, or other tax incentives, show up in the budget as Federal expenditure so as not to become a back door approach to Federal spending.

**Mr. Nixon** has already conferred with Mills on the prospects. He wanted to know, for starters, how Mills would react to the use of a tax credit to induce industrial participation in a Federal job training program.

Mills' ultimate reaction to the proposal, when it comes up for hearings before his committee, may well determine the fate of broader tax incentives in the coming years and Mr. Nixon's ability to deliver on his promise of more private participation.

A wide variety of industries is waiting in the wings for the outcome:

- Steel, oil, chemical and other industries often identified with water pollution pressed hard last year and the year before for tax incentives—either tax credits or a write-off—as a stimulus to their investment in water pollution control facilities. They almost won it, attracting wide support in the Senate, but crumbling against the bulwark of House Ways and Means.

- Budget and economic advisers to both President Johnson and President Kennedy before him have considered the use of tax concessions to stimulate private support of research. This idea, too, was unpalatable in the House, though aerospace and electronics corporations found the idea intriguing.

**In addition**, besides the proposal for the training of workers, Rep. Mills' committee expects to have before it this year proposals for tax credit treatment of such diverse expenditures as the rehabilitation of gold mining property, housing in urban poverty areas, state tax payments and expenditures on higher education. The Congressional future for all of them is bleak.

Nevertheless, Mr. Nixon's new Secretary of the Interior, Alaskan Governor Walter J. Hickel, has already endorsed Federal incentives for water pollution control efforts by industry. The new Secretary of Commerce, former Budget Bureau Director Maurice H. Stans, has declared that tax incentives would be necessary for some, though not all, efforts at "marshalling the efforts of the business community" in assault on the nation's problems. And Governor George W. Romney, Secretary of Housing and Urban Develop-

ment in the new Administration, regards tax credits as a "tool we ought to take a look at."

Rep. Mills was noncommittal on the subject after talking with Mr. Nixon.

As an aide to Chairman Mills expressed it: "He's going to listen and could be persuaded, but he hasn't been in the past." His sympathy toward an incentive plan to draw private industry into the ghetto is even less likely. And Rep. Mills' supporters in Congress on this issue have declared tax incentives in such areas as research and pollution control a flat giveaway of public funds.

Joseph A. Peckman, director of economic studies at the Brookings Institution, declares that many of the tax incentive proposals would "introduce wide-open loopholes that would be exploited by sharp operators. All the proposals would greatly complicate the tax laws.

"**Tax laws** are already riddled with special provisions which should be removed in the interest of equity, simplification and improved economic performance," says Dr. Peckman. "Few of them would be tolerated if these provisions were subject to the same scrutiny given by Congress to direct appropriations."

**But with** Mr. Nixon's emphasis on this approach, many economists and social scientists who view tax manipulations suspiciously are guarded in their remarks. While the general opinion is that tax credits should be used only as a last resort for goals of major importance, each analyst can think of one area where they might work.

James L. Sundquist of the Brookings Institution, for instance, notes that a tax incentive might work in developing the industry of rural areas. Its value would be to hold down migration to big cities—if the country should want such a national policy.

But Sundquist, an expert on job training, opposes tax credits for employment training. "The Government would be subsidizing a lot of people and buying nothing," he says. "Job training is one of the least attractive areas for tax incentives." Recently, the National Commission on Urban Problems, headed by former Senator Paul H. Douglas (D-Ill.), said the same thing about housing, contending that tax incentives are the least efficient form of subsidy for stimulating ghetto housing construction.

The fact is that until now, little real thinking has gone into the idea of using tax policy to promote social change and betterment. But the time has come to begin. As one unhappy legal assistant to Rep. Mills says, "I don't want to think about it, but I guess I'll have to."

## SOVIET PHYSICISTS

### Race toward the 1,000 GeV

Of all the races in which the United States and the Soviet Union are engaged, the one with the most immediate relevance to physics is the high energy accelerator race. A more complex relationship than the space race or the arms race, the accelerator rivalry has been characterized by the presence of a third party, Western Europe, and by a fairly complete exchange of information and some exchange of personnel.

**Nevertheless**, at the moment the Soviets are ahead in the hardware part of the competition since they are operating the world's most energetic accelerator, the 76-billion-electron-volt (GeV) synchrotron at Serpukhov. The United States is now constructing a 200-to-400-GeV machine at Batavia (formerly Weston), Ill., and the Europeans are planning a 300-GeV machine for a still-unselected location (SN: 1/4, p. 10).

Meanwhile, the Soviets are already planning their next giant step, a 1,000-GeV machine, the like of which has never gotten beyond preliminary discussions in the United States.

The Soviet Government has not yet made any public commitment to build such a machine, and it is difficult to know how seriously to take the plans. The Russians, says Dr. William A. Wallenmeyer of the U.S. Atomic Energy Commission, are not usually very secretive about their activities in this field, but, on the other hand, one can never be entirely sure that they have revealed everything they are about to do.

**Yet, two** groups of highly regarded Soviet physicists have spent a good deal of their recent time preparing detailed plans, not only for the design of the machine but also for a general experimental program. The plans come in two thick volumes (AEC-tr-6936 and 6949) which the AEC has just finished translating for the benefit of interested American scientists.

The tone of the documents is confident; the compilers seem to take for granted that such a machine should and will be built. According to the leader of the design study, Dr. A. L. Mints, they have recently completed a 1-GeV pilot model to test the special control mechanisms designed for the big machine, presumably with the approval of their government.

The main accelerator ring for the 1,000-GeV machine would be 5.434 kilometers across. The designers figure the whole installation will need a site of not less than 150 square kilometers. A main experimental area would cover 75,000 square meters, and a secondary