

came in the following order: Garden soil; yellow sandy clay; pipe clay; lime soils having crystalline grains; and lastly, a pulverulent chalk soil."

At noon of a July day when the temperature of the air was 90°, a thermometer placed a little more than 1 inch below the surface of different soils gave the following results:

	Degrees.
In quartz sand	126
In crystalline lime soil	115
In garden soil	114
In yellow sandy clay	100
In pipe clay	94
In chalk soil	87

It would seem that the warmest soils are those that retain the least water, and doubtless something of the slowness with which the fine soils increase in warmth is connected with the fact that they retain much water which in evaporating appropriates and renders latent a large quantity of heat.

METEOROLOGICAL CONGRESS AT PARIS, SEPTEMBER 10-16, 1900.

In addition to the important official international conferences that are occasionally called together by the Permanent International Committee, there are other nonofficial congresses that may be assembled at any time. Such were held at Paris, France, in 1887, and at Chicago, Ill., in 1893. The Chief of the Weather Bureau has just received a circular letter notifying him that the authorities of the exposition at Paris have called an international meteorological congress to be held from the 10th to the 16th of September, 1900, and he has been requested to distribute certain circulars of invitation to those interested in the subject.

We print herewith the translation of the body of the circular, but omit the provisional program of subjects that may be discussed.

Those of our observers, either voluntary or regular, or other of our correspondents who desire to attend this conference, or who desire to simply become members and to receive the volume of proceedings that will eventually be published, should make application to M. Angot, General Secretary of the Committee of Organization, Avenue de l'Alma, No. 12. Money orders for the necessary 20 francs should be made payable to Th. Moureaux, Treasurer of the Congress. They should also in making their application be particular to write their names in full and very distinctly, with their titles and positions and home address, and the titles of communications, if any, that they propose to send in. The forms appropriate to such applications may be obtained from the Editor of the MONTHLY WEATHER REVIEW.

The following is the circular letter above referred to:

REPUBLIC OF FRANCE. MINISTRY OF COMMERCE, INDUSTRY, POSTS, AND TELEGRAPHS. EXPOSITION OF 1900. OFFICE OF THE GENERAL COMMITTEE OF ARRANGEMENTS. INTERNATIONAL CONGRESSES. INTERNATIONAL METEOROLOGICAL CONGRESS. PARIS, SEPTEMBER 10-16, 1900.

SIR: An international congress of meteorology will take place at Paris from September 10 to 16, 1900. We hope that you will be pleased to give it your membership and cooperation.

The International Meteorological Committee, which met recently at St. Petersburg, decided that it would call a meeting of the different committees established by the conference at Paris in 1896, at the same time with the present congress.

These committees are as follows:

Terrestrial magnetism and atmospheric electricity.—President, M. Rücker.

Aeronautics.—President, M. Hergesell.

Study of the clouds.—President, M. Hildebrandsson.

Radiation and insolation.—President, M. Violle.

The first of these committees held an important meeting at Bristol in 1898, an account of which, and the resolutions adopted by it, have been published in the Report of the British Association for the Advancement of Science.

Again, a large number of ascensions, with manned balloons and sounding balloons have been made in various countries for the systematic study of the upper regions of the atmosphere.

Finally, the publication and the discussion of the international observations of clouds made in 1896-97 will probably be accomplished during 1900 for the greater part of the countries that took part therein.

From these various points of view we are justified in counting on communications of the highest interest.

The questions that the congress will be called upon to discuss are not restricted, however, to meteorology so-called; they include, in general, everything that concerns the physics of the globe.

It seems to us that it would be premature, at the present moment, to prepare a detailed program of these different questions, and that it must suffice to have indicated its general character by the accompanying provisional program.

In order to facilitate the publication of the definitive program, we beg that you will kindly send, as soon as possible, and certainly before the 15th of May, 1900, your adhesion to this congress and indicate the questions that you intend to bring up for discussion.

The sessions of the congress and of the committees will be held at the hotel of the Société d'Encouragement, rue de Rennes, No. 44, the same place where the International Conference of 1896 held its meetings.

The price of the subscription is fixed at 20 francs (about \$4). The payment of this sum will confer the right to a card of admission and to the volume containing the proceedings of the sessions, as well as the memoirs presented to the congress. We hope that this publication will prove to be of great interest to all meteorologists.

Acceptance of membership and communications relative to the organization or to the program of the congress should be addressed to M. Angot, Secretary-General, Avenue de l'Alma, No. 12, Paris.

Subscriptions may be sent by post office order to M. Moureaux, Treasurer, rue de l'Université, No. 176, Paris.

(Signed)

E. MASCART,
President of the Committee on Organization.

A. ANGOT,
Secretary General.

METEOROLOGY AT THE PARIS EXPOSITION.

Early in March Prof. C. F. Marvin, Dr. O. L. Fassig, and Mr. E. G. Johnson, will be ready to sail for Paris in order to establish and take charge of the meteorological exhibit of the Weather Bureau at the Exposition of 1900. This exhibit will be in a special building occupied by the United States Weather Bureau and the United States Post Office Department, and will be located on the Quai d'Orsay on the Seine, north of the Eifel Tower. The post office address will be care of the office of the United States Commissioner, 20 Avenue Rapp, Paris, France.

The representatives of the Bureau have promised to communicate to the Editor occasional notes on matters of meteorological interest, and voluntary observers who visit the Exposition are all invited to cooperate.

In addition to the work at the Exposition it is hoped that Professor Marvin will have an opportunity to make a series of international barometric comparisons, so that the standards used by the Weather Bureau may continue to be in close accord with those recognized by the Permanent International Committee. The important work already described in the MONTHLY WEATHER REVIEW as being done with sounding balloons, not only at Trappes, near Paris, but also at Berlin, Strasburg, St. Petersburg, and elsewhere, will undoubtedly also be specially studied by him if in any way possible consistently with his other duties.

It is interesting to note that apparatus devised for the use of the United States Weather Bureau is being imitated in Europe, and possibly Professor Marvin may find his own devices as made by others on exhibition at Paris.

LECTURES IN THE SCHOOLS.

Mr. E. C. Vose, Section Director, West Virginia, recently gave a talk on meteorology before the senior class of the high

school at Parkersburg. The talk was illustrated with a series of maps showing the origin and movement of the recent severe storm that passed from one end of the country to the other, and caused such a decided fall in the temperature. It was a practical talk, and gave much information upon a subject of universal interest.

Mr. A. F. Sims, Forecast Official, gave a lecture on January 20 before the normal school at Cooperstown, N. Y., in continuation of his extensive system of lecturing at all points easily accessible from Albany.

Mr. Maurice Connell, Observer Weather Bureau at Red Bluff, Cal., gave a talk on physical geography and the weather to the pupils of the high school at that place on January 15. He pointed out the causes that affect the climate of California, and explained the Weather Bureau system of symbols and forecasts.

LONG DRY SPELLS.

In the November number of the report of the Colorado section Mr. F. H. Brandenburg publishes an excellent piece of work, viz, a list of all dry periods of twenty days or longer, arranged by seasons, based, of course, entirely upon the records of the Denver station from November, 1871, to December, 1899, inclusive. He counts as a dry spell one in which nothing more than 0.01 inch of rain falls. Thirty-five such spells, of from twenty to forty-six days' duration, are enumerated during the fall months, from August to December; twenty-one cases, of from twenty to fifty-eight days each, during the winter months, from November to February; ten cases, of from twenty to twenty-eight days each, during the spring months, from February to May, and, finally, five cases, of from twenty-four to fifty days each, during the summer months, from May to September.

Since the distribution of barometric pressure, which brings about dry weather, is generally widespread, therefore these dry spells often prevail simultaneously over extensive areas.

In order to show that these long dry spells follow a law of distribution that agrees with the laws of probability or chance, the Editor submits the following enumeration:

Length of spell.	Number of cases.	Length of spell.	Number of cases.	Length of spell.	Number of cases.	Length of spell.	Number of cases.
Days.		Days.		Days.		Days.	
20	10	28	2	36	0	44	0
21	12	29	0	37	2	45	0
22	8	30	1	38	0	46	1
23	5	31	1	39	1	47	0
24	5	32	4	40	1	48	0
25	8	33	3	41	0	49	0
26	1	34	2	42	1	50	1
27	2	35	0	43	1	58	1
Total							71

We can not too strongly recommend all observers to compile similar tables, as illustrative of the peculiarities of the local climate. It would also be well to show, not merely these absolutely dry spells, but, also, those in which a very small quantity of water falls. For instance, if at a given station the water supply for the use of a city runs dangerously short when twenty days go by without more than 1 inch of rainfall, it would, therefore, be important to know the number and lengths of intervals having 1 inch of rain. In another case, if the river attains an undesirable height and interferes with business when there has been 10 inches of rain within five days, therefore a record of the inter-

vals within which 10 inches of rain have fallen becomes interesting.

LECTURES AT FARMERS' INSTITUTES.

Mr. E. W. McGann, Section Director, New Brunswick, N. J., writes to the Editor as follows:

I have about completed arrangements with the Secretary of the State Board of Agriculture for a series of addresses to be delivered during the next fall and winter at the Farmers' Institutes held in each county of the State. The themes will be about as follows: What the United States Weather Bureau and the State Service have done, and are doing for the farmers; the principal features of the weather in the vicinity of each Institute; dry and wet seasons; fluctuations in temperature and rainfall, etc. A set of instruments will be on exhibition and fully explained at each Institute, as the Chief has promised me that assistance. * * * I think such a plan will bring the Service closer home to the people, especially the farmers, as very few of them have any idea of the magnitude of the work performed by the National Bureau.

Mr. S. S. Bassler, Local Forecast Official at Cincinnati, Ohio, delivered a talk on Weather Bureau matters to the Farmers' Institute which assembled at Blue Ash, Ohio, on Saturday afternoon, January 6. His address was well received.

CLIMATOLOGY OF SAN DIEGO, CAL.

In the November and December numbers of the California Section Mr. A. G. McAdie, Forecast Official and Section Director, publishes an extensive article by Ford A. Carpenter, Weather Bureau Observer, on the climatology of San Diego. The tables are too elaborate and extensive to be republished in the MONTHLY WEATHER REVIEW, but would make an admirable basis for a monograph or bulletin. The discussion begins with the records for July, 1849, as kept by the United States Army post surgeons, including those kept by the United States Coast Survey and the United States Signal Service, and thus gives a continuous record for fifty years. Owing to the great importance of the question of droughts and the fact that so many persons in southern California have appealed to the Weather Bureau to encourage artificial rain making, the Editor has made the following computation, based upon Mr. Carpenter's table of monthly precipitation after completing the table for the whole of 1899:

Monthly rainfall.

Months.	Number of cases having—				Total monthly (inches).
	0.00-0.10 inches.	0.11-0.50 inches.	0.51-2.00 inches.	2.00 or more inches.	
January	5	3	25	17	1.75
February	3	8	23	16	1.87
March	5	10	28	7	1.88
April	8	21	17	4	0.64
May	21	30	7	2	0.33
June	42	7	1	0	0.07
July	44	4	2	0	0.05
August	40	8	2	0	0.11
September	45	3	2	0	0.08
October	23	16	9	2	0.33
November	9	12	19	10	0.95
December	0	10	24	16	1.97
Total	245	122	159	74	9.58

It appears from this table that the rainfall for November, December, January, February, and March generally comes in showers sufficient for vegetation. During April, May, and October the rains are light showers that may be helpful to vegetation. During June, July, August, and September the showers are too light and infrequent to maintain vegetable life. If plants flourish during these months it must be by virtue of the water stored up in the soil. The rainy season is considered to include the eight months from October to May, inclusive. The following four months constitute the dry season of the agricultural year. The success of the crops