

#### A NEW DEEP-SEA THERMOGRAPH—MOLTSCHANOFF 551.46.087(048) SYSTEM

*Annalen der Hydrographie und Maritimen Meteorologie* of August 15, 1926, contains a description and diagram of this instrument. A fundamental difficulty with former types of deep-sea thermograph has been the impossibility of keeping sea water out of the housing of the registering apparatus. The trouble lay with the connections between the thermal element outside of the housing and the register inside. Any connecting rod had to pass through a stuffing box. And no thermal element was powerful enough to work a rod through a stuffing box tight enough to keep out water under deep sea pressures. The new device is intended to remedy all this.

Its thermal element is a brass tube of small diameter, sealed water-tight at both ends, mounted outside of and parallel to the heavy cylindrical register housing, to which it is attached at the middle of both tube and housing by a short, water-tight hollow fixture giving free access from the interior of one to the interior of the other. Within the tube are two light invar-steel bars. These extend, respectively, from fastenings near the ends of the tube to a movable joint opposite the opening in the hollow fixture just referred to. From this joint a rod passes through the fixture to a train of levers leading to the pen on the registering drum.

The ingenious new feature in Moltschanoff's device lies in using the expansions and contractions of the brass tube with its high coefficient of expansion, to move the invar-steel bars which have a coefficient very close to zero.

The depth of submergence of the instrument is obtained by utilizing the hydrostatic pressure in a bourdon tube mounted with open end through the main register housing, the inner end being connected with a lever train to a pen on the recording drum.—*B. M. V.*

#### EARLY METEOROLOGY IN GERMANY

G. Hellmann, continuing his research into the beginnings of meteorological observation in Germany, has been able to set back the date of the supposed earliest records (Stoffler's *Almanach nova*, 1499) to *Ephemerides* by one Regiomontanus from 1490. This work contains for each month for the years 1490-1505 two pages of weather notes entirely in Latin except for two entries of "hagel" and one, for January 20, 1501, of "eyn grosz waszr"—a similar occurrence in February, 1491, having been noted as a "diluvium." The above are items from the section on "Pre-instrumental Meteorological Observations" in a fascinating historical survey by Hellmann entitled "The Development of Meteorological Observations in Germany from their Beginnings to the Establishment of the National Observing System" (issued by the Academy of Sciences, Berlin, 1926).

With encyclopedic thoroughness the author has assembled and briefly characterized all the known sources of observational material. The noninstrumental period extends from 1490 to 1678. The first decade which the author describes as having "active meteorological stations" was that of 1701-1710. There were six stations in that decade. Through various periods of increase and decrease the number rose to 67 for the decade 1781-1790, but fell off to 20 for 1801-1810. Thereafter, however, the growth of stations was continuous, and in the decade 1841-1850 there were 169.

October, 1847, saw the establishment of the national service, the Prussian Meteorological Institute.—*B. M. V.*

#### PROGRESS IN INTERNATIONAL METEOROLOGY

The most recent meeting of the International Meteorological Committee was held in Vienna, September 23-28, 1926. To this meeting, eight of the commissions appointed by the committee presented some 70 resolutions looking toward further cooperation between the nations in meteorology, the commissions having been in session from September 13 to 20, in Zurich.

Progress is indicated in the adoption of an international code for day and night visual gale warning signals; in the definitive fixing of wind velocity equivalents to be used in translating anemometer velocities into Beaufort velocities for weather telegrams; in the preparation of an international cloud atlas embodying changes in cloud nomenclature and a new set of photographs. This will be submitted for the approval of the International Conference of Directors in 1929, and will take the place of the 1895 atlas of Hildebrandsson, Riggenbach, and Teisserenc de Bort.

The work of the International Meteorological Committee has outgrown the stage in which the labor of its secretarial and publishing work could legitimately be imposed on some one of the national meteorological services. A committee of three has therefore been put to work upon the problem of setting up a permanent secretariat. This secretariat will take over the records of the conference and of the international committee and its commissions, will arrange the meetings, see to all publication, and act as a clearing house for meteorological information of interest to the State services concerned.—*B. M. V.*

#### 551.578.1: 551.510.4 (048) MORE "BLOOD RAIN"

*La Nature* for November 27, 1926, prefaces an account of a "blood rain" in France on October 30, 1926, with a brief historical résumé. We quote the following from this account:

It was not until 1669, on the 17th of March, when a "blood rain" fell at Chatillon-sur-Seine, that the truth began to be suspected. "There fell in various parts of the city," says the History of the Academy of Sciences, "a sort of rain, or reddish liquid, thick, viscous, and stinking, which resembled a rain of blood. The prints of great drops of it were observed on walls; it was this fact which led to the belief that this rain was made of stagnant, muddy water, raised by a whirlwind from some pond in the neighborhood." \* \* \*

There have been observed many red and yellow rains, especially in southern France, southern Italy, the Balkans, and Turkey. \* \* \* The Saharan simoom, and the sirrocco, are quite capable of raising tons of these particles. On the Canary Islands, the soil of which is essentially volcanic, there are observed sand dunes formed of deposits which east winds have brought from the African deserts. In 1846 a mud rain accompanying a series of thunderstorms and violent squalls fell over France, Italy, and in Turkey. It covered the Jura and the south of France with a thick deposit. In Valence the layer was so thick that people had to clean their roof gutters and disconnect the down-spouts. The Chateau of Chamagneu received a coating that rendered it almost unrecognizable. We find similar rains in 1847 at Chambéry, and in 1862 in central France, in 1863 a snow which was thought to be colored with blood, as also on March 10, 1869, February 13, 1870, etc. \* \* \*

Of the same sort was the rain which fell on the 30th of October last, about 6.30 p. m. On the following morning the inhabitants of Isle-sur-Serein were astonished to find that the rain storm which had been raging all night had left an earthy deposit, reddish in color and oily to the touch. In the troughs for catching water from the roofs the water was muddy and rust-colored; clothes left out by washerwomen were stained a muddy russet and had to be put back in the wash. \* \* \* The deposit was somewhat like powdered cacao. Under the microscope it showed that it was composed of tiny semitransparent crystals and of a rather glistening dust in a clayey matrix. \* \* \*

It may be pointed out that on the 24th of October a violent southwesterly storm, accompanied by thunder squalls, raged for 48 hours. It marked the onset of a cyclone which arrived over French territory, moving about south-southeast. The apparatus at the Observatory of Guette registered, from midnight of the 25th to 6 p. m. of the 26th \* \* \* the passage of 710 kilometers of wind, with velocities up to 20 meters per second, or 75 kilometers per hour. After three days of lull, a new storm \* \* \* with violent south wind, brought, on the 30th of October, the curious colored rains noted in our territory. \* \* \*

The water in this rain, when evaporated, left a deposit of 5.75 milligrams per liter, or for each 10 millimeters of rainfall 57.5 milligrams per square meter, or 575 grams per square hectare [2.471 acres]. When one considers that the Department of the Yonne has an area of 746,006 hectares [3,036.5 square miles], that means over 525 tons of solid matter left by the rain over this region alone.—*B. M. V.*

### LIGHTNING OUT OF A CLEAR SKY

[Extracts from a communication by H. J. Upham, Panama City, Fla.]

Referring to MONTHLY WEATHER REVIEW, August, 1926, p. 344, note on "Lightning out of a clear sky," *B. M. V.* quotes Florida conditions. I have noticed this dangerous lightning ahead of a summer squall so frequently during my three years' residence here, about 5 miles east of Panama City [some 45 miles northwest of Appalachicola—*ED.*] that I am more apprehensive of it than of lightning in the squall, as one is more apt to linger out of doors. We have a summer condition of squalls forming northeast, east, and southeast of us. \* \* \*. Day after day the squalls will build up east of us with a general northerly movement, but some movement or building up westerly, toward us. There will be no squall condition west of us noticeable. These squalls miss us day after day at times, but come close enough for us to get the ground out of a comparatively clear sky. I have noticed this so frequently that I watch the squalls for this phase, when working in the grove. I have recognized it but not closely enough to study the position of the lightning in the cloud or how far ahead the ground occurs. I rather feel it occurs in the building up phase and when there is a slight haze and possibly detached clouds in the sky. It is a ground, though, and not from cloud to cloud. I have not noticed any connection between it and whether we will get the squall or not.

### PHYSIOLOGICAL EFFECTS OF CLIMATE

The climatologist, the physician, the geographer, all interested in the relations of climate to man, will find a useful presentation of present-day results and views regarding "The Physiological Effects of Climate" in a paper under that title by Otto Kestner, received at the Weather Bureau library as a separate from the *Handbuch der Normalen und Pathologischen Physiologie* (press of Julius Springer, Berlin).

The paper is a condensed summary (50 pages) of a considerable range of literature on the subject—the extensive citations referring mostly, however, to German authors. The variety of climatic factors dealt with in their relations to health is evident from the following list of major divisions of the work:

Temperature, moisture, wind direction and velocity, winds of the foehn type, barometric pressure, varying partial oxygen pressure and carbon dioxide pressure, light, ultra-violet radiation, consideration of ionization of the atmosphere, and of other factors not yet investigated.—*B. M. V.*

### TORNADOES OF NOVEMBER 25-26, 1926

Accompanying a cyclone of considerable intensity which moved northeastward from the Middle Plains to the Great Lakes on Thursday, November 25, a series of tornadoes occurred over Missouri, Arkansas, Louisiana, Mississippi, Tennessee, and Alabama, in which 88 lives are known to have been lost and 200 or more persons injured, aside from property damage which runs into many thousands of dollars.

Two of this series of tornadoes occurred in southern Missouri. The first struck near Competition, Laclede County, about 5 p. m., and, moving northeastward into Phelps County, took a toll of two lives and injured 11 persons. Its path ranged from 100 yards to half a mile in width and was about 50 miles in length. Considerable damage to buildings of all kinds and crops resulted, and much livestock was killed or injured.

A little over an hour later, or about 6.20 p. m., the second tornado occurred. Beginning at Brandsville, Howell County, near the Missouri-Arkansas line, it moved northeastward into Oregon County over a path about the same width as that of the preceding storm and was last seen near Thomasville about 14 miles away. The property damage from this tornado was considerably greater than the earlier one; four lives were lost and about 40 persons injured.

Arkansas paid the heaviest penalty in lives lost as well as in destruction of property. Here tornadoes occurred at a number of widely separated points. The chief one traversed Faulkner and Cleburne Counties, doing a great amount of property damage in and about Heber Springs, where it took a total of 22 lives and injured many persons.

A storm of like character struck Perry County about 6.30 p. m. and advanced into Conway County, and one also occurred in Pope and Van Buren Counties. These, however, were less severe, the first taking five lives and the second eight. Heavy property losses resulted from both storms. Storms of a more local character occurred near Newport with 2 lives lost, and at Sheridan with 1, Macedonia 2, and Moscow 10. In all, the tornadoes in Arkansas cost 50 lives, and a great amount of property damage, which has not yet been fully estimated.

About 8.45 p. m. a tornado of great intensity struck in the vicinity of Haynesville, Claiborne Parish, La. Its path averaged 67 yards wide and although it only covered 14 miles, damage of more than \$100,000 is reported with a loss of seven lives.

About 11.30 p. m. and 80 miles east of the Haynesville tornado the second Louisiana tornado occurred in Morehouse Parish near the vicinity of Mer Rouge. The path was about 100 yards wide and ran northeast about 4 miles. Here 11 persons were killed, 38 injured, and property loss was considerable.

Northeast of the Louisiana storms, a violent wind having tornadic characteristics occurred near Marks, Miss., where 10 persons were killed, a number injured, and many unsubstantial buildings damaged.

The high winds on the night of the 25th-26th in west Tennessee took the form of a tornado at Florence early on the morning of the 26th. Here little damage was done; the path was short and about 200 yards wide.

At 5.30 a. m. of the 26th the last of this series of violent storms occurred about 1 mile north of Winfield, Ala., doing considerable property damage and causing the loss of four lives. Here the path was 150 yards wide and 7 miles long.

Tornadoes in November are more or less infrequent, and the above appear to have been among the worst that have occurred during that month.—*Grace W. Carter.*