



Working on the hard ones

**Japanese-American
cooperation could bring
far-out concepts to fruition**

by Stuart Griffin

On the fringe of feasible technology lies a whole skein of promising techniques and developments whose application is blocked by cost or unsolved engineering problems, solutions more and more require international cooperation.

One such cooperative venture is a quiet movement to program scientific and technological exchanges between Japanese and American authorities who hope to cut out some of the duplication of separate efforts.

Says one official of Japan's Science & Technology Agency:

"This interaction would primarily pool information and experts and would, as a corollary, deepen and broaden the overall dialogue between the U.S. and Japan."

U.S. Department of Interior officials meeting with their opposite numbers in the agency list among the projects to be developed:

- The suppression of water evaporation from reservoirs and paddy fields by monomolecular films.
- Desalting of seawater and utilization of by-products.
- Studies on botulinus and other toxic microorganisms.
- Production of seed for grazing grass.
- Unconventional power sources, such as geothermal steam.

Some of these topics came up as far back as 1964, on the occasion of the visit to Tokyo of the then Under Secretary of Interior James K. Carr, meeting with his Japanese counterpart at that time, Dr. Arimasa Baba.

A problem that has slowed down progress has been, and to a point still continues to be, opposition on the part of some American businessmen and industrialists. They contend that Washington has been too prone to show Japan favoritism, at expense to U.S. business, despite the counter-contention that such an informational exchange would benefit the U.S. as well as Japan. Such an exchange might also improve the somewhat shaky U.S. position in Japan politically, and be an attractive lure to other Asian nations.

Three projects are under consideration in the minerals field.

One would involve exchange of knowledge in the blending of U.S. with indigenous Japanese coal, to insure maximum efficiency in steelmaking.

Existing production methods for titanium might be improved and new methods devised to cut costs and make

the metal more competitive. Plans also call for expanding uses and alloying potentials for such closely allied metals as zirconium, hafnium, tantalum and columbium.

Outside the minerals field the transmission of electricity by very high-voltage AC and DC lines has been suggested for study.

Another area involves technology for converting saltwater into fresh, using both oil-fired and nuclear-power plants. The U.S. has been having trouble getting desalination off the ground (SN: 12/28/68, p. 639).

Use of monomolecular films to suppress evaporation from water storage reservoirs is another project that has been under development for years, and has yet to reach a practical point.

Japanese and American scientists are both interested in the use of thin films of high molecular weight substances such as alcohols and oil-wax compounds, but for different reasons. In the U.S. the aim is to conserve water by retarding the rate of evaporation while the Japanese want to increase rice production by having the monolayer trap heat needed for the crop. By this method, the Japanese have had some success in raising crops in colder areas and in improving crop yield and quality in others.

Development of geothermal power is also being looked at. Japan is already well advanced in surveys of subterranean heat and ready for utilization.

In the continental U.S., scientists are in the data-collecting stage. Under the auspices of the University of California at Riverside, for example, a team of scientists led by Dr. Robert Rex is surveying the lower Colorado River basin, which includes the Imperial Valley of Southern California.

Test wells have shown the presence of hot brine, of uncertain commercial value, because the proportion of salt to steam is high. The only market evident for large quantities of geothermal brine is for possible desalination.

Japanese say they are interested in U.S. progress in solar energy development, sinking of land masses, mine safety, soil conservation and survey and development of the continental shelf; and Japan is ready to exchange its latest findings in deep sea fishing techniques, advanced riceland cultivation methods and research that has recently produced new hardy strains of high protein rice.