

JUN 1969

SCIENCE BULLETIN

*National Science Council
87 Ningpo West Street, Taipei
Taiwan, Republic of China*

ROC Acquires Versatile Research Ship

Free China acquired its first research vessel last month, thus enabling its scientists to embark on a systematic oceanographic research on Taiwan's coastal waters and distant seas.

The ship, christened Chiu Lien, was the former USS Geronimo built toward the end of the last war. Loaned to China by the United States, the vessel was towed to the naval base of Tsoying in southern Taiwan by the U.S. Navy early last month for refitting and repair.

Measuring 143 feet long and 33.9 feet wide, the 853-ton Chiu Lien is powered by diesel turbine with a maximum speed of 13 knots. After the overhaul, she will boast an air-conditioned laboratory and seminar room capable of accommodating up to 15 oceanographers and seminar students.

The S.S. Chiu Lien, which will be manned by a naval crew of 10 to 12, will be assigned to the newly-established Institute of Oceanography of the National Taiwan University for various research activities scheduled to begin this fall. The National Science Council will finance the operations under the nation's 12-year master plan for science development.

Professor Chu Tsu-yu, director of the Institute of Oceanography, said the Institute would admit 20 graduate students in the fall semester. Chinese naval authorities are positive that repair and refitting of Chiu Lien can be completed in September, in time for the Institute to start its research and training activities.

Although relatively small, Taiwan has unique geographical features as an ideal place for oceanographic research. Water off the western coast is shallow, while the eastern coast descends abruptly into deep trenches on the ocean bottom in the Pacific. These features make the island an excellent base to conduct studies on both con-

tinental shelf and deep-water phenomena, according to oceanographers.

The value of Chiu Lien lies in its capability for long voyage. She can stay on the sea for two to three months at a stretch without restocking. The Institute of Oceanography plans to capitalize on this asset.

A research program is being worked out. One of the projects being discussed is marine biological study. The scientists plan to study the ecology and migration habits of a number of fish species, including scombrid, sardine, anchovy, and millet, which are found in the coastal waters of Taiwan. Some of the species are getting scarce. The purpose of the study is to study the ways and means to increase yield as well as conservation problems.

The study will also cover deep-sea fishery in the South China Sea extending all the way to areas bordering the Indian Ocean. Tuna catching is likely to be studied under the program.

Another immediate concern of the oceanographers is geological survey.

During the past four years Chinese scientists have made a series of study trips aboard the naval survey ship Yang Ming to study the Japanese current which flows from the Equator via the Philippines and Taiwan to Japan. It is a major oceanographic phenomenon having a close bearing on climate and fishery.

The Chinese scientists have collected a vast amount of data about the Japanese current, the counterpart of gulf stream in the Western Hemisphere. It is up to the scientists aboard Chiu Lien to analyze and interpret them. The vessel will also make further survey about the current. Because its course becomes unstable after the current enters the vicinity of Taiwan, it must be chartered continuously to find out its seasonal changes.

The next mission for Chiu Lien will be the geophysical survey of the continental shelf in the Taiwan Straits. However, this requires installation of some special equipment not yet available. Therefore, this step will not be taken until the fall of 1970.



The research vessel Chiu Lien before repair.

Biology Research Center and Its Activities

(Continued from previous issue)

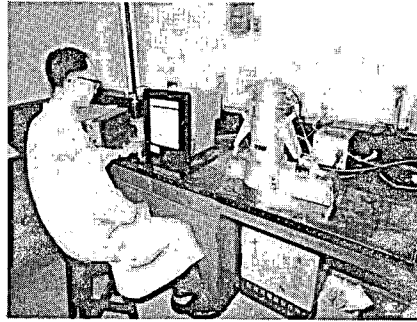
8. 5-Methylcytosine replacing cytosine in the deoxyribonucleic acid of a bacteriophage for *Xanthomonas oryzae* (by T. T. Kuo, T. Huany and M. Teng)—From the present study they reported "that in the DMA of a bacteriophage of *Xanthomonas oryzae*, cytosine is completely replaced by a new pyrimidine base which is tentatively identified as 5-methylcytosine."

9. The distribution of strains of *Xanthomonas oryzae* and its phages in Taiwan (by T. T. Kuo, C. M. Yang, Y. Y. Yang and Shih-Pen-Yu Hsieh)—The investigators reported: "From electron microscopic and serological studies, it was found that at least 5 types of phages, Xp10, Xp12, Xp21, Xp20 and Xf exist in Taiwan ... Two of them were similar to that OP1 and OP2 reported from Japan ... Phages isolated from 45 localities were identified by their reactions against antisera of Xp10, Xp12 Xp13 Xp20 nd Xf, respectively ... Xp10, Xp13 and Xp20 were widely distributed on this island."

10. Pineapple disease of sugarcane (by T. T. Kuo and P. C. Chen.)—This is a study trying to solve one of the controversial problems in Mycology: whether or not there is a sexual stage in the fungus causing pineapple disease of sugarcane. The result of this study confirms Dade's (1928) finding that there is production of sexual stage in *Ceratostomella paradoxa*. It also shows that "The parithecial formation of the fungus was affected by the environmental and nutritional conditions."

11. Effect of aluminum on translocation and metabolism of phosphorus by rice seedling (by Y. J. Shieh and C. C. Wang)—The results of this study indicate that the translocation of P to shoots is metabolically dependent and is affected by the rate of photosynthesis or phosphorylation which in turn, are affected by Al concentration and the stimulation of P uptake by low level of Al (1×10^{-4} M).

13. Microbial production of amino acids by anxtrophic mutant of *Brevibacterium divaricatum* (by Y. C. Su and (Nora C. Chen—)From this study the workers were able to obtain 7 threonine, 5 arginine, 2 histidine, 2 leucine, 1 tyrosine, 2 methionine, 4 tryptophan, and 1 cysteine



Paper chromatogram scanner is used to check radioactive material on filtering paper. .

auxotrophs from *Brevibacterium divaricatum* by N-methyl-N'-nitrosoguanidine treatment. One of arginine auxotrophic mutants (No. 5) was found producing a large amount of 1-proline directly from suger and inorganic nitrogen.

13. Properties of Xf phage of *Xanthomonas oryzae* (by P. Y. and C. P. Chen)—This is a part of studies which are conducted in this Institute on a filamentous bacteriophage (Xf) isolated from the water of local rice field. This study tells us that the DNA of this phage has a single-structure and the phage is resistant to the treatment with deoxyribonuclease and proteolytic enzymes.

14. The tertiary structure of RNA phage MS-2 coat protein (by J. Y. Lin and C. C. Wu)—In this study the workers used iodination-method to study the tertiary structure of MS-2 coat protein and found that "C-terminal tyrosine was fully iodinated as diodotyrosine and resistant to cpase A digestion, that C-terminal tyrosine residue is buried until higher amout of ICI is used" and that "the C-terminal tyrosine residue is not at the surface of MS-2 phage particle but rather buried inside."

15. An electron microscopic study of sarcosomes of thoracic musculature in *Tenebrio molitor* L. during metamorphosis ((by W.Y. Lee and P.H. Shen)—This is the first study trying to investigate the fine structure of sarcosome of the larval muscles. The workers used sarcosomes of both adult flight muscle and that of larval stage in *Tenebrio moltor* L. From the results obtained, the workers speculated that a large number of cristae existing in the sarcosomes of the indirect flight muscle may indicate these sarcosomes have high me-

tabolic activity, and "this seems to be a correlation with the number of cristate and oxidation activity of the mitochondrion. ..."

16. Interrelation of PH temperature, salinity and growth of fungi in milkfish ponds in Taiwan (by B. Y. Yang and L. Y. Kuan)—This study was made in attempting to investigate the relationship between fungi and algae in milkfish ponds. Although the present work is yet to be completed, but the results obtained show that the decisive factor affecting the existence of fungi and algae does not lie on the temperature but the PH of the water.

17. Study on Taiwan lichens-*Foliose lichens* (by Jo R. Wang)—The worker based on her own collections from Mt. Ali reported altogether 21 species, belonging to 5 genera of foliose lichens. The report includes both keys to genera and to species.

18. Pollen grains of Formosan plants (3) (by T. C. Huang and M. Wong)—This is part of a research project trying to classify Dictyoyledons of Taiwan with the morphology of their pollengrains. With keys to genera and species the workers listed the pollen grains of 5 families, 56 genera and 112 species.

19. Cytological studies and systematic notes in the Monocotyledons of Taiwan (by C. C. Hsu)—He reported "the chromosome counts of 36 taxa belonging to 32 genera and 11 families of the monocotyledonous plants together with some taxonomical notes. ..."

20. Histochemical studies in the developing root meristem of *Ceratopteris thalictroides* (by S. H. T. Chiang)—This is one of the worker's recent studies on the morphology of pteridophytes. Here, she studied the morphology of nucleus and the distribution of RNA, DNA and histone in cells of root apical metistem the apical cell nuclei of both main root and lateral root and the rate of cell division in different stages of growth.

21. study of thermo-neutron induced chromosome abrrations in *Sorghum purpures-sericeum* (by T. P. Wu.)

22. Comparative asteology of the house-geckos. *Hemidactylus* Gray from Taiwan (by Y. S. Liang and

C. S. Wang.)—This is a taxonomic study on house-geckos, *Homidactylus bowringi* and *H. frenatus* based on their osteological differences.

23. Studies on the ecology of Tanshui River estuary (by T. S. Tan)—From July 1967 to June 1968, the worker collected zooplankton and water samples from Tanshui River and studied the distribution of zooplanktons with physiological and chemical conditions of water, including water temperature, dissolved oxygen salinity and concentration of some nutritive ions. Altogether 16 groups of zooplankton were found, among them copepoda was the most abundant, around 96% of the whole year collection. Zooplankton population was found most abundant in October and the least in May. The amount of zooplankton in relation to the salinity and oxygen in water was found that lower salinity and lower oxygen content in water possessed higher amount of zooplankton.

During the past three years, the Center invited two visiting professors to give lectures in the Institutes of Botany and Zoology, National Taiwan University and seven former students who got their doctoral degrees from universities in the United States and Japan to come back to point the Center.

Additionally, four or five well-known specialists in biology were invited to give lectures at the Summer Science Seminar for the benefit of graduate students, some college teaching staff, and research workers of many institutes.

Two special seminars were held during the summer of 1967 and 1968 under the auspices of Academia Sinica and the U.S. National Academy of Sciences. One was on "Recent Development in Biochemistry" during which 15 world well-known biochemists gave lectures before some 300 interested individuals. The lectures were published by the Center in a monograph entitled "Recent Developments in Biochemistry". Another seminar was on "Some Recent Development in Genetics" for which 18 world well-known genetists came from the United States and Switzerland. Like the former one, it was also attended by about 300 professors, research workers and graduate students. Every year the Center sends 3 or 4 promising graduate students abroad for advanced studies with the financial support of the Center.

Ruling Governing Appointment of Visiting Professors

The National Science Council appoints a number of visiting professors every year for lecturing and research assignments at local institutions to help speed up science development in the nation. The tenure of six months or one year is subject to renewal for once with the concurrence of the parties concerned.

The appointment is made on the nomination of the employing public colleges, universities, or research institutes. Nominations must be accompanied with the nominees' curriculum vitae, list of publications and representative work for screening by the relevant special committees of the NSC.

To qualify for the nomination, a visiting associate professor must be:

- a) holder of a doctoral degree conferred by a foreign institution, or one with similar academic training who is credited with publications considered valuable; or
- b) holder of a master's degree conferred by a foreign institution who has done research or engaged in the professions for at least three years with distinction; or

- c) assistant professor at a foreign university, or one holding a post of similar ranking who is credited with publications considered valuable.

In the case of a visiting professor, the nominee must be:

- a) professor of good standing at a foreign university or college; or
- b) associate professor at a foreign university or college, or one holding a post of similar ranking for at least two years who is credited with publications considered valuable; or
- c) one who has the qualifications of a) for a visiting associate professor and who has engaged in the professions or done research work for

at least four years with academic contributions to his credit.

Once the appointment is confirmed, the NSC will underwrite the round-trip air passage (economy class) for the appointee, his spouse, and one or two children below 18 if the tenure is of one-year duration. In the case of half-year tenure, the NSC will underwrite the round-trip air passage for the appointee and one-way ticket for his spouse. Additionally, the NSC will provide a monthly remuneration of NT\$5,000 (\$125) for a visiting professor and NT\$4,000 (\$100) for a visiting associate professor over and above the regular pay of the employing institution. The NSC payment will be made in advance once every three months. Housing and laboratory facilities will be provided by the employing institution.

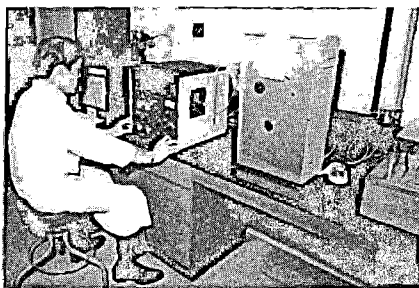
Dr. Hu's Unpublished Manuscripts Available

The Hu Shih Memorial of Academia Sinica has published the manuscripts of Dr. Hu's life-long scholastic research in photolithographic edition, manuscripts that have never been published before or were not intended for publication.

The first six volumes comprising of his research on *Shui Chin Chu* (Book of Rivers) are now available. Four more volumes will be off the press before the end of the current year. Volumes VII-VIII deal with Buddhism in China, Volume IX covers *Chu Tse Hui Chao* (Miscellaneous Notes of Chu Hsi) and other critical studies, and Volume X contains hitherto unpublished miscellaneous articles written by Dr. Hu during the last 20 years of his illustrious career and the *Selection of Quotable Quotes* he compiled.

Priced to cover only the cost, all the volumes are in attractive binding of traditional Chinese style. Those who are interested in obtaining the whole set or individual volumes may write to:

Hu Shih Memorial Hall
Academia Sinica
Nankang, Taipei, Taiwan
Republic of China.



Gas chromatography is used to analyse organic matters in tiny amount.

Catalog of Rare Books Completed

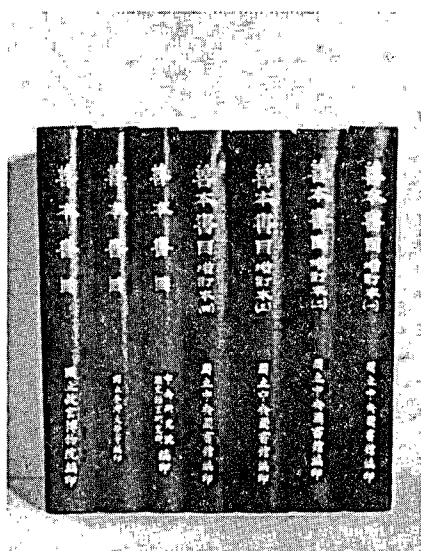
A complete catalog of rare books in Taiwan has been compiled by the National Central Library at the request of the China Council on Sino-American Cooperation in Humanities and Social Sciences.

The seven-volume work, the first portion of the Union Catalog to be completed under the compilation project, has been made available to local libraries, universities and other interested institutions.

Four volumes of the catalog list the rare books in the custody of the National Central Library itself, the rest of the rare books are kept by the National Palace Museum, Institute of History and Philology of Academia Sinica, National Taiwan University and four other libraries.

Compilation of three more catalogs are underway. They are catalog of books dealing with humanities and social sciences in the custody of public libraries, catalog of periodicals, and catalog of publications in the Republic of China. Also under compilation is a complete catalog of thread-bound books in public libraries.

A complete catalog of foreign books on the humanities and social sciences will be the next task under the Union Catalog project, designed to facilitate the research work of scholars and sinologists both in Taiwan and abroad.



The complete catalog of rare books available in the various libraries in Taiwan.

NSC To Help Grantees Solve Visa Problem

Arrangements have been made between the National Science Council and the United States Embassy in Taipei to render assistance to those NSC grantees who have difficulties in obtaining the required exchange-visitor visa (type J) for advanced training in America.

From time to time, a NSC grantee may have failed to obtain the DSP-66 Form, without which no type J visa can be issued. Usually the failure is a consequence of the fact that the admitting U.S. institution has not been assigned an exchange-visitor program number, and is therefore not authorized to issue DSC-66 Forms. Sometimes it is because the admitting institution, though assigned a program number, has adopted a restrictive policy regarding its use. To remedy this situation, the U.S. Department of State has authorized the Office of the Cultural Counselor of the American Embassy in Taipei to issue DSP-66 Forms to NSC grantees who cannot obtain such

Forms through regular channels. Applications, however, must first be screened and certified by the NSC.

From now on, NSC grantees having difficulties in obtaining DSC-66 Forms should report to the NSC. Documentary proof that the failure is not caused by the grantee's personal qualifications will be required. The NSC will then refer appropriate cases to the U.S. Cultural Counselor's Office in Taipei for assistance.

Hardship cases in visa application accounted only a very small percentage among NSC grantees in the past. The National Science Council is concerned with the possibility, however, that a number of grantees might have settled for American institutions other than the ones of their first preference because of anticipated visa difficulties. The new arrangement with the U.S. Embassy is to make sure that no compromise will be made in the use of NSC grants for advanced training in America because of visa considerations.

News Roundup

Prof. S. S. Chern, member of Academia Sinica and the U.S. National Academy of Sciences, took a brief trip to Taiwan last month in connection with the Mathematics Research Center.

As adviser of the Center, the world-renowned mathematician attended meetings to review its progress and discussed plans about its teaching and research activities.

During his week-long sojourn in Taipei, Prof. Chern also gave a public lecture on "Gauss-Bonnet Formula and Its Developments" at the National Taiwan University.

The professor, who is teaching at the University of California Berkeley, returned to the United States on May 21.

The Seventh Summer Science Seminar jointly sponsored by Academia Sinica, National Taiwan University, and National Tsinghua University is scheduled to start on July 1 for an eight-week period.

Lecturers for the forthcoming Seminar have been lined up. Most of them will come from the United States.

As in previous years the Seminar will be conducted in five divisions:

Mathematics, Physics, Chemistry, Biology, and Engineering Sciences.

Dr. J E. Vaner, an authority on botany, physiology and biochemistry, completed his week-long free lectures at the Department of Botany, National Taiwan University, on May 10. On departure he lauded the high student quality and promised to invite other lectures for the department. He also promised to return again some day.

Meanwhile, the department has completed a new laboratory building. It will be inaugurated in the near future for stepped-up research activities.

The National Science Council has earmarked NT\$3,000,000 for the National Chiaotung University to finance the following six projects: (1) laser holography, coherent light, and statistical optics research; (2) semiconductor and integrated circuit research; (3) microwave electronics and optoelectronics research; (4) electronic switching system development; (5) laser modulation research; and (6) plasma physics research.