JPRS 69210

6 June 1977

CHINA

PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS

No. 169

U. S. JOINT PUBLICATIONS RESEARCH SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22151. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

JPRS 69210

6 June 1977

PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS

No. 169

This serial publication contains abstracts of articles published in selected scientific and technical journals. JPRS is unable to honor requests for original source materials or information as to the availability of full translations of these articles.

CONTENTS PAGE

SCIENTIFIC EXPERIMENT

AUTHOR: None

ORG: Ship Design and Planning Institute, Dairen Red Flag Shipyard

TITLE: "'Hsi-hu' -- First Chinese 50,000 Ton Class Ocean Oil Tanker"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 1-3

ABSTRACT: Commemorating the launching of the first Chinese self-designed and -built 50,000 ton class oil tanker "Hsi-hu", this article introduces the specifications, design, construction, outfitting and innovations of the tanker. Equipped with 16,800 horsepower engine, various up-to-date nautical instruments, air-conditioned comfortable accommodations, water desalination plant, and others, the tanker has a cruising range of 15,000 nautical miles, and a speed of 15.2 knots. By adopting a side-by-side mold lofting and shipbuilding system and complete welding technique, the tanker was completed in barely 135 days. Besides many innovations to raise shipbuilding efficiency and economize materials, some measures are developed also to solve pollution problems.

AUTHOR: HSIN Kang [6580 0474]

ORG: None

TITLE: "Modernized New Dairen Deep-Water Oil Port"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 4-5

ABSTRACT: The author describes the construction that is undergoing of a new modern deep-water oil port in northeastern Dairen to accommodate the shipping of crude oil from the Ta-ch'ing oilfield. The main construction includes a 900 meters long nine span, completely welded steel truss viaduct stretching out to the sea, an adjoining 420 meters long crude oil terminal wharf to berth a 100,000 tons tanker on the outside, and a 50,000 tons tanker on the inside, 8 automatic oil-transfer arms, a 9 storied radio control tower, a 34 meters high lighthouse, and a system of oil pipelines, storage tanks and other facilities. Huge caissons for the 18 piers of the viaduct and wharf were prefabricated in a small local plant by a newly developed technique.

AUTHORS: LI Tsai-ying [2621 0375 4134]
LI Chien-min [2621 0256 3046]

ORG: Ocean Petroleum Institute, Ocean Petroleum Prospecting Headquarter

TITLE: "First Chinese Huge 500 Ton Floating Crane"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 6-7, 15

ABSTRACT: The authors introduce the construction, performance theory and characteristics of the first Chinese self-designed and self-constructed "Hai-pin 102" 500 ton floating crane, that was completed in 1974, and put into operation since 1975 at Tientsin. The floating crane is 67.2 meters in length, 25.2 meters in width, weighs about 1000 tons, and is the largest of its type now operating in China. A silicon controlled power supply governing device, developed specially by the Tientsin Electric Transmission Design and Planning Institute, has further improved its performance. It is reported that, since its completion, the floating crane has performed in the installation of more than ten offshore petroleum drilling platforms and other facilities.

AUTHOR: None

ORG: Large Screen Television Research Group, Central China Normal College

TITLE: "Oil Film Light Valve Projection Television"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 8-9

ABSTRACT: This article introduces the components, performance theory and characteristics of oil film light valve projection television, which can display on television screens as large as a few tens of square meters, with high degree of sharpness, brightness and fresh colors, and therefore is ideal for public television. The only handicap is its shorter serviceable life due to cathode pollution and polymerization of the oil medium, which deserve further intensive research.

AUTHOR: T'AN Lun-ch'ang [6223 0243 2490]

ORG: Institute of High Energy Physics, Chinese Academy of Sciences

TITLE: "Cosmic Rays"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 12-14

ABSTRACT: The author introduces the knowledge concerned with cosmic rays with regard to: 1) the photons, mesons and electrons that are manifested as the photon showers, solar flares, etc., their very high energy levels, and mutual interactions; 2) the accelerators and cloud chambers that are being used in the quantitative study of the behavior of elementary particles and discovering of new ones; 3) the influence of geomagnetic field, atmosphere and solar eruptions on elementary particles, and their importance in aviations; and 4) some examples of their application to the study of celestial evolution, astronomy, structure of matter, and others. It is reported that China has maintained a large cosmic rays observation station over the Wu-meng [3527 5536] mountains, wherein a large Chinese self-designed and made magnetic cloud chamber is utilized to explore new particles.

AUTHOR: CH'EN Lao-kuei [7115 5071 6311]

ORG: Kwangtung Chieh-yang Hsien Yu-tsai Production Brigade Agriculture Section

TITLE: "K'o-liu No 17 Early Rice Varieties"

SOURSE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 14-15

ABSTRACT: The author introduces some techniques of how to breed the K'o-liu No 17 early rice varieties, noted for high yielding, strong plant body, broad adaptability, and strong resistance to insect pests and diseases. The techniques introduced include: 1) early transplanting, early management and earley harvest; 2) reasonable close transplanting; 3) shallow seedling transplanting; 4) regulation of fertilizer application; 5) timeing of watering and drainage; and 6) insect pest and disease preventive measures.

AUTHOR: CHIAO Yung-p'ing [4255 3057 1627]

ORG: None

TITLE: "Breeding of Disease-resisting Crop Varieties"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 16-17, 36

ABSTRACT: The author introduces four methods of breeding disease-resisting crop varieties, namely: 1) selection of individual healthy trees from disease-infested fields for breeding; 2) sexual hybridization between parents of high disease-resistance or previously immunized, and parents with comprehensive superior characteristics; 3) hybridization between different species or even genuses, especially those of wild origins; and 4) chemical induction, radiation breeding, and others. Three methods to determine the degree of disease resistance are also introduced and illustrated. The importance of purification and revitalization is also stressed.

AUTHOR: HSIN Yung [6580 3057]

ORG: None

TITLE: "Winter Beet Planting in Southern China"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 17, 11

ABSTRACT: The author reports successful promotion of planting beets in southern China, notably in Fukien and Hunan provinces, during winter, to utilize the winter-idle farm fields, sugar-cane fields,orchards, as well as saline-alkaline seashores and mountainous slopes, after five years of experiments conducted jointly by the Chinese Academy of Agricultural and Forestral Sciences and the Heilungkiang Beet Institute. The technique developed is to apply lime and pearl ash to render the soil neutral or slightly basic. The first commune-operated beet sugar plant with a capacity of treating 30 tons of beets per day was already established in Fukien Chang-p'ing Hsien.

AUTHOR: None

ORG: Stateowned Peking Radio Equipment Plant's Pressure Found Foundry

TITLE: "Pressure Founding"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 18-19

ABSTRACT: This article introduces the knowledge and techniques concerned with pressure founding or die casting, which includes: 1) the construction and performance of the die cast machine; 2) the die components; 3) the various types of die cast alloys; 4) the process and techniques of die casting; and 5) the characteristics of die casting. 13 illustrations are included to show the construction of the die cast machine, and the process of die casting.

AUTHOR: HSU Hsieh-chiang [6079 0588 3068]

ORG: None

TITLE: "Climatic Anomaly"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 20-22

ABSTRACT: Following a review of the more recent climatic anomaly in China as well as around the world, the author discusses such factors as changes of solar radiation, influences of human activities, such as pollution, exploitation of nature, etc., the effect of ocean currents, volcano activities, etc., and others that may cause climatic anomaly, and the present research on climatic anomaly in history in an effort to establish a rule of climatic anomaly for the benefit of mankind.

AUTHOR: LIAO Wei-hua [1675 5898 5478]

ORG: None

TITLE: "Coral Fossils and the Changes of Global Equator"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 22-23

ABSTRACT: Based on a review of the correlations of the occurrence of corals to the equator of the earth, the author discusses the application of the discovery of coral fossils in the Antic's Greenland, Alaska, Siberia and Newfoundland as evidence of the changes of the location of the equator, and the prospect of basing the distribution of coral fossils of different geological age to re-map the location of the equator corresponding to the period, and further reveal the evolution of the earth's activities throughout the ages.

AUTHOR: None

ORG: This Journal

TITLE: "Air Gun for OceanSeismic Focus Prospection"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 p 24

ABSTRACT: This article reports a development by the State Geological Bureau of a controlled air gun for the prospection of ocean seismic focus to replace the usual explosive detonation technique. The detonation is effected by quantitatively and timely directing highly compressed air from a ship to the air gun. The new technique has been adopted by the Ta-chiang oilfield in the prospecting of deep geological formations with satisfaction.

AUTHOR: None

ORG: Peking 113 High School

TITLE: "Model CY-III Oxynometer Produced by School-operated Plant"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 p 24

ABSTRACT: This article reports the joint development of model CY-III oxynometer by the Peking 113 High School, and the Shanghai Institute of Metallurgy and the Peking Institute of Botany of the Chinese Academy of Sciences for the measurement of oxygen level to replace the conventional Orsat apparatus. The instrument adopts a platinum-magnesium cathode a silver-silver oxide anode, and a 7.5 v dry cell power source for the measurement. The reproducibility is $\pm$ 0.2, and accuracy $\pm$ 0.3.

AUTHOR: None

ORG: This Journal

TITLE: "Pedalling Type Dynamometer"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 p 25

ABSTRACT: This article reports the joint development of model 6.26-1 pedalling dynamometer by the First Hospital of Peking Medical College, the Institute of Machinery and Electrical Equipment of the First Ministry of Machine Building, and the First Peking Toy Plant for the measurement of heart functions, state of physical strength, and the diagnosis of coronary heart disease. Powered by a type of electro-magnetic eddy generator, the power can be regulated to well over 500 watts.

AUTHOR: None

ORG: This Journal

TITLE: "Electric Foothold Frame for Shipyard"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 p 25

ABSTRACT: This article reports development by the Hsin-chiang Shipyard of a new type of electrically controlled foothold frames, that will elevate and move traversely to any part of a ship's bulwark for ship repairs. The working platform of the framework will carry four persons and some simple tools. A person besides the ship can simultaneously control four such working platforms by push buttons.

AUTHOR: None

ORG: This Journal

TITLE: "Gear Dynamic State Total Error Analyzer"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 p 25

ABSTRACT: This article reports a joint development of a gear dynamic state total error analyzer with electronic computors and self printing device by the Shanghai Measuring and Cutting Tools Plant, the Chengtu Tool Institute, the Shanghai Industrial Automation Institute, and the Shanghai Normal University. The instrument will automatically analyze the total gear error and print out all the errors in 3-5 minutes. The specifications of the analyzer are also given.

AUTHOR: FUNG Tse-chun [7458 3419 0689]

ORG: None

TITLE: "Nuclear Energy Power Generation"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 29-31

ABSTRACT: The author introduces the general knowledge concerned with nuclear energy power generation that includes: 1) the outstanding characteristics of nuclear energy; 2) the disintegration reactions of the atoms; 3) how atomic energy can be converted into electric energy; 4) the more prospective graphite, light water, heavy water, uniform and liquid metal fuel reaction piles; and 5) some examples of combined utilization of nuclear energy power generation.

AUTHOR: None

ORG: Tientsin Electric Transmission Design and Planning Institute

TITLE: "Silicon Controlled Frequency Conversion and Speed Regulation"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 p 31

ABSTRACT: This article introduces the principle of silicon controlled frequency conversion and speed regulation of electric power sources. It is reported also that this type of silicon controlled regulation system has already been applied to the processing of certain motion picture plant, motion picture film plant and tape recording machines for the conversion of frequency and regulation of speed of revolution.

AUTHOR: KUNG K'un-yuan [7895 0981 0337]

ORG: Peking Institute of Zoology, Chinese Academy of Sciences

TITLE: "Reasonable Applications of Pesticides"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 pp 32-33

ABSTRACT: The author introduces the correct techniques of applying pesticides that include: 1) timely early treatment with small dosage; 2) strict control of effective dosages to avoid over concentration and excessive dosages; 3) improvement of pesticide characteristics to broaden their effectiveness; 4) logical compounding of the ingredients; and 5) strict control of the applicable range of highly toxic and long acting pesticides.

AUTHOR: None

ORG: This Journal

TITLE: "Automatic Instrument Assembly"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 12, Dec 76 back cover

ABSTRACT: This cover reproduces a picture showing workmen of the Sixth Shanghai Automatic Instrument Plant assembling automatic instruments produced by the plant at the assembling workshop.

11,206
CSO: 4009

ACTA MICROBIOLOGICA SINICA

AUTHOR: FAN Yun-liu [5400 0061 0362]
CHIANG Shu-ch'in [1203 2579 0530]
KUO Tien-jui [6751 3013 3843]
WANG Ch'ing-hai [3769 3237 3189]

ORG: All of Institute of Microbiology, Chinese Academy of Sciences, Peking

TITLE: "Identification, Transformation, and Molecular Weight of R40 Plasmid of Escherichia Coli Strain PH116"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 277-281

TEXT OF ENGLISH ABSTRACT: The donor strain PH116 of E. coli was identified as F^- by its response to phage Qβ. It is resistant to tetracycline$_S$ but$_R$ sensitive to rifampicin. Conjugal transfer was performed with W1177F$^-$ Tet$_S$Rif^R as recipient. The frequency of conjugal transfer for plasmid R40 is 10^{-7}. In addition to conjugal transfer, the transfer by plasmid R40 can be accomplished by transformation. Two kinds of circular DNA in plasmid R40, the open circular form and supercoiled molecules were observed. The average contour length of plasmid R40 DNA is 1.03μ m± 0.1. This plasmid is rather a small one, molecular weight is about 2 x 10^6 daltons.
This paper was received for publication on 12 July 1976.

AUTHOR: None

ORG: Chiang-hsi Institute of Food and Fermentation Industry, I-ch'ang, Kiangsi

TITLE: "Studies on the Isoamylase of Aerobacter Aerogenes 10016"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 282-290

TEXT OF ENGLISH ABSTRACT: A strain of Aerobacter aerogenes 10016 has been screened out for the production of isoamylase. Conditions suitable for enzyme formation have been established. The percentage composition of the medium was as follows: liquefied sweet potato starch (DE about 10), 1; soybean cake meal,1; ammonium acetate, 0.8; $MgSO_4 \cdot 7H_2O$, 0.05; $K_2HPO_4 \cdot 3H_2O$, 0.05; KCl, 0.05; $FeSO \cdot 7H_2O$, 0.005. Shake flask culture was conducted at 30°C for 4 days. In a 500 l. fermentor with lower aeration rate, the enzyme level was usually over 500 units/ml. The activity of isoamylase is optimal at pH 5.6-7.2 and 45-50°C, inactivited below pH 5 and above 55-60°C, stimulated by Ca^{++} or Mg^{++} ions and strongly inhibited by Fe^{+++}, Al^{+++}, Hg^{++}, Cu^{++} ions. The isoamylase, when used together with β-amylalysis, promoted the degree of β-amylalysis, thus it increased the maltose content, decreased the dextrin content and raised the browning temperature of the syrup when used in maltose syrup production. It also increased slightly the reducing sugar content and raised the attenuation about 5%, when used in enzymatic mashing process in brewing.
This paper was received for publication on 26 June 1976.

AUTHOR: YUAN Chi-sheng [7086 4949 3932]
CHANG Ya-mei [1728 0068 5019]
CHIANG Ch'ao-jui [12032600 3843]

ORG: All of Institute of Microbiology, Chinese Academy of Sciences, Peking

TITLE: "A Taxonomic Study of Actinoplanaceae: II. Four New Species of Actinoplanes"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 291-300

TEXT OF ENGLISH ABSTRACT: Thirty-five strains of Actinoplanes, isolated from soil collections from Peking, Canton, and other parts of China, were shown to all have type II cell wall (meso-DAP, glycine.) Based on their morphological, cultural, physiological, and biochemical characteristics, they are found to differ from any species of Actinoplanes species so far described in the literature. They are identified to belong to four new species; Actinoplanes auranti-acus n. sp. (strain 71-C_{38};) Actinoplanes roseosporangius n. sp. (strain 71-C_{29};) Actinoplanes pallido-aurantiacus n. sp. (strain C;) and Actinoplanes rutilospo-rangius n. sp. (strain 71-C_6). Their morphological, cultural, physiological, and biochemical characteristics are given in a table.
This paper was received for publication on 15 July 1976.

AUTHOR: LIU Po [0941 3134]
LI Tsung-ying [2621 1350 5391]
CHUANG Fu [1104 1788]

ORG: All of Department of Biology, Shansi University, T'ai-yuan

TITLE: "A New Species of Arthrinium"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 302-303

TEXT OF ENGLISH ABSTRACT: In this paper, Arthrinium macrosporum Liu, Li et Du on dead leaf sheath of Bambusa sp. as a new species is described. It has several prominent characters, notably in its conidiophores and conidia. The conidio-phores are light olivaceous brown and the conidia are larger (17-27.4μm in diam.) than those of the Arthrinium state of Apiospora montagnei Sacc. (6-8μm in diam.) The conidia of the former are olivaceous brown or dark brown, whereas those of the latter are light brown. This new species resembles the genus Cordella, but differs in having no setae in the colony. Type specimen is deposited in the Herbarium of the Department of Biology, Shansi University, T'ai-yuan, China.
This paper was received for publication on 8 June 1976.

AUTHOR: HSU Kung-ch'iao [1776 0501 1564]
CHAO Ken-nan [6392 2704 0589]
HSUEH Yu-ku [5641 4416 6253]

ORG: All of Institute of Microbiology, Chinese Academy of Sciences, Peking

TITLE: "Mutagenic Effect of N-Nitroso-Methyl-Urea for Bacillus pumilis AS 1.271"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 304-309

TEXT OF ENGLISH ABSTRACT: A fairly good yield of auxotrophic mutants (average amount 16%, maximum amount 22% of the total number of the colonies tested) can be obtained by incubating logarithmic phase cells of Bacillus pumilus AS 1.271 with 1 mg/ml of N-nitroso-methyl-urea (NMU) in 0.05 M tris-maleic buffer (pH 7.0) at 30°C for an hour. Amino acid auxotrophs accounted for 71.4%, and purine and pyrimidine bases auxotrophs 11% of the total induced auxotrophs. This paper was received for publication on 21 June 1976.

AUTHOR: None

ORG: Graduate Practice Group, Microbiology Specialty, Department of Biology, Wuhan University, Wuhan; Ch'ang-lin Oil Refinery, Hunan Province

TITLE: "Isolation, Cultivation, and Identification of Some Iron Bacteria, Sulfur Bacteria and Sulfate Reducing Bacteria From Fouling of Heat Exchangers and Recirculating Water of Cooling Tower System in Refinery"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 310-317

TEXT OF ENGLISH ABSTRACT: Petroleum refinery waste water was treated by activated sludge followed by filtration and then recirculated in cooling system. There was a heavy brown gelatinous deposit over the internal surface of multitube condensers and heat exchangers. Eleven strains of iron bacteria were isolated from fouling of heat exchangers by using inorganic medium. Five isolates are identified as Leptothrix ochracea, three as Sphaerotilus natans, and one as Sideromons major respectively. In accordance with their capacity to oxidize manganous compounds to black manganic oxide, two strains of sheath forming filamentous iron bacteria should belong to genus Leptothrix. But apparently they differ in morphological characteristics from any known species in the genus. Twenty-two strains of sulfur bacteria were isolated from the samples described above by using inorganic medium. Twenty strains are identified as Thiobacillus trautweninii, one

as Thiobacillus denitrificans, one as Thiobacillus ferroxidans respectively. Five isolates of filamentous sulfur bacteria were isolated from the samples mentioned above by using inorganic medium. These bacteria do multiply but cannot form colonies on solid medium, so it is doubtful whether these bacteria have ever been cultivated in pure cultures. These isolates of filamentous bacteria were identified as Thiothrix nivea, according to their capacity of depositing sulfuric granules in cells and their morphological characteristics. Three isolates of sulfate reducing bacteria identified as Desulforibrio desulfuricans.

This paper was received for publication on 27 April 1976.

AUTHOR: T'AO Chia-feng [7118 1367 7364]
SHEN Yen-chang [3088 6056 4545]
CH'IN Chia-chung [4440 1367 1813]
LIU Cheng-shan [0491 2973 3790]
CHIANG Ch'u-p'ing [3068 2806 1627]

ORG: All of Szechwan College of Agriculture, Ya-an

TITLE: "Biology of Erysiphe graminis DC. F. Sp. Tritici EM. Marchal in Relation to Incidence of Wheat Powdery Mildew in West Szechwan, China"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 318-327

TEXT OF ENGLISH ABSTRACT: (1) When wheat seedlings were inoculated with the conidia of Erysiphe graminis DC. f. tritici at 16-18°C, the host was penetrated around 12 hours after inoculation, Primary haustoria bodies were found to appear in 24 hours, mycelia on the surface of leaves in 48 hours, secondary haustoria in 3 days, and conidia in 5 days. Each stage in the development of the fungus infection process is rather uniform. At temperature 4-8°C the incubation period is 16-17 days, at 6-10°C, 12-14 days, at 12-18°C, 4-5 days. (2) The optimum temperature range for the germination of conidia was 11-17°C. At 31°C, no conidum germinated and many conidia shrivelled. Conidia germinated much better in a saturated atmosphere than in free water; they germinated even at zero relative hunidity. Water drops reduced germination. In spring the conidium lost its infectivity within 3-4 days, as shown by inoculation tests.

[continuation of WEI-SHENG-WU HSUEH-PAO No 4, 1976 pp 318-327]

(3) Wind plays an important part in the dispersal of the conidia. Raining had a pronounced inhibitory effect on conidia dispersion and sporulation, reducing the number of collection to very low levels. Abundant conidia were trapped above fields at 10.00-16.00 hours every day. (4) Evidence indicates that the cleistothecia on the straw left over in the field after harvest played an important role in the oversummering of the fungus. The ascospores produced therefrom either infected early sown wheat seedlings directly or infected volunteer seedlings producing more conidia to infect the wheat plants in the field. This is believed the chief way of the oversummering of the pathogen and to initiate primary infection of the disease in this area. (5) In powdery mildew prevailing winter wheat region, a higher temperature both in winter and early spring, together with less rainfall and fewer rainy days are considered to be the most favorable climatic conditions for an outbreak of the disease.
This paper was received for publication on 12 January 1976.

AUTHOR: None

ORG: Kansu Provincial Veterinary Pharmaceutical Plant, Lanchow

TITLE: "Production of Anthrax Spore Vaccine by Submerged Culture"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 328-333

TEXT OF ENGLISH ABSTRACT: (1) Vaccine was prepared from an avirulent strain of Bacillus anthracis which was grown in 2% peptone water aerated with a rate of 1:3 by volume. The seed culture culture had been cultivated in the same way for 2-5 passages. The inoculated medium for the vaccine production was then incubated at 35-36°C for 8 hours and later at 33-31°C until the spores were well formed. A rate of more than 80% sporolation could usually be achieved at 24-48 hours, and the spores could withstand the treatment at 60°C for 30 minutes. (2) The safety of the vaccines had been tested on rabbites and sheep in laboratory conditions. It was proved that inoculation of 1 ml into sheep were harmless. In field test, a dose of 0.5 ml for sheep and 1 ml for horse, cattle, donkey, and mule were found to be innocuous. (3) The potency of the vaccines were checked on rabbits and sheep. More than 75% of the rabbits tested were able to survive the challenge, and in sheep, among

[continuation of WEI-SHENG-WU HSUEH-PAO No 4, 1976 pp 328-333]

three batches of the vaccines, two protected 100% and one 80% of the animals vaccinated. (4) The minimal dose of the vaccine required to develop immunity were determined. It was found that sheep could be well immunized by one million living spores suspended in 30% glycerin saline solution. After challenge by the standard virulent anthrax spores of 200 M.L.D., 100% and 75% protection were achieved in two groups of the sheep tested respectively. (5) Tests for the preservative property of the vaccines were conducted in room temperature or 10-15°C. After the storage for a period from 12 to 43 months, no apparent decrease of the living spore counts were observed. It appears that the vaccines thus made possesses high stability and immunogenicity.
This paper was received for publication on 12 August 1976.

AUTHOR: None

ORG: Bacterial Fertilizer Group, I-wu-hsien Agricultural Production Materials Company; Ch'un-lien Brigade Science and Technology Group, Chiang-wan Commune, I-wu-hsien; Chekiang Province

TITLE: "Seed Culture of Actinomyces Microflavus 5406 Prepared on Straw Paper"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 p 334

ABSTRACT: The culture medium is made of 5% of corn meal, or sweet potato meal, or barley meal, or rice meal, or soybean meal; 4% fertile soil; 3% cotton seed residue cake meal; 1% calcium perphosphate. Sufficient water is added to the above and boiled until the mixture takes the form of thin paste. Sodium hydroxide solution is used to adjust the pH to 8-8.5 first, to be 7-7.5 after sterilization. Line an aluminum box with 3 sheets of straw paper and pour about 50 g of the culture medium evenly onto the paper. Cover the box with a lid and sterilize in 1.5 kg/cm^2 steam pressure for 60 minutes. Seeds of 5406 which are preserved in alga should be cultured for 5 days in a potato, cane sugar, and alga medium before being spread onto the paper with a cotton swab, about 2-3 ml 5406 suspension fluid per box. The box is then covered and cultured under 30°C for 5-7 days before it is dried in shade and wrapped in a plastic bag.
This paper was received for publication on 19 May 1976.

AUTHOR: YANG Lien-wan [2799 1670 1238]
K'UNG Hsiang-ch'uan [1313 4382 5425]

ORG: Both of Institute of Microbiology, Chinese Academy of Sciences, Peking

TITLE: "Studies on Immobilized Enzyme:III. Factors Increasing the Activity of Immobilized Glycoamylase"

SOURCE: Peking WEI-SHENG-WU HSUEH-PAO [ACTA MICROBIOLOGICA SINICA] in Chinese No 4, Dec 76 pp 335-338

ABSTRACT: Most reports on immobilized glycoamylase in recent years emphasize preparation, properties, and forms of saccharification; there have not been reports on enzymic activity and its mechanism. Results of an experiment carried out by the authors indicate that if ammonium sulfate, ammonium citrate, ammonium acetate, ammonium chloride, or ammonium dihydrogen phosphate is added when the immobilized glycoamylase is being prepared, and urea is used to treat the carrier, the enzymic activity may be increased in various degrees. The increase is the most apparent when ammonium sulfate is added and urea is used to treat the carrier before ammonium sulfate is added again to prepare the immobilized enzyme. Steps of the experiment and the resultant data are given. This paper was received for publication on 13 March 1976

6168
CSO: 4009

- END -