FEBRUARY 1, 1979 Vol. 11, No. 2

FEB 1979

SCIENCE BULLETIN

National Science Council
2 Canton Street
Taipei, Taiwan, Republic of China

Scientist Given Task to Set Up Science-Oriented Industrial Park

A senior scientist from the United States has been appointed head of the Preparatory Office for the Establishment of the Science-Oriented Industrial Park at Hsinchu.

Receiving the important assignment is Dr. Irving Tze Ho, whose specialities include LSI memory, IC-chip design, IC interconnection/packaging, array logic, digitary circuitary and logic and computer sub-systems.

Born in Fukien in 1921, Dr. Ho was graduated from the National Amoy University and received his postgraduate training at Stanford University in California where he earned his M.S. and Ph.D. degrees.

He was an engineer at the China National Aviation Corporation and taught at the Taipei Institute of Technology before he went to Stanford in 1956 for advanced training.

Since 1963 Dr. Ho has been working with the IBM Corp. He has been the company's senior engineer and department manager since 1969.

A prolific inventor, Dr. Ho has obtained 18 U.S. patents and one Chinese patent.

Dr. Ho is married and has a 14-year-old daughter.

Development of the projected park began in late December last year (See Jan. issue of Science Bulletin). The draft statute governing the establishment and functioning of the park is pending at the Legislative Yuan.

Under the statute, the park shall be designated as an export bonded area within which the manufacturing factories will be given special tax privileges.

To qualify for investment in the special industrial park, the investment plan must be in conformity with the industrial development of the Republic of China and the investor shall employ or be able to train fairly large numbers of local scientific and technical personnel. The statute also requires that the number of local employees must be gradually increased to 50 per cent of the technical staff within three years after foreign-invested factory starts operation.

NSC to Publish Special Publication On Cancer Mortality in Taiwan

For the purposes of finding out the high relationships of particular sites of cancer with particular townships, socio-economic environment, particular ethnic groups, and particular localities classified according to climate, and also of serving as basic data on physical, socio-economic, and ethnic geographical distribution of cancer mortality for selective sites, original data on the number of death due to cancer in Taiwan area for 1966-1975, the National Science Council awarded a grant to the late Professors Kung-pei Chen and Hsin-ying Wu of the Institute of Public Health, College of Medicine, National Taiwan University to perform a research project entitled "Cancer Mortality by Township and Other Classified Districts in Taiwan: 1966-1975" covering Aug. 1977-July 1978. The fruit of their work is described in an article entitled "Color Atlas of Cancer Mortality by Administrative and Other Classified Districts in the Taiwan Area 1968-1976." The National Science Council decided to publish the report as National Science Council Special Publication, No. 2. This special publication will be published on March 1979. If there is any interested institution or person who requires the publication for reference, please contact the Editorial Board of the National Science Council.

This report provides a detailed epidemiological study of cancer mortality in Taiwan at township level. Cancer deaths and age-adjusted death rates by sex and by cancer sites were compiled for each township (361 in number) over a 9-year period (1968-1976). Before 1968, no complete compiled data of certificates were available. The maps presented in color may help to visualize geographic variation at the township level and one may identify clusters of townships with excess cancer deaths which in turn may provide etiological clues. The tables also help in a evaluating the cancer mortality of various ethnic and urban-rural groups. Both maps and tables may help to realize the patterns of mortality with suspected risks (such as ethnic, occupational exposure, ect.). In addition, the report may provide some clues to further advanced studies on cancer which may be able to clarify causal relationship of environmental factors with the occurrence of particular sites of cancer.

ROC-U.S. Cooperative Research

(Continued from last issue)

12. Induced strainer and fatigue response of bridge elements.

U.S.: Jackson C. S. Yang and Conrad P. Heiss, University of Maryland, College Park

ROC: J. P. Tang, National Central University, and H. C. Lee, National Taiwan University

Duration: December 1976-December 1978

Objective: To develop the Random-check method of structural analysis into a system for monitoring damage to steel bridges—field studies will measure the loading characteristics of structures and the strain/acceleration induced by loading.

13. Quantitative analysis of biological control of "Rhizoctonia" diseases.

U.S.: Ralph Baker, Colorado State University

ROC: T. Tschen, National Chunghsing University

Duration: March 1977-March 1978

Objective: To compare the effect of plant tissue amendment on the control of different anastomiosing groups of *R. solani*, and to clarify the behavior of *R. solani* in the soils heavily infested with other pathogenic or saprophytic fungi.

14. Development of a practical, multipurpose urban air pollution diffusion model.

U.S.: David C. Chou, University of Iowa

ROC: C. J. Hsich, National Taiwan University

Duration: March 1977-November 1977

Objective: To develop a practical, computerized, multi-purpose, atmospheric dispersion model. To extend the existing model for the inert carbon monoxide to other photo-reactive, automobile-generated pollutants by employing the method of matched asymptotic expansion.

15. Position annihilation in gases in the vicinity of the critical point.

U.S.: S. H. Chen, Massachusetts Institute of Technology
S. J. Tao, New England Institute

ROC: P. K. Tseng, National Taiwan University

Duration: May 1977-December 1978

Objective: To carry out a series of experimental and theoretical studies of position annihilation in dense bases, and to investigate the annihilation life times and angular correlation of annihilation gamma rays in xenon, carbon dioxide and argon in the vicinity of the critical point.

Remarks: Two separate grants were made in the U.S. for the individual institutions.

16. Laboratory and numerical modeling of the effects on typhoons when encountering the mountains of Taiwan islands.

U.S.: H. P. Pao, Catholic University of America

ROC: C. T. Wang, Academia Sinica

Duration: October 1976-October 1977

Objective: To construct a numerical model which will forecast the motion of a stratified atmosphere in the presence of a mountain ridge.

17. Attenuation, intensity and characteristics of strong ground motions and seismic response on embedded structures.

U.S.: J. Penzien, University of California, Berkeley

ROC: C. H. Yeh, National Taiwan University

Duration: March 1977-March 1979

Objective: To carry out research in the areas of attenuation law, expected maximum ground acceleration and ground motion characteristics, and to investigate the soil-structure interaction of embedded structures.

18. Earthquake resistant design and strengthening of shear walls in concrete buildings.

U.S.: Le-wa Lu, Lehigh University

ROC: Y. B. Tsai, Academia Sinica

Duration: October 1977-September 1979

Objective: To study the effectiveness of concrete walls with new design arrangements of reinforcing steel and wire mesh, under earthquake loading.

19. Survey of fungal parasitism in Gramineae, Cyperaceae, Seguruumorae, and Rosaceae in Taiwan.

U.S.: T. M. Koyama, the New York Botanical Garden

ROC: Z. C. Chen, National Taiwan University

Duration: May 1977-April 1979

Objective: To investigate the fungal parasitism in four major families, Gramineae, Cyperaceae, Leguminosae, and Rosaceae in Taiwan with special reference to its systematic significance in the classification of both fungi and host plants.

20. Spectrophotometric studies on hemocyanin in Taiwan snails.

Microearthquake Studies in Southern Taiwan

By M.T. Lin, Y.B. Tsai and C.C. Feng

Institute of Earth Sciences
Academia Sinica, Taipei Taiwan

Microearthquake surveys were conducted at Kaohsiung-Pingtung area in April, May and October 1977. About 2800 microshocks with magnitude ranging from 0.6 to 3.7 were recorded by portable, high gain, high frequency seismographs at eleven sites. Since the instruments were operating at sites with different crustal structure, a simple station-to-source residual method was used to correct the travel times. The reliably located microearthquakes in these surveys show much higher level of activity than the data of Taiwan Telemetered Seismographic Network (TTSN) have shown. However, similiar spatial patterns of seismicity are noted.

Consistent first motion directions, linear patterns on areal distribution and on vertical profile of two aftershock sequences suggest that Chaochou fault is probably a north-south striking sinistral strike-slip fault, while the Liukuei fault is a north-northwest dipping thrust. The composite focal-mechanism solution of another earthquake swarm in Central Mountain range show a normal dip-slip motion. The epicenters of these earthquake swarm were located at about the boundary between the paleogene eugeosynclinal and the pre-Tertiary metamorphic provinces, but whether it relates to the current interaction between these two provinces is still an open question.

U.S.: Norman C. Li, Duquesne University
ROC: S. M. Wang, National Tsing Hua University
Duration: August 1977-February 1978
Objective: To investigate the proton NMR spectra of imidazole in the presence of hemocyanin obtained from Taiwan snails. To use imidazole as a probe for study of the active site of the snail hemocyanin.

21. Earthquake research in Taiwan.

U.S.: F. T. Wu, State University of New York at Binghamton
ROC: Y. B. Tsai, Academia Sinica
Duration: December 1976-November 1978
Objective: To study the surrounding areas of microearthquake sources and to investigate with C^{14} dating techniques the raised marine terraces on the eastern side of the coastal range. To record and to analyze microearthquake data in Tsengwen area.

22. Growth kinetics of bacteria on silicate-ligno-cellulose and effects on macromolecular composition of cells.

U.S.: D. W Thayer, Texas Tech University
ROC: K. C. Lin, Food Industrial Research and Development Institute
Duration: October 1976-September 1978
Objective: To determine the nutritional composition of rice hulls, the suitability of rice hulls as an energy and carbon source for the growth of bacteria, and the effect of mild pretreatments on the ability of bacteria to use the rice hulls as a growth substrate.

23. The study on grafted starch polymers.

U.S.: Mitchel Shen, University of California, Berkeley
ROC: C. C. Lin, National Taiwan University
Duration: January 1977-January 1979
Objective: To synthesize a class of new grafted starch polymers using a variety of comonomers. The properties of new polymers will be analyzed to determine the impact resistance of these plastics.

24. Seismicity and focal mechanism studies of the region between Taiwan and Luzon.

U.S.: Carl D. Bowin, Woods Hole Oceanographic Institute
ROC: M. T. Lin, Academia Sinica
Duration: August 1977-July 1979
Objective: To provide seismic evidence of seismicity and focal mechanism and to gain an understanding of tectonic processes in the area between Taiwan and Luzon based on geophysical data and geological features.

Seismicity in the Tsengwen Reservoir Area, Taiwan

By Francis T. Wu

Department of Geological Sciences
SUNY, Binghamton, N.Y. 13091

Y.H. Yeh and Y.B. Tsai

Institute of Earth Sciences
Academia Sinica
Taipei, Taiwan

The Tsengwen reservoir, with a maximum depth of 128m, and a storage volume of $708X10^3m^6$, is located over an active thrust fault, the Chuko fault. Chuko fault was evidently the causative fault of a magnitude 6-3/4 (Pasadena Ms) earthquake in 1964. Filling of the reservoir started in April, 1973 and water reached the designed level in September of that same year; since then, the water level has undergone yearly cycles with 40m-50m amplitude.

An earthquake swarm near the dam occurred in December, 1972, before the reservoir was filled, and microearthquakes have populated the area from that time. Before filling, there were some very shallow events, with depths as small as 0.5 km, but these disappeared shortly after the water level rose to the maximum. The majority of epicenters afters reservoir loading lies in a layer between depths of 2.5 and 8 km; the seismicity under the reservoir is noticeably lower than that in the surrounding area. There is no obvious correlation of seismicity with water level (Fig. 1), based on available data. The seismicity in the Tsengwen area can be described as a response of the over-pressured and fractured sedimentary strata to the tectonic stress accommodation, modified by the presence of the reservoir.

A ts/tp vs. time study revealed anomalies, but these are not precursory to large earthquakes, as the periods of the anomalies would imply.

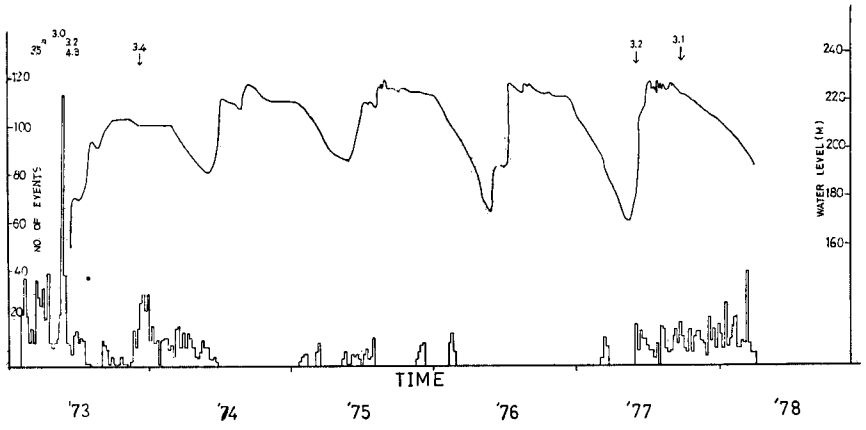

Fig. 1 Number of events and water level of reservoir versus time.

NSC-Supported Research Projects

Min-nan Wang

NSC-68H-03-01(01)

Design and promotion of the computer program packages for statistical analysis in social sciences.

Paul K.C. Liu

NSC-68H-03-01(02)

Demographic analysis of the genealogies in the Ming and Ch'ing Periods.

H.C. Chang

NSC-68H-03-02(01)

Eocioeconomic-psychological determinants of fertility.

Tzong-shian Yu

NSC-68H-03-01(04)

The role of the government in the process of Chinese economic development since Ch'ing Dynasty.

Ching-jiang Lin

NSC-68-H-03-04(0)

Determinants of educational and occasional asperations of junior high school graduates.

In-mao Liu

NSC-68H-03-02(02)

Psychological processes of comprehension.

Shou-jung Yang

NSC-68H-03-09(01)

A correlation study and research on the effect of television media on the self-concept, value system and behavior pattern of the junior and senior high school children.

Guang-hsiung Kou

NSC-68B-0201-02(22)

Study on the immune response of eel to immersion method—II. Application and mechanism of *E. anguillimortiferum* Vaccine.

Shih-chieh Shen

NSC-68B-0201-02(23)

(1) Study on the sex reversal of *Rhinomuraena sp.*
(2) Study on the variation of sex reversal and morphology of Amphiprion and Gomphosus varius.

Dou-mong Hau

NSC-68B-0201-02(24)

Effects of the moderate degrees of hyperthermia and hypothermia on the sensitivity to irradiation in mice.

Wen-lung Wu

NSC-68B-0201-03(31)

Systematic and zoogeographical studies of the Formosan Patellid limpets (Gastropoda, Patellidae).

Inn-ho Tsai

NSC-68B-0203-03(05)

Staphylococcus aureus protease: Preparation, characterization and application.

Young-meng Chiang

NSC-68B-0204-02(03)

A comparison of benthic community structure and species morphology between Taiwan and Guam in relation to temperature, upwelling, and fish grazing.

Tseng-chieng Huang

NSC-68B-0409-02(13)

Check list of Formosan plants.

Ju-sherng Yang

NSC-68B-0409-04(04)

The rate of evapotranspiration in Len-Hwa Chi watershed.

Feng-jyi Chang

NSC-68B-0409-04(11)

Studies on the bank paper and the other speciality paper making from pineapple leaf.

Wang-chueng Shieh

NSC-68B-0409-04(12)

Studies on the origin of species and the variants in Taiwan paulownia.

Hsuch-ching Chiang

NSC-68B-0412-02(14)

Studies on ten kinds of potential antifertility plants in Taiwan.

Fung-jou Lu

NSC-68B-0412-02(15)

Studies on fluorescent compounds in drinking water of blackfoot disease endemic areas: Experimental peripheral gangrane.

Hsheng-kai Lee

NSC-68B-0412-06(09)

Studies on the morphine-induced tail erection.

Shih-chieh Shen

NSC-68B-0204-02(02)

Study on marine fish-fauna of Taiwan.

Tsu-chang Hung

NSC-68B-0407-01(06)

Study on the present status of carbon cycle and its effect on the marine ecosystem around Taiwan.

Yaw-huei Lin

NSC-68B-0409-03(01)

Studies on the relationship between proteinase inhibitor activities and month of harvest.

Jenn-chung Hsu

NSC-68B-0409-04(07)

Studies of the metabolizable energy value and the feeding value of lard pulp for broilers.

Fu-sheng Thseng

NSC-68B-0409-04(08)

Theoretical studies on soybean culture and breeding.

Ching-yih Chen

NSC-68B-0409-04(09)

The effects of soil moisture content on the yield increase of upland crops and the comparison of photosynthetic ability and drought resistance between crop varieties.

Chin-ri Hou

NSC-68B-0409-07(02)

Studies on the effects of organic silicon compounds, calcium carbide and NAA on flowering, yield and quality of pineapple.

Yun-chuan Ku

NSC-68B-0409-09(03)

Pulping studies on fiberous plants.

C.F. Chen

NSC-68B-0412-02(07)

Influence of thermal injury on gastric motility and renal function. 1. Effect of thermal injury on gastric motor function.

Po-chao Huang

NSC-68B-0412-02(10)

Further study on the protein requirement of Chinese—second year.

Jiang--chuan Liu

NSC-68B-0412-06(07)

Vomiting in the decerebrate cat.

(*To be continued*)

印刷廠：中新印刷股份有限公司 台北市信義路二段二七七號

中華郵政台字第二七六五號執照登記爲雜誌交寄