第5卷

竺可桢

全集

THE COMPLETE WORKS OF COCHING CHU

上海科技教育出版社

第5卷

竺可桢全集

竺可桢　著

上海科技教育出版社

图书在版编目(CIP)数据

竺可桢全集.第5卷/竺可桢著.—上海:上海科技教育出版社,2005.12
ISBN 7-5428-3987-X

Ⅰ.竺… Ⅱ.竺… Ⅲ.竺可桢(1890~1974)—全集
Ⅳ.Z427

中国版本图书馆CIP数据核字(2005)第123588号

竺 可 桢 全 集

第 5 卷

竺 可 桢 著

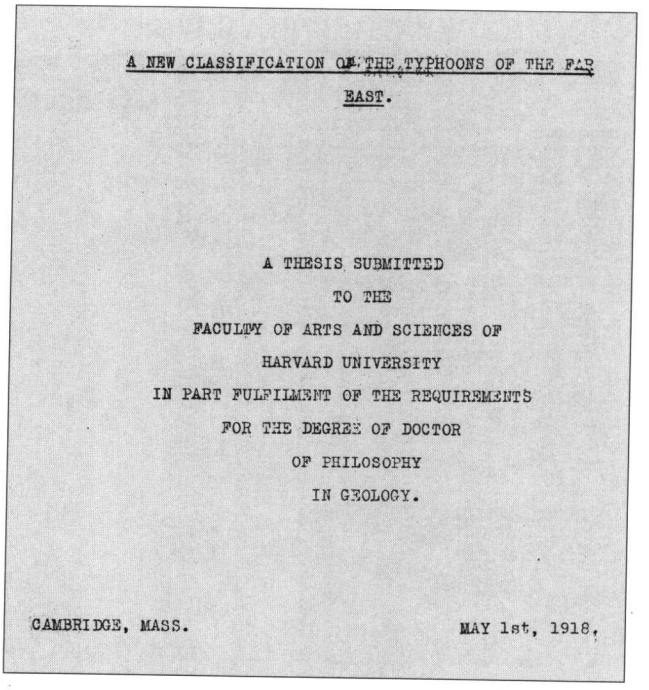
世 纪 出 版 集 团
上海科技教育出版社 出版发行
(上海市冠生园路393号 邮政编码200235)
www.ewen.cc www.sste.com
各地新华书店经销 上海华成印刷装帧有限公司印刷
ISBN 7-5428-3987-X/K·11

开本 787×1092 1/16 印张 36.75 插页 10 字数 715 000
2005年12月第1版 2005年12月第1次印刷
印数:1-3 000 定价:100.00元

竺可桢

1946年 11—12 月,作为中国代表团成员出席联合国教科文组织会议时摄于巴黎

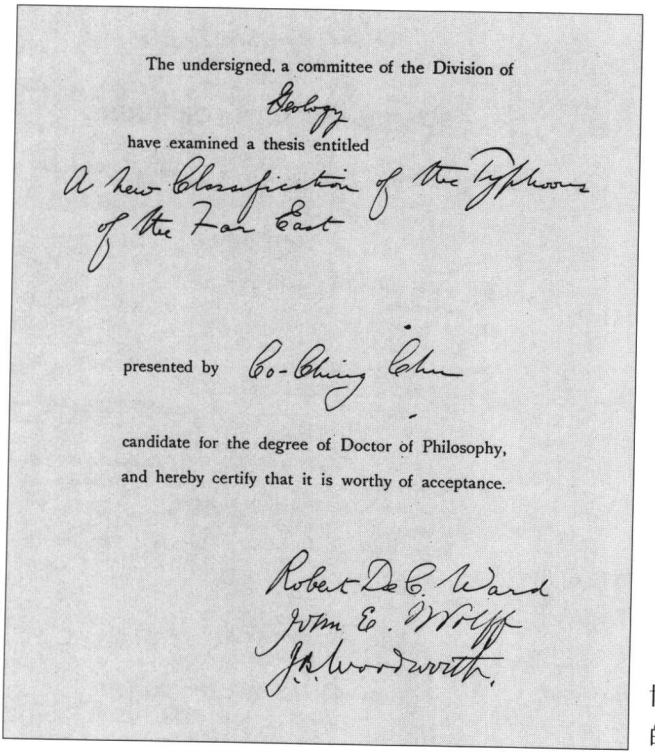
1918年以论文《远东台风的新分类》获得哈佛大学博士学位，图为博士论文英文打印稿封面



A NEW CLASSIFICATION OF THE TYPHOONS OF THE FAR EAST.

A THESIS SUBMITTED
TO THE
FACULTY OF ARTS AND SCIENCES OF
HARVARD UNIVERSITY
IN PART FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR
OF PHILOSOPHY
IN GEOLOGY.

CAMBRIDGE, MASS. MAY 1st, 1918.



The undersigned, a committee of the Division of
Geology
have examined a thesis entitled
A new Classification of the Typhoons of the Far East
presented by Co-Ching Lahm
candidate for the degree of Doctor of Philosophy,
and hereby certify that it is worthy of acceptance.
Robert DeC. Ward
John E. Wolff
J. B. Woodworth.

博士论文答辩委员会通过答辩的评定意见书

MONTHLY WEATHER REVIEW

Editor, ALFRED J. HENRY. Assistant Editor, BURTON M. VARNEY.

Vol. 53, No. 1 JANUARY, 1925 Closed March 3, 1925
W. B. No. 837 Issued March 31, 1925

THE PLACE OF ORIGIN AND RECURVATURE OF TYPHOONS

By Coching Chu

[National Southeastern University, Nanking, China]

[Note.—This paper constitutes the concluding section of Dr. Coching Chu's paper "A new classification of the typhoons of the Far East," begun in the December, 1924, number of the Monthly Weather Review.]

In order to ascertain the zones of formation of typhoons, it is necessary to have a network of meteorological stations in the region of the Caroline and Ladrone Islands. Such stations are not available to-day, nor are they likely to be in the near future. In the following discussions, therefore, the zone of formation of typhoons can only be approximately indicated. The Weather Bureau stations at Guam, in the Ladrone Islands, and at Yap, in the Carolines, were established in June, 1904,[1] the first year of the period with which this paper deals. The importance of these two stations can not be overemphasized. The observers there cable warnings to the Manila Observatory whenever the pressure indicates the existence of a typhoon, or the development of one. They serve as the advance guards to protect the eastern coast of Asia, Japan, and the Philippines from the sudden invasion of a destructive cyclone. These warnings were regularly transmitted to the Manila Observatory until lately, when owing to the war the reports have stopped.[2]

The Philippine Weather Bureau, having in its possession the reports from Guam and from Yap, can determine the latitude and longitude of origin of many storms with more or less accuracy. The Japanese weather service does not trace the typhoons to their origin, but plots only that portion of the tracks which is north of latitude 20° N. The place of origin is usually determined by the wind directions and pressure oscillations observed at Guam (lat. 13° 26′ N., long. 144° 40′ E.) and at Yap (lat. 9° 29′ N., long. 139° E.).

The latitude and longitude of origin and recurvature of the typhoons of the period 1904–1915, taken mostly from the Manila *Monthly Bulletin*, have been computed, and three tables have been prepared. Table 6 shows the average location of the origin and of the recurvature of the typhoons of the different months. The data given by Father Algué have also been tabulated for the sake of comparison. Table 7 gives the number of typhoons and depressions of each month which originated in different latitudes. Table 8 gives the average location of the origin and of the recurvature for the different types of typhoons.

The latitude of origin moves northward from May, when it is 13° 20′ N., to August, when it is 18° 05′ N. It then decreases until December, when it is 8° 30′ N. The number of storms in the months of January to April, inclusive, is too small to obtain a good average, but the latitude of origin probably remains as low as that of December, if it is not still lower. The storms originate farther to the west as the season advances from January to June, when the zone of formation begins to shift eastward until the month of December. As a whole, the average longitude and latitude of origin for the different months as calculated from the 247 typhoons observed during the period 1904–1915 agrees very well with the limits set by Father Algué.

The vertex of the parabolic tracks of typhoons reaches the highest latitude in the month of July, and, like the origin, it goes farther toward the west in June than in any other month.

From Table 7 we see that 253 cases out of 303 cyclones and depressions originated between lats. 8° to 20° N. This is 85 per cent of the total. The lowest latitude in which a storm appeared during the period 1904–1915 is lat. 2° N. This happened in the storm of December 2–4, 1909.[3] The highest latitude in which a tropical storm originated during the same period is lat. 25° N. This typhoon occurred in August 3–8, 1909.[4] If it were not for the fact that the storm went westward, it might have been taken as an extratropical storm, for it traveled in a remarkably high latitude. Originating in lat. 24° N., long. 149° E., it traveled westward, crossing the Island of Kiusiu and entering China near latitude 35° N. The average latitude of origin of 303 typhoons and depressions which have been studied is 13° 40′ N.

Concerning the origin of typhoons, Father Chevalier said: [5]

> There are typhoons which originate in the China Sea, but there are very few, and they will be pointed out as exceptions to the trajectories regularly followed. Very commonly the typhoons originate east of the Philippines, in the square roughly included within the meridians 125° to 145° east of Greenwich and the parallels 10° and 25° north. Whether they originate further eastward is not sure, but it is rather probable. But if there are some, they do not come so far westward as to make their appearance either on the Chinese or the Japanese coast.

Father Algué, after quoting the same statement, added: [6]

> Generally speaking, there are many typhoons which form in a lower parallel than 10° N. and very few in a higher parallel than 20° N. somewhere to east-northeast of Luzon. With regard to the longitudinal limit of formation assigned by Father Chevalier, we judge it to be sufficiently approximate for those of which he speaks, as well as those which are experienced here in the Philippines and in Japan. This refers chiefly to the cyclones which are some way or another felt in the Philippines. If we take into consideration the cyclones which we classify in chapter 10 as cyclones of the Marianas and Magallanes, type 6a, we can extend the limits in longitude for the cyclones formed in the Pacific to meridian 125°–132° east of Greenwich.

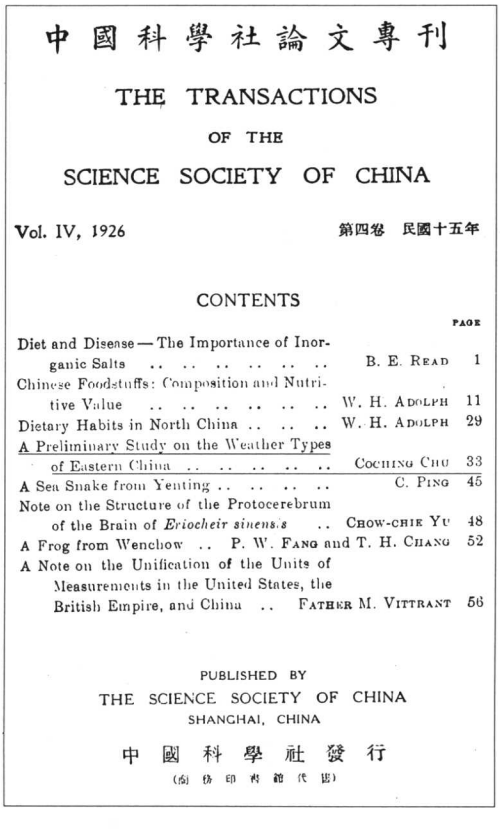
From Table 7 we see that out of 303 storms only 1 originated at or above lat. 25° N., while 65, or 21 per cent of the total, originated below lat. 10° N. Therefore, as is pointed out by Father Algué, Father Chevalier's lower limit of the latitude of origin is too high. Father Chevalier was doubtful whether typhoons ever originated

[1] Monthly Bulletin of the Philippine Weather Bureau, September, 1905, p. 378.
[2] This paper was written before the ending of the European war.

36106—25——1

[3] Monthly Bulletin of the Philippine Weather Bureau, December, 1909.
[4] Loc. cit., August, 1909.
[5] Ch. Chevalier, Loc. cit., p. 36.
[6] J. Algué, loc. cit. p. 35.

1925年3月在美国《天气评论月刊》杂志上发表博士论文的部分内容《台风的源地与转向》,图为该文首页



中國科學社論文專刊

THE TRANSACTIONS
OF THE
SCIENCE SOCIETY OF CHINA

Vol. IV, 1926 第四卷 民國十五年

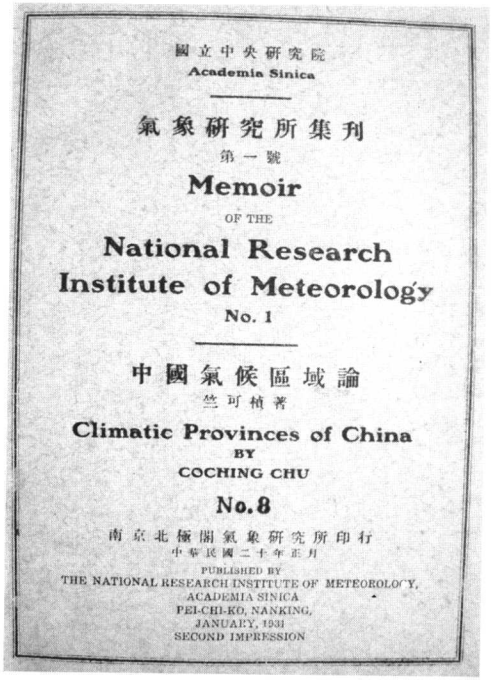
CONTENTS

PUBLISHED BY
THE SCIENCE SOCIETY OF CHINA
SHANGHAI, CHINA

中國科學社發行
(版權仍有翻印代售)

1926年10—11月,作为中国代表团成员出席在日本东京召开的第三次泛太平洋学术会议,在会上宣读论文《中国东部天气之种类》。此文英文稿刊于《中国科学社论文专刊》1926年第4卷,图为该刊封面

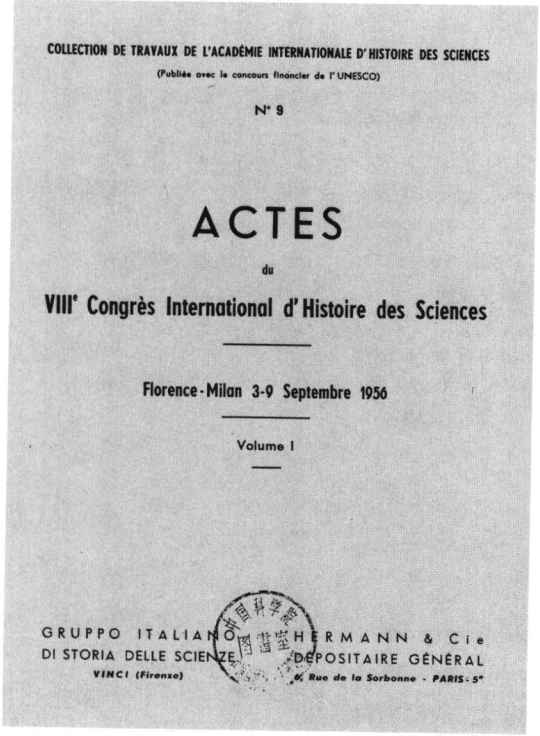
1929年5月赴印度尼西亚万隆参加第四次太平洋科学会议,在会上宣读论文《中国气候区域论》。此文英文稿刊于《国立中央研究院气象研究所集刊》第1号,图为该刊封面


國立中央研究院
Academia Sinica

氣象研究所集刊
第一號
Memoir
OF THE
National Research
Institute of Meteorology
No. 1

中國氣候區域論
竺可楨著
Climatic Provinces of China
BY
COCHING CHU
No.8

南京北極閣氣象研究所印行
中華民國二十年正月
PUBLISHED BY
THE NATIONAL RESEARCH INSTITUTE OF METEOROLOGY,
ACADEMIA SINICA
PEI-CHI-KO, NANKING,
JANUARY, 1931
SECOND IMPRESSION


COLLECTION DE TRAVAUX DE L'ACADÉMIE INTERNATIONALE D'HISTOIRE DES SCIENCES
(Publiée avec le concours financier de l'UNESCO)
N° 9

ACTES
du
VIII^e Congrès International d'Histoire des Sciences

Florence-Milan 3-9 Septembre 1956

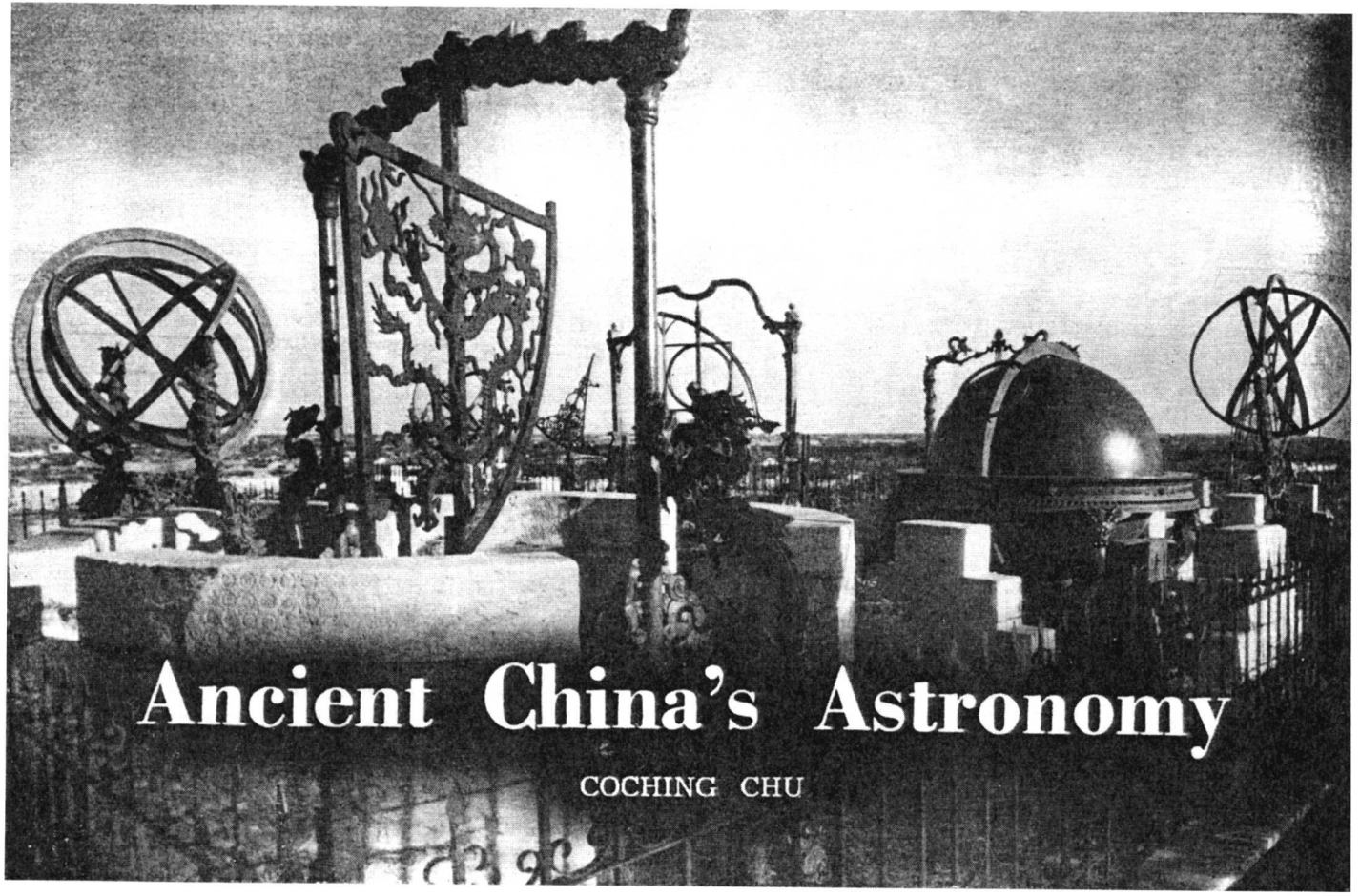
Volume I

GRUPPO ITALIANO DI STORIA DELLE SCIENZE
VINCI (Firenze)
HERMANN & Cie
DEPOSITAIRE GÉNÉRAL
6, Rue de la Sorbonne - PARIS-5e

1956年9月在意大利佛罗伦萨召开的第8次国际科学史大会上宣读论文《二十八宿的起源》,图为此次会议论文集封面

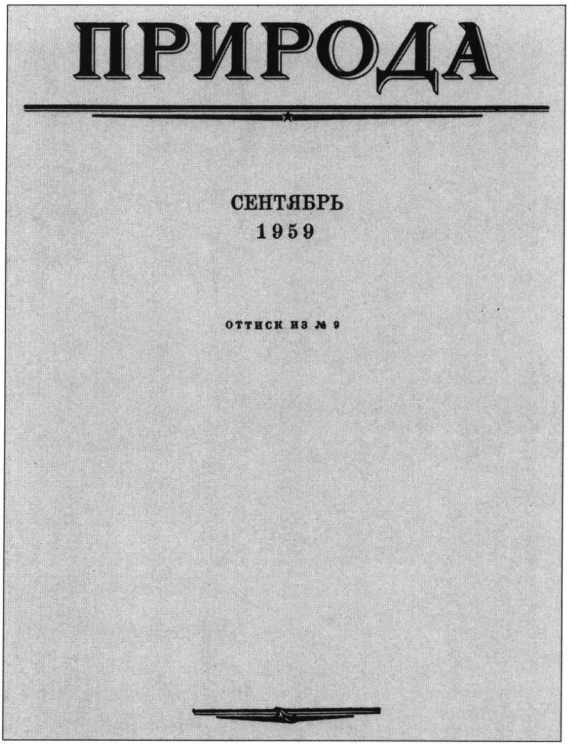
出席第 8 次国际科学史大会期间在海滨散步时与其他会议代表的合影
左 2 为竺可桢,左 3 为王铃

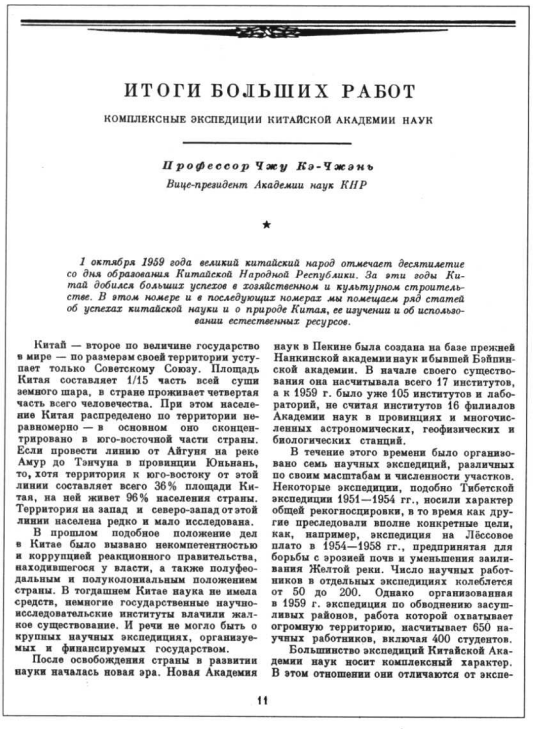
苏联报纸《太平洋之星》刊登中苏联合考察黑龙江时的照片(1957 年 7 月 14 日)
右起 5—9:竺可桢、陈剑飞、顾准、涅克拉索夫、涅姆奇诺夫



1958年6月在《中国建设》杂志上发表《中国古代的天文学》一文,图为该文发表时的压题图“北京古观象台”

1959年9月在苏联《自然》杂志上发表《中国科学院的综合考察工作》一文，图为该刊封面





ИТОГИ БОЛЬШИХ РАБОТ

КОМПЛЕКСНЫЕ ЭКСПЕДИЦИИ КИТАЙСКОЙ АКАДЕМИИ НАУК

Профессор Чжу Кэ-Чжэнь

Вице-президент Академии наук КНР

★

1 октября 1959 года великий китайский народ отмечает десятилетие со дня образования Китайской Народной Республики. За эти годы Китай добился больших успехов в хозяйственном и культурном строительстве. В этом номере и в последующих номерах мы помещаем ряд статей об успехах китайской науки и о природе Китая, ее изучении и об использовании естественных ресурсов.

Китай — второе по величине государство в мире — по размерам своей территории уступает только Советскому Союзу. Площадь Китая составляет 1/15 часть всей суши земного шара, в стране проживает четвертая часть всего человечества. При этом население Китая распределено по территории неравномерно — в основном оно сконцентрировано в юго-восточной части страны. Если провести линию от Айгуня на реке Амур до Тэнчуна в провинции Юньнань, то, хотя территория к юго-востоку от этой линии составляет всего 36% площади Китая, на ней живет 96% населения страны. Территория на запад и северо-запад от этой линии населена редко и мало исследована.

В прошлом подобное положение дел в Китае было вызвано некомпетентностью и коррупцией реакционного правительства, находившегося у власти, а также полуфеодальным и полуколониальным положением страны. В тогдашнем Китае наука не имела средств, немногие государственные научно-исследовательские институты влачили жалкое существование. И речи не могло быть о крупных научных экспедициях, организуемых и финансируемых государством.

После освобождения страны в развитии науки началась новая эра. Новая Академия наук в Пекине была создана на базе прежней Нанкинской академии наук и бывшей Бэйпинской академии. В начале своего существования она насчитывала всего 17 институтов, а к 1959 г. было уже 105 институтов и лабораторий, не считая институтов 16 филиалов Академии наук в провинциях и многочисленных астрономических, геофизических и биологических станций.

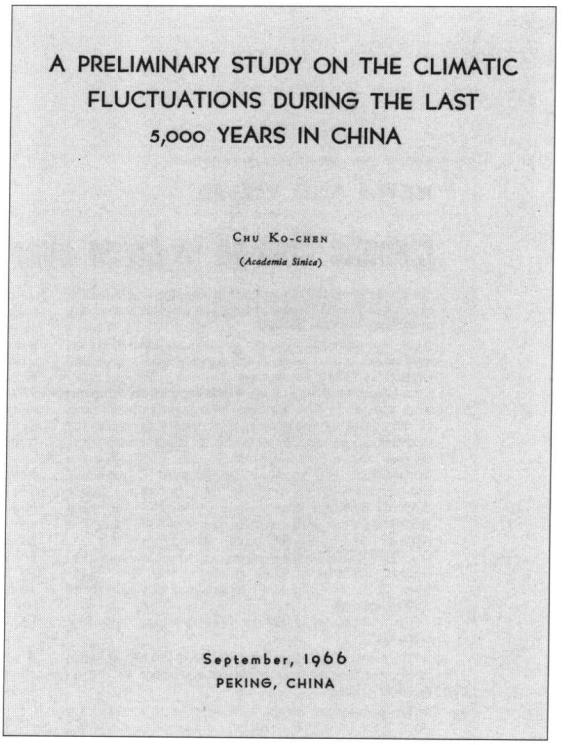
В течение этого времени было организовано семь научных экспедиций, различных по своим масштабам и численности участков. Некоторые экспедиции, подобно Тибетской экспедиции 1951—1954 гг., носили характер общей рекогносцировки, в то время как другие преследовали вполне конкретные цели, как, например, экспедиция на Лёссовое плато в 1954—1958 гг., предпринятая для борьбы с эрозией почв и уменьшения заиливания Желтой реки. Число научных работников в отдельных экспедициях колеблется от 50 до 200. Однако организованная в 1959 г. экспедиция по обводнению засушливых районов, работа которой охватывает огромную территорию, насчитывает 650 научных работников, включая 400 студентов.

Большинство экспедиций Китайской Академии наук носит комплексный характер. В этом отношении они отличаются от экспе-

11

《中国科学院的综合考察工作》一文首页

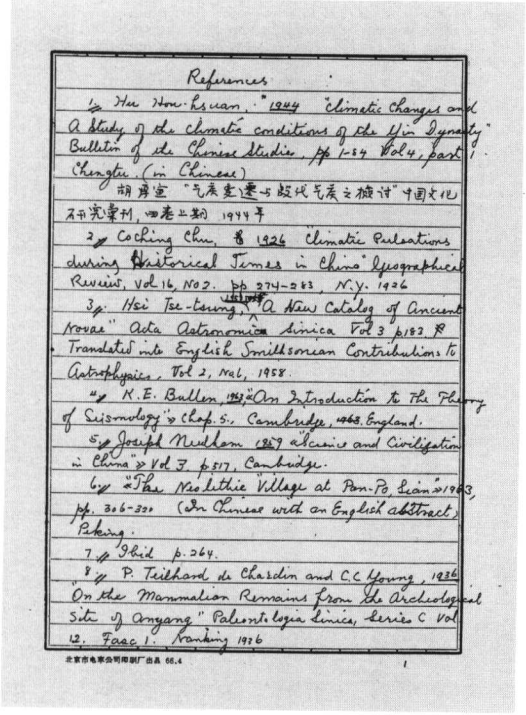
1966年完成《中国近五千年来气候变迁的初步研究》英文稿(初稿)



A PRELIMINARY STUDY ON THE CLIMATIC FLUCTUATIONS DURING THE LAST 5,000 YEARS IN CHINA

CHU KO-CHEN
(Academia Sinica)

September, 1966
PEKING, CHINA



References

1. Hu Hon-hsuan, "1944 "Climatic Changes and A Study of the Climatic conditions of the Yin Dynasty" Bulletin of the Chinese Studies, pp 1-54 Vol 4, part 1 Chengtu (in Chinese)
胡厚宣 "气候变迁与殷代气候之研讨" 中国文化研究汇刊,四卷上期 1944年
2. Co-Ching Chu, B 1926 "Climatic Pulsations during Historical Times in China" Geographical Review, Vol 16, No 2. pp 274-282, N.Y. 1926
3. Hsi Tze-tsung, "A New Catalog of Ancient Novae" Acta Astronomica Sinica Vol 3 p183 ff Translated into English Smithsonian Contributions to Astrophysics, Vol 2, No 6, 1958.
4. K.E. Bullen, 1953 "An Introduction to The Theory of Seismology" Chap. 5., Cambridge, 1963, England.
5. Joseph Needham 1959 "Science and Civilization in China" Vol 3. p 517, Cambridge.
6. "The Neolithic Village at Pan-Po Tsun" 1963, pp. 306-330 (In Chinese with an English abstract) Peking.
7. Ibid p. 364.
8. P. Teilhard de Chardin and C.C Young, 1936 "On the Mammalian Remains from the Archeological Site of Anyang" Palaeontologia Sinica, Series C Vol 12. Fasc 1. Nanking 1936

北京市电影公司印刷厂出品 66.4

1

1972年送交《考古学报》发表《中国近五千年来气候变迁的初步研究》中文稿时有关参考文献部分的手迹

NEWS AND VIEWS

Climatic Change in China over the Past 5,000 Years

"In the fields of the struggle for production and scientific experiment, mankind makes constant progress and nature undergoes constant change."

Now that scientific contacts with China have been re-established, a vast pool of information about historical changes in climate has become available. The quotation from Chairman Mao Tsetung which appears above comes from a paper by Chu Ko-chen, who highlights one facet of the constantly changing face of nature by presenting evidence of how the climate of China has fluctuated over the past 5,000 yr (*Scientia Sinica*, **16**, 226; 1973). Western climatologists will no doubt be delighted to have this comprehensive review available, even though the author modestly disclaims it as preliminary work which, while elucidating a few problems, also puts forward a lot of new puzzles. As Chu Ko-chen says, "misinterpretations . . . are unavoidable" when looking at the oldest historical records—but misinterpreted or not, at least the records from China are essentially continuous for the entire 5,000 yr period.

The interval of 5,000 yr falls naturally into four sections:

- The archaeological period, from 3000 to 1100 BC, when there were few written records except those carved on the oracle bones.
- The documental period, from 1100 BC to AD 1400, for which there are written documents but no detailed regional reports.
- The gazetteer period, from AD 1400 to 1900, when many districts kept records of history and geography which contain climatic information.
- The instrumental period, from 1900 onwards, in which detailed meteorological records have been kept.

Even for the earliest of these periods important climatic evidence is available. The oracle bones, which contain many inscriptions praying for rains, provide an important clue; evidence of farming activity, and farming methods, provides another. It seems that since the time of the Yangshao culture, 5,000 yr ago, the northern limit of bamboo has moved south by 3°. This corresponds to a decline in temperature along the lower reaches of the Yellow and Yangtze rivers of about 5° C (on average) for January and some 2° C for the mean annual temperature. Yangshao and Yin-Hsu times, at the earliest period of the 5,000 years studied, seem to have been a climatic optimum in China, when rich subtropical fauna and flora flourished in places like Sian and Anyang. But "as to the existence of elephants in the northern part of China during the neolithic age, it is still a moot question," says Chu Ko-chen.

In some ways, the analysis of evidence from the documental period is the most fascinating. Here, there is no lack of data—the problem lies in interpretation to give a self-consistent picture. The keeping of official records began with the founding of the Chou Dynasty (1066 to 256 BC), with first inscriptions in bronze and later written records in bamboo books. But the official historians were not the only people to leave records, and poets in particular have left descriptions of birds and flowers from which evidence of climatic change can be deduced. Certainly, at the beginning of the Chou Dynasty the climate was warm enough to grow bamboo extensively in the Yellow River Valley. But the climate soon deteriorated, and the Han River, a tributary of the Yangtze, froze in 903 and 897 BC. Great droughts followed the freezing, but conditions in the mid-Chou period were rather better. Plum trees, much loved by the Chinese, became common throughout the country, and from about the ninth century BC to the time of Confucius (557 to 479 BC) the Yellow River valley was slightly warmer than it is today. The next cold period began about 200 BC, and in the space of a century there were six very severe winters, with frost and snow occurring in late spring months, and many people froze to death. From the first century BC to the first century AD the climate again recovered, but between AD 155 and 220 attempts to grow oranges in the royal garden at Loyang "failed dismally", even though oranges had been grown in the royal gardens during the Han Dynasty some 300 yr earlier.

The astronomer-poet Chang Heng (AD 78 to 139) had written an ode in which he referred to plentiful orange groves near the "South Capital"—but in AD 225 naval manoeuvres at Kuangling had to be suspended when the Huai River froze, for the first time on record. So the pattern of warm and cold periods continues; it is plausible to argue, for example, that during the 8th and 9th centuries AD temperature and rainfall belts in the eastern part of China were shifted a little north relative to their present day positions, and Chu progresses through the maze of documental evidence up to the 12th century. Then, there was a much more dramatic change in the climate.

In the past few years, climatologists (and even some non-experts) have come to be familiar with the idea of a 'Little Ice Age' which affected Europe and Britain some 500 yr ago, and which may have been at least partly responsible for the loss of Viking colonies in North America and Greenland. But in China, it seems, this little ice age was pronounced in the 12th century, considerably earlier than in the west. Japanese records confirm this; from the 9th century onwards, nobles celebrated the blooming of Japanese cherry trees (a sensitive climatic indicator) and appropriate records were kept until the 19th century. Climatic changes in China and Japan paralleled each other during that millenium. The long cold period lasted effectively from the 10th to the 14th centuries in China, with the severe cold of the 12th century corresponding most closely with the western little ice age. Development and movement of this cold spell can be traced from east to west, since a cold period began in European Russia around 1350, and in central Europe between 1429 and 1465; in England it was during the 16th century that conditions became so serious that they led to the Elizabethan legislation on poverty. Lamb has already pointed out that "the greatest incidence of anomalies moved westward across Europe during the climatic deterioration from 1300 to 1600 and returned to the East

英国《自然》杂志(1973 年 12 月 14 日)对《中国近五千年来气候变迁的初步研究》一文的评述

《竺可桢全集》编辑委员会

前　言

一

竺可桢，字藕舫，卓越的科学家和教育家。1890 年 3 月 7 日出生于浙江绍兴东关镇（今属上虞），1974 年 2 月 7 日病逝于北京。

进入 20 世纪之前的中国，科举制是国家教育制度的主体。1898 年维新派主张改革教育制度，新风所被之处，绍兴东关镇也办起了新式学堂。竺可桢由此得以在家乡读完小学，到上海读中学，之后又进了唐山路矿学堂，打下了较为扎实的新学基础。1910 年，竺可桢考取第二批留美“庚款生”，先入伊利诺伊大学农学院，后入哈佛大学研究院地学系，攻读新兴的气象学，1918 年以论文《远东台风的新分类》获得哈佛大学博士学位。

西方科学在中国的传播，自传教士利玛窦入华算起，历经三百余年，断断续续，波波折折，直到 20 世纪初，才通过新学制把现代科学知识体系全面引进中国的课堂。随后的留学大潮又把现代知识分子群推上了新世纪的舞台。幸逢如此历史机缘，加上自身勤奋有恒，竺可桢终能跻身于中国第一代科学家的行列。

1915 年中国留美学生创办“以传播世界最新科学知识为帜志”的《科学》杂志，发起成立了“以联络同志共图中国科学之发达为宗旨”的中国科学社。竺可桢汇入到这股科学救国的洪流中，成为该社的第一批社员和《科学》杂志的早期编辑。以此为起点，他一生中始终坚持向民众传播科学知识，弘扬科学精神，宣传科学对社会进步的推动作用，利用各种机会呼唤全社会注重科学事业的发展，倡言“只问是非，不计利害”，勇于担起天下兴亡的社会责任。

回国后的竺可桢，先后在武昌和南京任教，在东南大学创建了中国大学中的第一个地学系，为日后中国现代地理学和气象学的发展培养了一批早期专门人才。在推动科学教育升级转型的同时，他长期参与中国科学社的领导工作，被推选为继任鸿隽、丁文江、翁文灏之后的第四任社长。在 1915 年至 1927 年期间，中国的科学体制处于团体化组织自流发展的状态，而吸纳科学家最多、学科覆盖面最广、社会影响最大的中国科学社，成为居于中国科学界首位的代表性组织。

中国科学社按英美模式勾画了未来中国科学事业的蓝图，但囿于国情条件，此梦难圆。1928 年以后，蔡元培等力主引进法国模式，中国科学体制由此进入了

中央研究院时代。鉴于竺可桢的学术地位,从蔡元培着手筹备中央研究院之日起,他就被邀请来负责筹建气象学方面的研究机构。1928 年至 1946 年间,他一直担任气象研究所所长,自 1935 年起担任中央研究院评议会的评议员,1948 年被选为中央研究院院士。

竺可桢是中国现代气象学和气象事业的奠基人。他亲自主持在南京北极阁营建气象学研究基地,培养出一支精干的队伍。与此同时,他为国家争权益,经过苦心经营,中国终于从 1930 年元旦起能够独立自主地开展对我国领土领海的气象预报,结束了由外国人垄断中国气象预报的历史。继地质学与生物学之后,在竺可桢的领导下,气象科学实现了在中国的本土化和体制化。他本人在台风分类、季风、中国气候区划、气候变迁以及物候学等方面的研究,都处在科学的前沿。《竺可桢文集》(科学出版社, 1979 年)的编者在卷前撰有"竺可桢的生平与贡献",对此已有较系统的评述。

1936 年 4 月,竺可桢受命出任浙江大学校长。浙大前任校长推行法西斯主义教育,招致广大师生的激烈反抗,使学校处于瘫痪状态。竺可桢长校之后,尽力按哈佛办学模式塑造新浙大,着力革除弊政,聘选优秀教授,确立"求是"校训,注重通才教育,尊崇思想自由,推动科学研究。抗日战争的爆发,致使中国的大学进入颠沛流离的状态,而浙大是搬迁各校中组织得最好的一所。每到一地,即能迅速开课,图书馆、实验室也都随即开放,保证了教学与科研的进行。在竺可桢的领导下,浙大每到一地,都为当地的文化、教育、科学事业作出贡献,其影响在六七十年后的今天也清晰可见,因而浙大的西迁被称为"文军长征"。经历了遵义湄潭时期的相对稳定之后,浙江大学竟在艰难困厄中崛起,这所原为普通的地方性大学一跃而居于全国少数著名大学之列。

中华人民共和国成立之初,竺可桢即出任中国科学院副院长。从中国科学社到中央研究院,再到中国科学院,他在 20 世纪中国科学体制演化的历程中,始终发挥着重要作用。建院之初的首要任务,是在前中央研究院和北平研究院等原有基础上重新组建新的科研机构。由于竺可桢在科学界和教育界中具有很高的声望,在实现平稳过渡中发挥了无可替代的作用。他历来认为发展科学事业的关键是人才问题。在尊重人才、使用人才、吸引人才和保护人才方面,都给后世留下了许多令人感动的故事。

1955 年,竺可桢当选为中国科学院学部委员,兼任生物学地学部主任。随着后来领导体制的变化,他开始把主要精力放在执行"十二年科学发展远景规划"的有关任务上,主要是全国范围内的自然区划和自然资源考察工作。他亲自筹划建立了中国科学院自然资源综合考察委员会,与各方面协调,组织了一系列的重要考察队。他在 70 岁的前后,以年迈之躯奔波在大河流域、西部高原和北漠南疆,足迹遍及除西藏和台湾以外的全国各个省区。这些考察成果为国家宏观规划和区域发

展提供了最宝贵的第一手资料，与此相随，在全国布置了略具规模的研究机构和观测台站的网络，并直接促进了在冰川、冻土、沙漠、青藏高原综合研究等许多新兴研究领域的拓荒与耕耘。

人口、环境与资源，与竺可桢所从事的地学研究有关，更与50年代以后他分工领导的工作有关。在对自然资源的调查、研究、保护、开发和改造等方面，他都有过艰苦的考察实践和深入的理论思考，著述亦多。通过物候学的研究和资源考察工作，他较早地注意到了环境问题，晚年则对此给予了更大的关注。他从20年代起即关注我国的人口问题，50年代以后，面对人口陡增的形势和政府对策失误的现实，这一关注就更为持久和益显沉重。他在著作和日记中殷殷述说中国古人盲目开发资源而给后世遗下无穷祸患的惨痛历史教训，呼唤今人负起历史责任，不要再因我们的失误而殃及子孙后代。竺可桢立足于中国的国情，最为关注的是人口增长和水土流失两大问题。与源于西方的工业忧患不同，他表达的乃是源于本土的农业忧患，今人由此可以隐约看到“可持续发展”这一思想在中国的早期萌动。

自20世纪30年代起，竺可桢在中国气象学会和中国地理学会中长期担任领导职务。1950年任中华全国科学技术普及协会副主席，1954年起当选第一至第三届全国人大常委会委员，1958年任中国科学技术协会副主席。他的一生，除在气象学与气象事业、地理学与自然资源考察事业上作出了杰出贡献外，在科学史、科学普及、科学教育、科研管理和诸多科学文化领域皆有突出成就。

59岁以前的竺可桢，先后领导过一个系、一个研究所和一个大学；59岁以后，他参与领导中国科学院和全国的科学事业；66岁以后侧重于对地学和生物学科研的领导；晚年遭遇“文革”，开始“赋闲”，在特殊的政治保护中幸得“平安”。不过，早年的思想棱角已被连续淘磨多年，他尝以“落伍者”自责，对时代政治大局欲解而难解，对国家科学事业欲为而难为。他只有“躲进小楼成一统”，充分利用原来难得的时间，继续研究并潜心撰写《中国近五千年来气候变迁的初步研究》，又与合作者共同完成了《物候学》一书的修订。此外，他坚持逐期阅读国际上两种最权威的科学期刊《自然》(Nature)和《科学》(Science)，关注国际科学进展，思考中国科学和教育事业的前途；他认真检索几十年的日记，为澄清对有关人士历史问题的审查而认真书写证明材料；也曾为基础科学研究的命运和保卫钓鱼岛主权问题上书周恩来总理。当然，还有许多时光消耗在与病魔的周旋中。因“文革”时期宅内冬季供暖不足而周期性引发的肺气肿，严重损害了他的健康。

二

竺老离去的30年来，科学界、教育界一直以各种方式表达着对他的怀念。

中国科学院、中国科协、浙江大学，在他的诞辰和忌日，于1984年、1990年、

1994年、2000年举办过不同规模的纪念活动。

竺老的纪念文集和传记著作,已出版近20种。在中国人民邮政发行的当代中国科学家纪念邮票中,竺可桢名列第一组之中。

浙江上虞县东关镇辟设“竺可桢故居陈列室”,为该地文物保护单位。

在竺可桢的故乡命名“竺可桢中学”,为浙江省级农村示范初级中学。

由中国气象局投资,在浙江省绍兴市气象局辟设“竺可桢纪念馆”,作为中国气象系统开展传统教育基地之一。

江苏省气象局将中央研究院气象研究所旧址的会议厅命名为“藕舫厅”。

浙江大学设有“竺可桢教育基金会”“竺可桢学院”“竺可桢杰出学者年度讲座”,在竺可桢学院大楼内辟设“浙江大学竺可桢纪念馆”。

在浙大西迁所在地遵义,建有“竺可桢碑亭”,并将附近一座新建桥梁命名为“可桢桥”。

中国科学院及其直属机构设有“竺可桢野外科学工作奖”“竺可桢科学史讲席”“竺可桢科学史奖”和“竺可桢南森国际研究中心”。

竺可桢塑像见于各地:南京大学东南大楼、浙江大学校园、江苏省气象局内中研院气象所旧址、中国科学院917大楼、中国科学院大气物理研究所科研楼和上海青浦“东方绿舟”的知识大道等。

多年以来,在众多报刊上发表的纪念和回忆文章,就举不胜举了。

上述种种,尽管出面主持者的名义不同,但都发乎于人们内心那份历久弥深的真情。

国人以“立德、立功、立言”为不朽,纵观竺老之一生,“三立”皆备。他以求是精神醒世律己,以敬业精神继往开来,享中国气象学和地理学一代宗师之誉,研究水土风云,成果惠及百代,培育人才桃李满天下。竺老以地学为专攻,重实地考察而躬行各地,又终生奋笔不辍,著述虽多有佚失,而现尚可得各类遗存文稿约300万字,日记约1000万字。

出版界早就有人打算为竺可桢出集子,也作过收集文章的准备。1962年,主管科技界的聂荣臻副总理曾提出:“象竺可桢这样的科学家应该给他出个文集。”

1977年4月,中国科学院决定编辑《竺可桢文集》,此书于1979年3月由科学出版社出版,选收论文79篇,约70万字。受当时历史条件的限制,许多文章未能入选。后来还有科学普及出版社的《竺可桢科普创作选集》(1981),百花文艺出版社的《看风云舒卷》(1998)和浙江文艺出版社的《竺可桢文录》(1999)等,都是根据不同的需要编选的本子,文字量不大。日记方面,80年代由人民出版社和科学出版社先后出版了总共五卷本的《竺可桢日记》,约300万字,占原本字数的三分之一。

当历史走进21世纪的时候,人们自然而然把过去的世纪当作一个整体加以回