

Reunion and Introduction for Chinese Chemists

Delegation from the People's Republic of China at the American Chemical Society meeting looks forward to increased international contact and describes chemistry at home

BY JULIE ANN MILLER

It is sometimes felt that science writers trying to cover all aspects of a large scientific meeting face a more difficult task than even the scientists themselves, who are there to discuss their specialty. The delegation of Chinese chemists attending the recent Honolulu meeting of the American and Japanese chemical societies (8,000 participants, 5,000 papers), however, had it just as tough. They were there to gather information on all aspects of chemistry to report to those who stayed home. They were also renewing acquaintances and meeting (and trying to remember) people they hoped would provide helpful information in the future. And they had language problems, although with rapid English, instead of with chemical structures and processes.

But whereas reporters attend scientific congresses often during the year, this meeting was the Chinese chemists' first chance to participate in a mammoth meeting covering myriad chemical topics. They were clearly excited.

To many of the Chinese chemists, the meeting was a reunion with colleagues from their scientific youth. Eight of the twelve delegation members had studied or worked in the United States or Europe in the 1940s or 1950s. "The people are happy to meet old friends and make new acquaintances," Li Su, leader of the delegation, explained in an informal interview on a sunny balcony overlooking surfers, sailboats and sunbathers.

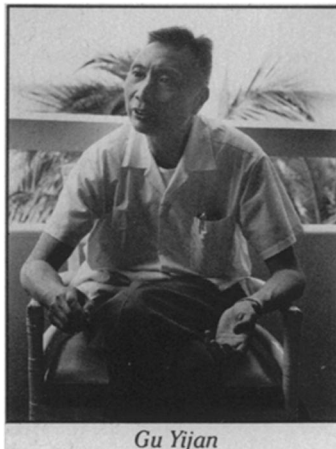
Gao Yisheng, who had studied at Oxford and is now director of the Shanghai Institute of Materia Medica, said, "The U.S. is not new to us. We have had a traditional friendship, with a short interval of disconnection."

The interview was a lively, if sometimes frustrating, mix of English and Chinese. Li made his more formal statements in Chinese and another delegate translated. (But Li occasionally answered questions in English, corrected the translations and leaned over to monitor my note taking.) The other two chemists spoke in English but, in the midst of an answer, might consult their colleagues in Chinese.

What had they learned at the week-long meeting? Surprisingly, they first mentioned a matter of U.S. meeting-going technique, one that frustrates American scientists as well. They had had their first experience with giving and hearing short, 20-minute technical talks. "Our papers were too condensed to be expressed fully," Gao said. "Next time we'll separate the contents into several papers."



Li Su



Gu Yijan



Gao Yisheng

Gu Yijan, director of the Dalian Institute of Chemical Physics, noted that the talks he heard were too short and wished there was written material to take home (points of frequent complaint among science writers, too). "I've taken some notes, but it's very dark," he said. "We just have to use our ears."

Outside the technical session, Gu said they had not had much chance to talk to chemists about their research. Mostly they had been kept busy with diplomatic talk.

The chemists did not appear to regret the time spent socializing, however. "Social activities are important to get in touch with many people," Gu said. The chemists joked about their popularity. They had been continually welcomed, photographed and dined by eager American and Chinese-American scientists. "We spend no money on lunches," Li admitted.

Of the technical sessions, Gu said he had attended talks primarily on organic chemistry, organometallic compounds and petrochemistry. He was impressed with the energy conversion techniques described and with purification techniques useful in making semiconductors.

The topics of the talks the Chinese chemists officially gave at the meeting included organic synthetic schemes, new reactions of a pyridine copper chloride and fluidized roasting of Chinese iron ores.

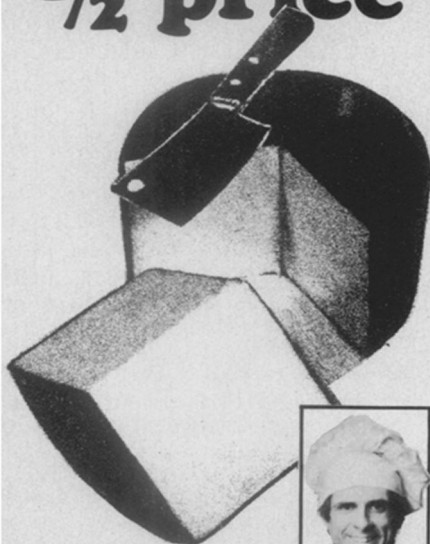
More informally they described some advances of Chinese medicinal chemistry. Word of gossypol, the cottonseed chemical being tested as a male contraceptive, had already reached the United States (SN: 3/3/79, p. 136.) Gao explained that they have also found a compound, a diterpene, from the *yuan hua* plant, that can be injected locally to induce abortions during the fifth and sixth months of pregnancy.

A new antimalarial drug, isolated from common water plants, is being used in clinics for cases not responsive to other treatments. The World Health Organization has expressed interest in that drug, a sesquiterpene, as well as in gossypol, Gao said. Finally, the Research Institute of Chinese Traditional Medicine has recently announced discovery of a drug active against stomach and bladder cancer. A major research strategy has been to isolate active ingredients from items in China's rich tradition of herbal medicine.

Although the Chinese chemists feel they lag behind international developments in some areas of chemistry, they are proud of their achievements in others. Gu says that they have developed new catalysts for pet-

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... Chinese chemists

rochemical reactions and have done important basic research on catalysis, surface properties and molecular dynamics. Recently, he says, they developed a high-pressure liquid chromatography column of especially high efficiency.

More than 27,000 Chinese work in chemical research and engineering, excluding the universities, Li estimated after consultation with the others in rapid Chinese. Li is deputy secretary-general of the Chinese Academy of Sciences and vice-chairman of two chemistry organizations — the Chinese Chemical Society and the Chinese Chemical, Industrial and Engineering Society. He explained that there are 20 institutes of chemistry in the Chinese Academy of Sciences and more than 180 in the governmental ministries of industry, agriculture and medicine. In addition, many universities have chemistry or chemical engineering departments.

Whatever the location of the laboratory, the Chinese government foots the research bill. "As long as the research program is recognized as important, you can have money," Gu said. "You don't have to worry." He explained that a national planning committee delegates money to the academy and ministries, who then divide it among the institutes. "You don't have to ask for money all the time," Gu said. "It comes right away."

When asked about women in Chinese science, Li said, "There are a lot of women scientists, especially in chemistry and biology and at the universities." Although only one woman was included in the delegation attending the Honolulu meeting, both Li and Gao estimated that, in all, about half the chemists are female. Gao said that currently there are fewer women than men at the top. "They have the same opportunity, but due to tradition only a few women [formerly] were well educated. So not very many are [now] in the highest rank," Gu explained. "But we will have many, I am sure."

The chemists went on to explain that daycare for a child is inexpensive — about \$2.50 per month. That amount is less than 3 percent of the average graduate scientist's salary, and in most families both parents work. Any thought of salaries, the chemists cheerfully pointed out, must include the fact that there is no income tax.

The scientists are looking forward to more information exchange. Plans are underway to send scientists to visit U.S. laboratories, to invite U.S. scientists to lecture in China and to continue exchanging technical journals. In an exchange program next year, more than 500 Chinese students plan to attend U.S. universities.

"We have a bright future, but we have a lot of work. It will take competence to carry out the task and help from American friends," Li says. "This meeting is a good way of beginning. We believe the future will increase contacts among scientists of all countries." □

... La Soufrière

be carried around the world.

Since two smaller explosions on April 22 and 25, La Soufrière has been quieting. But for the scientists activity is just beginning. Using samples of rock and ash gathered after each explosion, researchers will determine the amount and type of material spewed from the volcano. By combining satellite data and aircraft data, the particle and gas composition, the distribution, and the weather effects of the volcanic plumes will be mapped. Together with the continuous seismic record, the pieces will be fit into a giant puzzle that may help explain volcanoes such as La Soufrière.

A major question is the cause of the eruption. La Soufrière and its companions on Guadeloupe and Martinique sit on a subduction zone where the Americas plate crunches beneath the Caribbean plate. The material released in these volcanoes is believed to be rock that has melted under pressure and depth rather than the fundamental magma like that which oozes from Hawaiian "hot spot" volcanoes. The question about this eruption, say Fiske and Sigurdsson, is whether it is fed by the rise of new magma from depth or by material already in the volcanic conduit system. In the latter case, Sigurdsson explained, the eruption might be a phreato magmatic explosion — the result of water from the crater lake seeping into the magma source and expanding explosively into steam.

The answer may be as important for human safety as it is for science. If the eruption is the product of new magma — which may indicate activity along the subduction zone — then it may herald a longer period of eruption as well as similar events in the other volcanoes of the island arc. If it is due to the interaction of the lakewater and magma, then it will probably end when the 20-million-cubic-meter lake is used up, says Sigurdsson.

The composition of the rocks and of any liquid inclusions in the magma may provide the answer. For instance, if the silica content of the rocks varies significantly from that of earlier eruptions, it may indicate that new magma was present, says Fiske. By electron microprobe and mass spectroscopy, Sigurdsson will look for the presence, amount and type of liquid, the level of pressure needed to introduce it and the mineral composition of the rock. The early data, he says, favor phreato magmatic activity, but definite answers won't come for at least six months. If the eruption is found to be caused by the lake, says Sigurdsson, one solution might be to drain it. The lake of a volcano in Indonesia was drained, he says, and activity continued quietly and without loss of life.

A scientific basis for such a decision will not be soon coming, however. For now, scientific triumph notwithstanding, for the 20,000 evacuees, La Soufrière means months of displacement, ash-covered crops and the destruction of livestock. □