

國立中央研究院  
氣象研究所概況  
全出營國際交換所

14.6=  
295

14.6二-295  
1200501223689



始





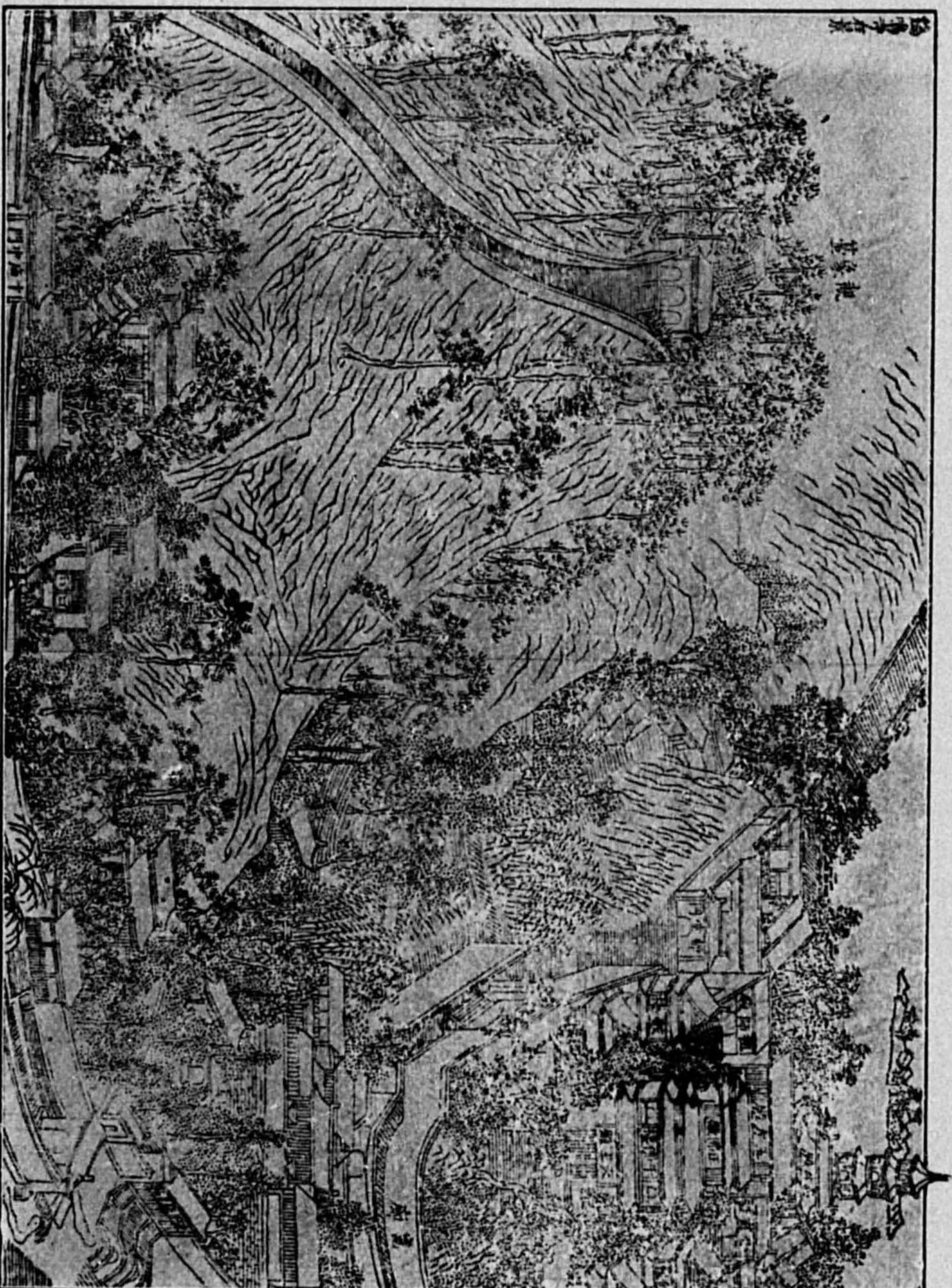
中華民國十六年八月

國立中央研究院  
氣象研究所概況

蔡元培題







第一圖 明天啟時代欽天山觀象臺及鷄鳴寺圖  
Fig. 1. Pei-chi-ko Observatory during Ming Dynasty.



14.6 = -295



### 一 歷史

一 千五百年前之觀象台 欽天山氣象台自開始籌備。以迄於今，為時不過一載有半，其歷史至短。然試考欽天山設置觀象之往事，則其淵源甚遠，現代世界任何觀象台，莫有堪與比擬者。距今千五百年，劉宋始設日觀台於台城，台城遺址，在今欽天山東北，是為欽天山設置觀象台之濫觴。

二 元明觀象台 元至正元年，建觀象台於此，明改為欽天台，欽天山之名，遂由此起。

三 清代北極閣 清初，欽天山觀象台儀器移置北京，其台亦漸毀，道觀北極閣，乃獨擅此山之勝，洎乎今日，人多稱此山曰北極閣，是以閣名代山名矣。

四 氣象台之籌備 民國十六年秋，中央研究院籌設觀象臺於



上海  
國立中央研究院  
出版品國際交換處  
寄贈本



第二圖 新建氣象臺圖  
Fig. 2 The New Observatory



首都，十七年二月，分觀象臺籌備處爲天文研究所，與氣象研究所。氣象研究所遂擇定欽天山爲所址。就原有北極閣地址，建造氣象台，俗人不知，有以拆除北極閣爲毀損古蹟者，實則興建氣象台，正所以恢復劉宋元明之舊業。與科學而除迷信，廢淫祀以求實用，氣象臺之建設，又曷可緩。

五 氣象臺之成立 氣象臺建築工程，自十七年六月至同年十二月，凡七閱月而告竣。全臺皆鋼骨水泥構成。遇火不壞，皮藏儀器，不虞震動。欽天山在首都城內地位最高，氣象臺矗立其巔，有仰凌雲霄，俯視全城之勝，首都新建設此其一也。

## 二 設備

一 儀器 本所應用儀器，多自德英法三國購來，如氣壓計溫度計，以德國製者爲多，量雨計微塵計，購自英國，而風向風力計

及各項自記計，多採用法國產。共計本所現有儀器九十餘件，價值二萬五千元。茲擇較爲複雜之儀器，略述數種如下。

一 滑錘自記氣壓計 普通水銀氣壓計，多不能自記，而自記氣壓計，則用空盒製造，不若水銀氣壓計之正確靈敏。故各國儀器公司，多設法製造自記水銀氣壓計，以相競爭。就中最爲正確靈敏，首屈一指者，莫如德國浮司公司之滑錘自記氣壓計，其法設一天平，懸水銀管於一端，水銀管至天平支點之距離，爲固定的，他一端設一滑錘，其重量爲固定的，其距天平支點之距離，則視水銀管之重量以爲斷，大氣氣壓高，使水銀管中水銀升高，然後賴電流通閉之力，能使滑錘外移，至天平保持平衡爲止，氣壓低降時則反是。如此氣壓升降，滑錘即向左右移動，滑錘



上繫一墨水筆，能留其左右移動之跡於自記紙上，自記紙則依時間向下移動，每日更換一次。

二 電傳自記風力計 電傳自記風力計，法國立却公司製造，上部設感風器，風推旋轉，每風行十二公尺半，電流接通一次，傳達於下部之自記器，自記器中設二輪，連之以軸。一輪依風行距離，使軸右移，一輪依時計使軸左移，因此軸所處之地位，即為二輪旋轉之商數，易言之，即以時間除風行距離之得數，即風速也，如此再用槓桿作用，及時計之助，留風力變動之跡於自記紙上。

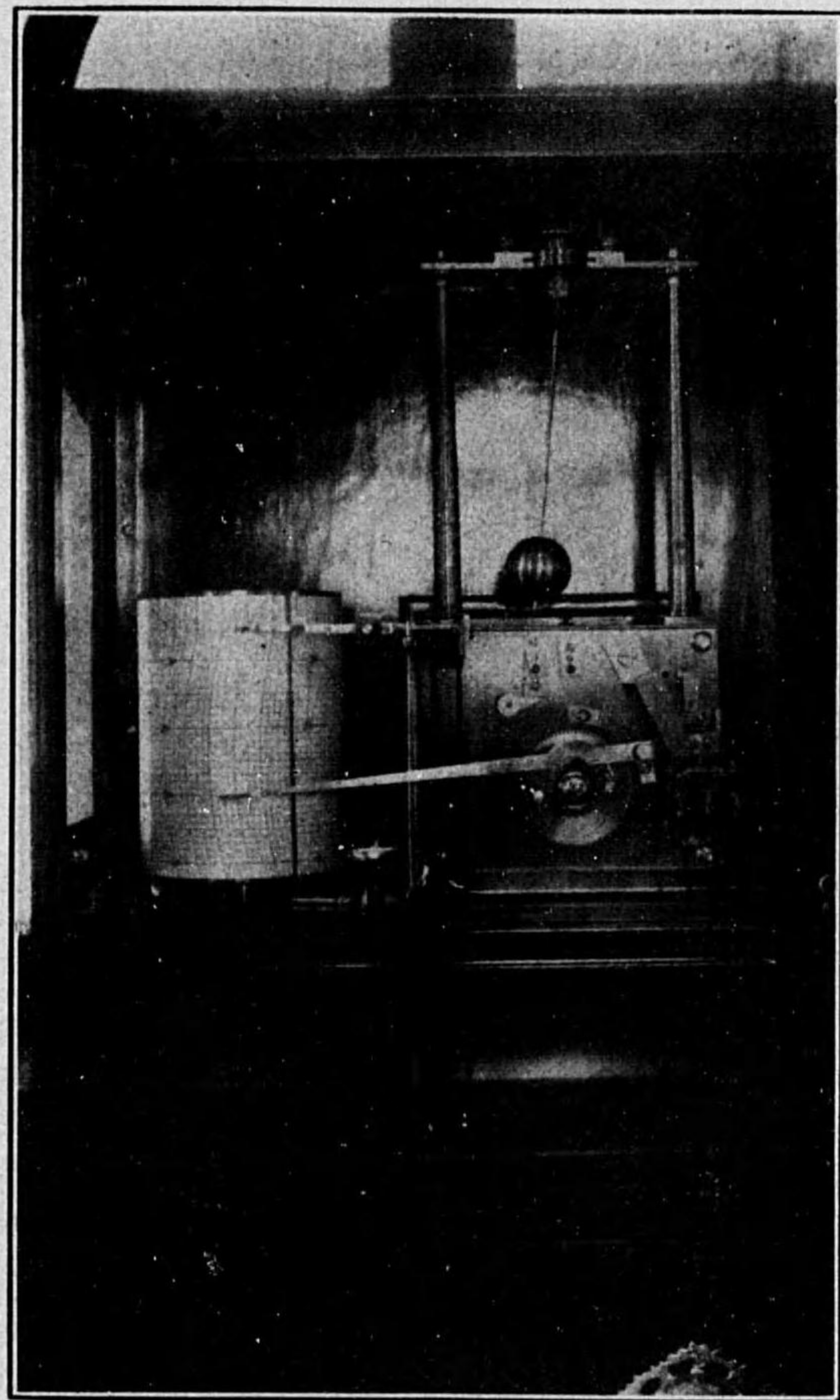
三 壓管風力風向計 倫敦納格勒底桑勃拉公司製，一聯合風力風向計，其風向計利用風信竿之機械作用，直接記錄於自記紙上，風力計可分兩部，(A)空管甲乙兩枚，

甲內乙外，甲之上端隨竿向風，乙之上端有微孔若干，風力加大，則甲管內之壓力增而乙管內之壓力減。(B)浮筒，浮於液體中，甲管通其下，乙管通其上，風力強則甲管內之壓力與乙管內之吸力，使浮筒上升，風力大小時，即浮筒浮沉不定，浮筒上繫一筆，乃留墨跡於自記紙上。

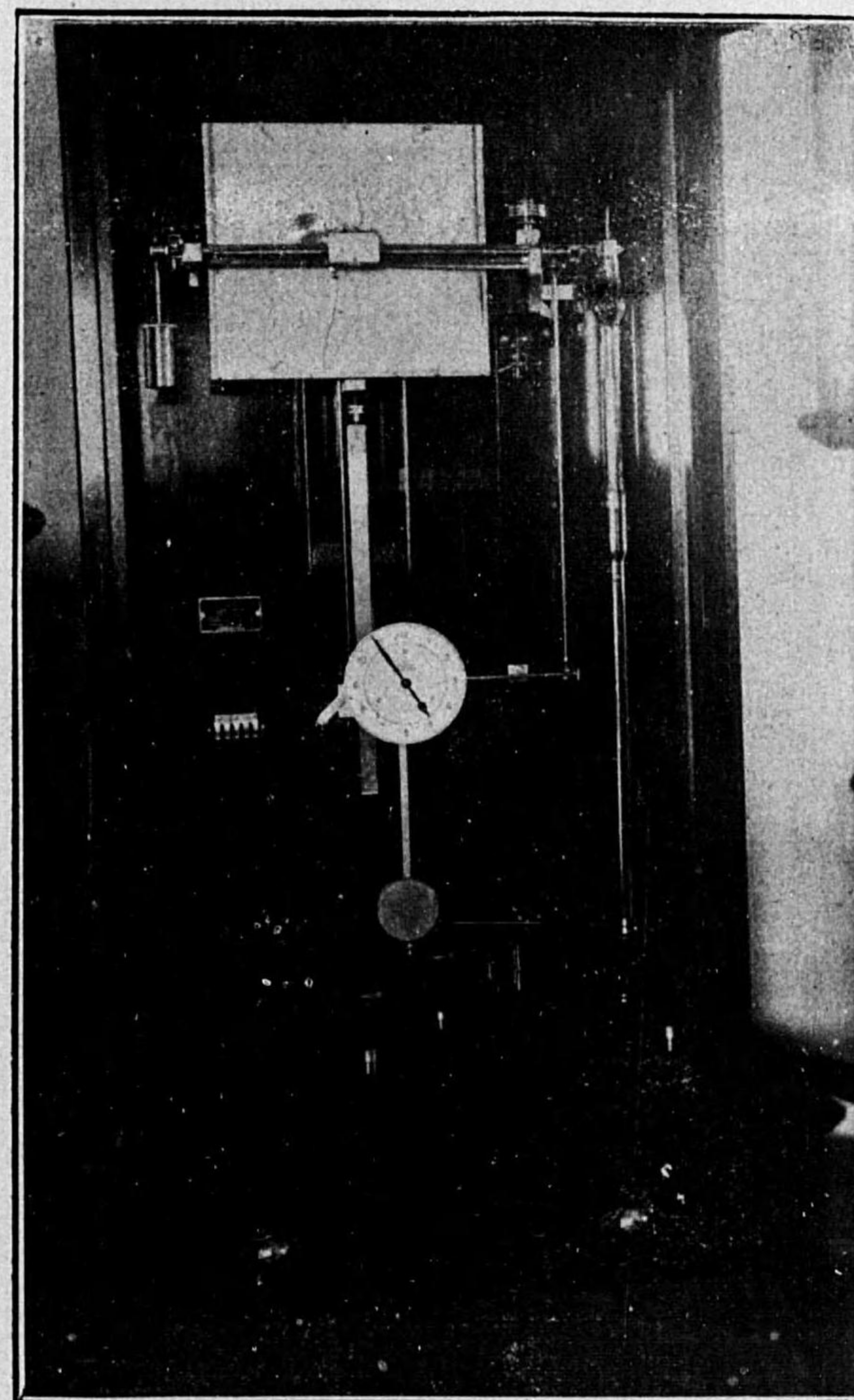
四 自記經緯儀 高空測候，多半利用汽球或風箏，其測風汽球一種，用途尤廣，以其上升最高，賴此能測定高空各層之風向與風力，可供航空或研究大氣運行之參考，測量汽球行動之儀器，為經緯儀，德國阿斯崗尼公司製造之自記經緯儀，能於觀測時，自記經緯度數，不需人工刻刻記錄，尤為靈便異常。

二 圖書 本所現有氣象專門書籍四百餘部，歐美各國氣象等





第四圖 電傳自記風力計  
Fig. 4 Richard's Anemo-cinemograph



第三圖 浮司公司製滑錘自記氣壓表  
Fig. 3 Sprung-Fuess Sliding Weight Barograph



類雜誌七十餘種，中外各處氣象報告八十餘處，又整部各國氣象舊雜誌十餘部，總計價值二萬餘元。

### 三 事業

一 著作 本所職員，自所長以下，除担任事務外，均同時担任研究，所長竺可楨，曾作「中國氣候區域」研究論文一篇，提出於十八年五月在爪哇舉行之第四屆太平洋科學會議。所員呂炯，作「極面學說與中國之風暴」，胡煥庸作「氣候變更說述要」，均載十七年年報中，其餘猶有陸鴻圖之「航空氣象概要」全文，晨黃廈千之「測候須知」均在編印中。

二 測候 本所測候事業，可分兩種，一地面測候，二高空測候。高空測候應用儀器，已購到數種，不日可以開始工作。地面測候，則如氣壓，溫度，濕度，風向，風力，日照，地溫，草溫，雲向，雲量，雨量，

雪量，以及蒸發微塵等各種測候全備，計每日日間人工觀測十六或十八次，視晝夜之長短而定，每小時一次，晚間則利用自記儀器之記錄，其觀測結果，載民國十七年之季刊年刊及十八年之月刊中。又北平前中央觀象臺，經改組後，其一部改爲北平氣象測候所，附隸於本所，專司北平測候事宜。

三 通報 本所測候報告及預報除在首都中央日報逐日發表外，首都中央黨部 XGN 廣播無線電臺，於每日下午六時三刻，將本所所測當日氣象概況，廣播一次，至下午八點廣播次日天氣預告。又北極閣 XN 無線電臺亦每日將本所測候結果，播發兩次，其時間爲上午十一點半及下午六點半，波長三十七米至於外埠測候結果，本所每日繪製天氣圖及預告天氣須利用之，大多利用交通部電局電臺，及建設委員會無線電



臺，由各處傳達於本所，本所亦自設無綫電收信機接收之。計現在可收到國內測候所報告三十餘處，菲力濱十處，日本二十餘處，香港觀象臺轉來臺灣琉球報告十餘處，徐家匯轉來東亞各地報告十處，惟各地報告每不能按日收到，有綫電報傳遞尤爲遲緩，有隔數日方到者，作當日天氣圖及預告天氣時，每感困難焉。

#### 四

造就測候人才 國內測候人才，異常缺乏，十八年春間軍政部航空署及河南陝西甘肅各省政府，均先後請本所開設氣象練習班。爲其造就測候人員，該項練習生畢業以後，現均在各該省署辦理測候事宜矣。

#### 五

計劃測候所 測候機關，在我國爲數極少，自本所成立以來，各方多有請求本所代爲計劃如何設置測候所者，或并委託

本所代辦儀器，或爲之訂正儀器，本所爲應各方需要起見，曾製各等測候所應用儀器清單，並介紹各國著名儀器公司於各機關。

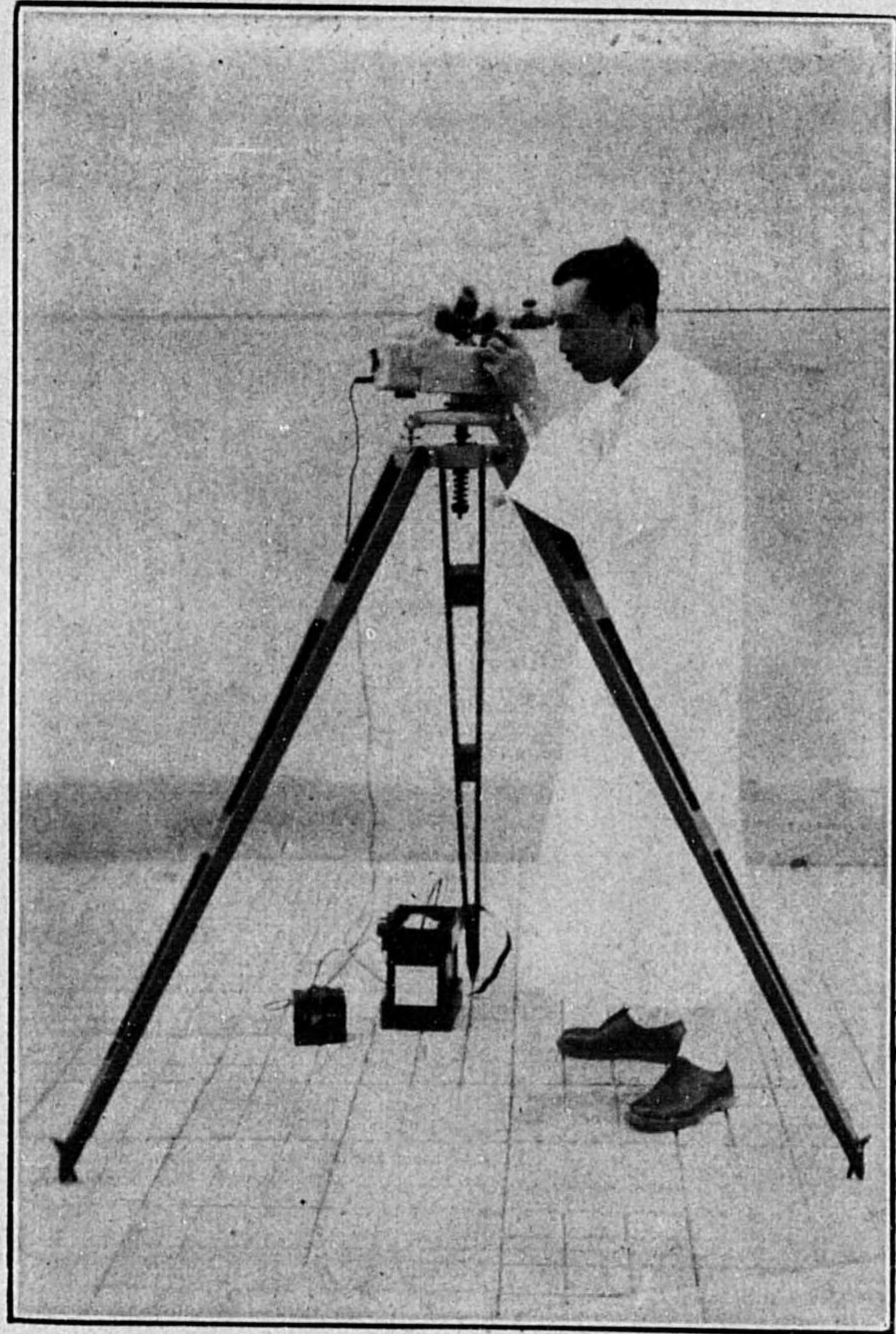
#### 六

保護飛航 本所除與各測候所互相通報外，近以交通部辦理京滬飛航，及國都設計技術專員辦事處利用飛機測量京都，均由本所每日供給氣象報告，及預告，藉供機師參考，以便保護飛航。

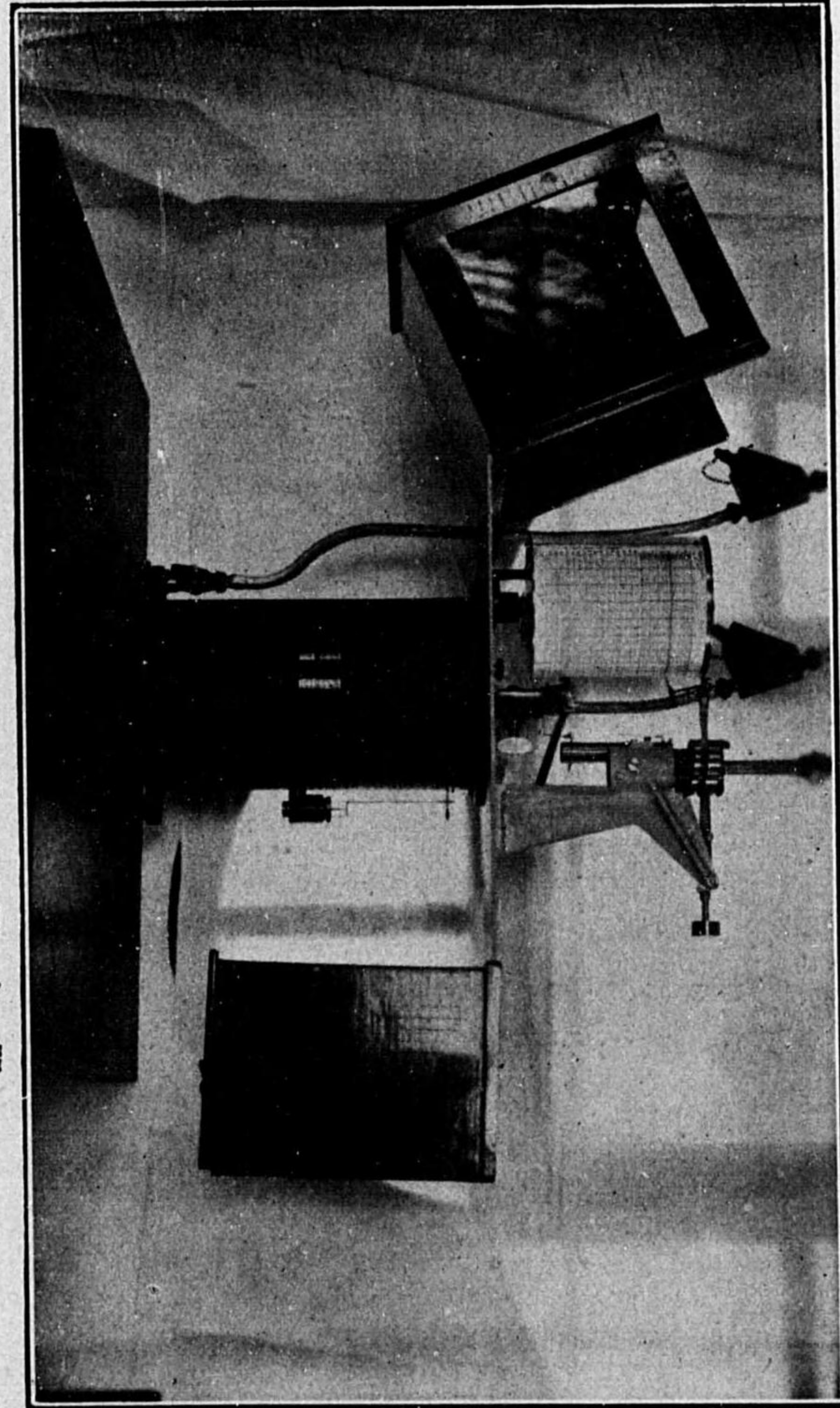
#### 七

出版品 本所現有出版品，分定期刊與不定期刊兩種，定期刊如十七年之季刊年刊，及十八年之月刊，均登載本所測候報告，月刊中並附列全國測候報告五十餘處，不定期刊，有氣象臺落成紀念刊，及竺著「中國之氣候區域」專著一種，其餘在編印中。





第六圖 自記經緯儀  
Fig. 6 Automatic Recording Theodolite.



第五圖 壓管風力風向器  
Fig. 5 Combined Anemo-biagraph and Wind-direction Recorder.



**The Institute of Meteorology**  
**National Research Institute**  
**Its Organization and Work**

PEI CHI-KO, NANKING, CHINA.  
AUGUST, 1929

Printed By  
The China Science Corporation



## THE INSTITUTE OF METEOROLOGY

### **Its Organization and Work**

#### **1. Organization**

The Institute of Meteorology is a part of The National Research Institute of China, which was created during the summer of 1927 by the National Government of China, and was at first known as the Ministry of Education and Research. In the late Autumn of the same year, The Ministry of Education and Research was separated into two independent governmental boards; 1, The Ministry of Education, and 2, the National Research Institute.

So far the National Research Institute has organized eight departments, viz: (1) Institute of Physics, (2) Institute of Chemistry, (3) Institute of Engineering, (4) Institute of Geology, (5) Institute of Astronomy, (6) Institute of Meteorology, (7) Institute of Social Sciences, and (8) Institute of History and Philology, besides maintaining a National Museum and a Service of International Exchange of Publications.



## 2. The History of Pei-chi-ko

Each Institute has its own separate headquarter. The Institute of Meteorology is located at the summit of Pei-chi-ko Hill, Nanking, about 60 meters above the surrounding country and 67.9 meters above the sea level. The place is very rich in historical memories, it was associated with solar observations as early as the Liu Sung dynasty, 1500 years ago.

During the Yuan dynasty in the year 1341, an observatory was erected at the top of this hill, the very site of the present Institute, for the purpose of observing the astronomical and meteorological phenomena. The Observatory was rebuilt in the early days of Ming dynasty in the year 1385, the place was then known as Astronomical Hill on account of its being the site of an observatory. The well-known Jesuit Father, Matteo Ricci, visited this hill in 1598 and found the observers making their daily and nightly watches. He saw several astronomical instruments, the bronze celestial sphere, sundial, wind vane, armillary sphere, etc., installed there in use. Fig. 1 is reproduced from an old Chinese book "Buddhist Temples of Nanking" written by one Kuo Ying Liang

in the year 1627, and published shortly after, the observatory was shown at the upper left corner.

It was not until during the reign of Emperor Kang Hsi of Ching dynasty (1662-1721) that the astronomical instruments in Nanking were transferred to the Peking Observatory. Since then a Taoist Temple sprang up in the place of the former observatory, and from which the name Pei-chi-ko is derived.

## 3. The Building of the present Institute

As stated in the first paragraph, the Institute of Meteorology came into existence with the formation of the Ministry of Education and Research in 1927. Hourly observations of meteorological elements, 24 times a day, were made beginning from the first of January, 1928, within the compound of the Ministry. Plan of establishing a new meteorological Observatory at the summit of Pei-chi-ko was soon decided upon, and the work on tearing down the old dilapidated Taoist Temple and founding of a new observatory in its place started in June 1928. Although the whole building did not finish until the end of December, 1928, the offices were completed first, and were occupi-



ed on the first of October; hence during the last quarter of the year 1928 all the meteorological observations were made at the new headquarter.

#### 4. Meteorological Observations

Since January 1, 1929, the observations during the night hours have been suspended, hourly readings were made from the day break to 10 P. M., the night readings were taken from the self-recording instruments. Of these instruments mention may be made of Sprung-Fuess Sliding Weight Barograph, Richard's Anemo-cinemograph, and Negretti & Zambas' Anemo-biograph and Self-recording Wind Vane.

#### 5. Weather Telegrams and Synoptic Charts

At present the Institute receives daily from about fifty stations in China, Japan, Formosa, and Philippine Islands, the meteorological telegrams and wireless weather reports containing barometric pressure, temperature, wind direction and force, and state of weather. From these reports a daily weather map is prepared. Owing to the poor communication the morning reports do not usually reach the Institute until the afternoon at the best, this, coupled with the scarcity of reports, especially from the in-

terior parts of China, makes forecasting a difficult task.

#### 6. Wireless Weather Reports and Daily Forecasting

The Weather conditions in Nanking at 10 A. M. and 5 P. M. are broadcasted by XNK Station, wave length 37 meters, power 1/2 kw., time 11:30 in the morning and 6:30 in the afternoon. The reports consists of four words: BBTT, DDFV, ANHW, cbbMM. The prediction of weather conditions in the vicinity of Nanking for the next 24 hours is transmitted by the radio through the station XGZ at 8 P. M. daily in Chinese, wave length 420 meters power 1/2 kw. The same prediction is published in The Nanking Daily, "The Central News" the next morning.

#### 7. Publications

For the year 1928, the Institute published four numbers of Quarterly Meteorological Bulletin, the Annual Report for that year is in the process of preparation. Beginning from the month of January, 1929, the Quarterly Bulletin has been enlarged to become a Monthly, incorporating the data of fifty or more stations other than those of Nanking, most of these stations belong to the Chinese Maritime



Customs. Two issues of Monthly are now ready for distribution on the exchange account, they are sold for one dollar gold each copy.

Memoirs embodying the results of researches will be issued from time to time, so far only one memoir on "the Climatic Provinces of China", has been published. Two Handbooks (in Chinese) one on "Aeronautical Meteorology" and the other "A Guide to Observers", both largely translated from German and English authorities, are now in press.

#### 8. Upper Air Research

The upper air research is of paramount importance to a thorough understanding of the character of cyclones, anticyclones, the nature of monsoons, the daily change of weather, and other meteorological problems of this region. It is, therefore the purpose of this Institute to undertake the work in the immediate future, first by the pilot balloons and later by the ballon sondes and kites. The sounding by pilot balloon will begin by this coming winter.

#### 9. Training of Observers

At the request of the Bureau of Aeronautics, Ministry of Military Affairs, and the Government

authorities of the provinces of Honan, Shensi, and Kansu, a course of six weeks on elementary meteorology and practical observations was opened this spring, fourteen students attended these classes. In the future, a more elaborate curriculum, a course covering one semester or more, will be planned.



14.6

295

**The Institute of Meteorology**

**Its Organization and Work**

PEI-CHI-KO, NANKING, CHINA.  
AUGUST, 1929



終