GENERAL EXTENT OF COLLEGIATE INSTRUCTION IN METEOROLOGY AND CLIMATOLOGY IN THE UNITED STATES.

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[Dated: Weather Bureau, Washington, D. C., Apr. 29, 1919.]

On February 24, 1919, Commissioner P. P. Claxton, of the Bureau of Education, sent the following circular to the presidents of colleges and universities in the United States:[1]

The Weather Bureau of the United States Department of Agriculture desires this office to obtain information concerning the extent of instruction in meteorology and climatology at higher institutions. May I ask you, therefore, to reply to the following questions at your convenience:

(1) Name of institution.
(2) Post-office address.
(3) Name of reporting officer.
(4) List of courses now offered in meteorology and climatology with statement of time devoted to each course.

To date, 433 replies have been received, and judging from the large proportion of those reporting no courses it is thought that the lack of replies from the other 200 is largely a result of no courses being offered. Of the 433 replying, 363 institutions reported that no separate courses in meteorology and climatology were given. Of these 363, 83 mentioned that some instruction in meteorology was given in more general courses, and 49 others stated, or let be assumed from their replies, that meteorology had been taught separately at the institution or would be soon; 10 institutions mentioned Weather Bureau officials as the instructors. Tables 1 and 2 indicate in some detail the nature of the replies.

TABLE 1.

I. Institutions giving meteorological courses	70
Departmental affiliation—	
Geology	20
Physics	10
Chemistry	1
Biology	1
Astronomy	1
Not specified	37
II. Institutions giving no meteorological courses	363
A. Meteorology or climatology taught in other courses	83
Geology and geography	34
Geology and astronomy	9
Geology and physics	4
Geology, physics, and astronomy	1
Geology and agriculture	1
Physics	13
Physics and astronomy	2
Agriculture	6
General science	4
Not specified	9
B. No present instruction mentioned	280
Course planned for next year	2
Want to teach subject	13
Past instruction implied without reference to future	34
Other institutions without meteorological instruction (8 mentioned having observing stations)	231

Of the institutions giving courses in meteorology and climatology, a quarter give the equivalent of a full year or more of instruction, with three class-room meetings a week; one-half give the equivalent of one to two semesters' meteorological course; and a quarter give less than a semester's three-hour course. Less than half mention any kind of laboratory work.

[1] Total number, about 650, of which about a fifth are junior colleges.

TABLE 2.—*Nature of meteorological courses given.*

Duration.	Class-room hours per week, not including laboratory.	Institutions. Number.	Institutions. (Doubtful classification).
I. COURSES IN METEOROLOGY ONLY.			
3 institutions with two courses each:			
Semester (i. e., 16–18 weeks)	3	1	
Do	3–1	1	
Do	2	1	
37 institutions with one course each:			
Year (i. e., 8 or 9 months)	4		1
Do	3	2	2
Do	2		1
Do	1	1	1
Do	(1)	1	
Semester	5	1	
Do	4	2	
Do	3	12	1
Do	2	9	
Quarter (i. e., about 12 weeks)	5	1	
Do	3	1	
Half semester	(1)	2	
II. COURSES IN CLIMATOLOGY ONLY.			
2 institutions with one course only:			
Year	4		1
Semester	3	1	
III. COURSES IN METEOROLOGY AND CLIMATOLOGY.			
8 institutions with more than two courses each: *See text.*			
7 institutions with two courses each:			
Semester	5	1	
Do	3	1	
Do	3–2	1	
Do	2	2	
Quarter	5	1	
Do	4	1	
13 institutions with one course each:			
Year	3 or 5	1	
Do	2	2	
Semester	5	1	
Do	3	2	
Do	2	1	
Do	1	2	
Do	(1)	1	
Quarter	3 or 5	1	
Do	3	1	
Half semester	(1)	1	

[1] Not specified.

It may be worth while to give further details as to the courses at the eight institutions offering more than two courses in meteorology and climatology. Profs. R. DeC. Ward and Alexander McAdie, of Harvard, offer six semester courses—two in meteorology and four in climatology; and the university offers credit for research work in meteorology and climatology also. During the present year but three of the six courses are being given. Radcliffe college offers 3 semester courses chosen from Harvard's six, all given by Prof. Ward, Cornell University, with Prof. W. M. Wilson in charge of meteorological instruction, offers five courses, each having one or two class-room meetings per week. Research credit is also given. Mr. Eric R. Miller, of the University of Wisconsin, offers two successive three-hour semester courses on weather and climate, and on climate and man; and, in alternate years, full courses in meteorology or climatology. Mr. B. M. Varney, at the University of California, gives a half course in meteorology followed by one in climatology; and offers more advanced instruction in a two-hour course on current developments in meteorology and climatology. Mr. G. A. Loveland, in the University of Nebraska, offers a two-hour course for the year and two one-hour courses for one semester each. He also gives a year's course in climatology, one hour per

week. In the University of North Dakota, Prof. H. E. Simpson presents a four-hour semester course in meteorology, and a two-hour course in climatology. Credit for research work is offered. Finally, in George Washington University, Prof. W. L. Moore gives a course on applied meteorology, and Prof. W. J. Humphreys one on meteorological physics. Prof. Humphreys's course is for advanced students only.

With relation to the position of meteorology and its outlook for further development, it is to be regretted that there are only three universities in the country where research in meteorology is specifically encouraged, and that even the semblance of a thorough course in elementary meteorology is given at only one in ten of the institutions of higher learning in the country. Surely, the weather is of sufficient interest and importance to deserve individual representation in the curricula of most colleges and universities. Let us hope that without being forced to it, more institutions will have the experience of Muhlenberg College. Prof. I. M. Wright says: "During the S. A. T. C. I had 60 men in the course in meteorology and the work made such an appeal to the men that we are continuing it in the regular college curriculum."

METEOROLOGICAL OBSERVATIONS WHILE TRAVELING.

By ROBERT DEC. WARD.

[Abstract: Handbook of Travel, Harvard Univ. Press, 1917, pp. 451-472.]

Weather conditions are such ever-present and obvious controls of all outdoor activities that no one, least of all a traveler, can be unconscious of them. By devoting a few minutes a day to recording simple observations, every traveler, whether skilled in meteorological work or not, may not only make his own journey more worth while, but also add something definite and valuable to our knowledge of the meteorology of little known regions. The traveler who has never made a study of meteorology and who wishes to gain some general knowledge of the subject before he starts on his journey, may well read over one of the newer American meteorological textbooks. If he desires to acquaint himself with the climatic conditions of the region which he plans to visit, he will do well to consult the standard work on local climate. In this he will find mention of important local phenomena which may be especially worthy of attention and further observation.

The present subject may be considered under two heads: (1) Non-instrumental, and (2) instrumental observations.

Non-instrumental observations.—Many travelers feel that unless they can keep up a complete series of standard meteorological records, with a considerable and superior instrumental equipment, it is not worth while to attempt any observations whatever. This is by no means the case. Even such irregular notes as may be made by a traveler on a train, on horseback, on foot, or on shipboard are often of real interest. A few careful non-instrumental observations, especially if made regularly, are often of more value, even to meteorologists, than any number of careless and inaccurate instrumental records. Even in the most elaborate meteorological records, many weather elements are always observed non-instrumentally.

The hours of observation preferably should be about 7 a. m., 2 p. m., and 9 p. m. to get a general summary of the character of a day. Temperature observations such as chilly, muggy, exhilarating, depressing, mild, excessively hot, etc., are well worth recording, as they give a human picture of the weather not easily obtainable from the other observations. Wind observations on the basis of the Beaufort scale and eight points of the compass are most satisfactory. Special winds such as mountain and valley breezes are worth particular mention. Cloud observations involve particularly the amount of cloudiness, the kinds and the directions from which the clouds move. The records can be made to show the tenths or thirds of the sky covered, the general thickness of the clouds, and particular features of the cloudiness best covered in a brief description. Non-instrumental rainfall observations may be made by describing the intensity of the falling rain; or, if the rainfall is not observed, by noting the condition of the countryside in general, especially as regards vegetation. All sorts of miscellaneous phenomena, when recorded, complete the weather record.

Instrumental observations.—The extent of his instrumental equipment will be determined by the interest, time, and means of each traveler. In the following sections reference is made only to the simple equipment which the average man will probably be able to take. Those who wish to give more time to this subject should consult the standard scientific guides for travelers and the instructions in the use of the various instruments, published by the United States Weather Bureau. Whatever be the equipment, care should be taken to secure good instruments. It is essential that the traveler should familiarize himself with their use before he starts on his journey.

The sling psychrometer is the most convenient type of thermometer and humidity instrument. Aneroid barometers are the most handy for pressure measurements, and will serve not only for local weather forecasting but also for altitude determination. A small rain-gauge may be carried and is frequently of considerable use, especially if travel is not performed on rainy days. Other instruments which may be taken with the traveler are barograph, pocket nephoscope, portable anemometer, and an instrument for determining the true direction and velocity of the wind at sea.

Two pages at the end of the chapter show where instruments may be obtained and their approximate prices, and give references to four textbooks, two scientific guide books, special instructions in the use of instruments, and meteorological tables.—C. F. B.

SOME ECONOMIC EFFECTS OF THE MILD WINTER, 1918–19.

A year ago so much was being written on the effects of the extremely severe winter of 1917–18 that it seems appropriate to make some mention of the economic effects of the extraordinarily mild winter of 1918–19 in the eastern United States.[1] It is unnecessary more than to mention the great saving of coal which resulted from the

[1] The meteorological conditions inducing this mild weather have been discussed in the MONTHLY WEATHER REVIEWS for the different months, and especially by E. H. Bowie, in the January, 1919, REVIEW, pp. 45–46, 2 plates.