latitudes and vice versa, especially during the transition from the warm to the cold season.

In early autumn the sequence, warm to cold, is of frequent occurrence in the northwest, but only in exceptional cases is the magnitude of the change so great as in the cases under consideration. The rise in pressure seems to be a reaction from the prevailing low pressure intensified and augmented by local conditions of rainfall and evaporation that promote cooling of the air. As a rule the high pressure does not persist much longer than 24 hours and many times a maximum pressure of 30.40 inches is reached on but a single morning.

FIRES CAUSED BY LIGHTNING IN IOWA, 1919-1922.

By ROY N. COVERT, Meteorologist.

[Weather Bureau, Washington, Aug. 31, 1923.]

An analysis of the table below shows that 74 per cent of the total fire loss caused by lightning in four years occurred amongst the farm barns and dwellings, of which 61 per cent was due to fires in barns which were unrodded while about 6 per cent occurred in barns supposed to be protected by rods. Eight of these latter barns, however, are known to have had defective rods, and in six cases lightning ran in on wires.

The value of rodding is effectively shown. The percentage of total money loss to include all rodded structures is 6.8, and it is estimated that in the rural districts, where most lightning fires take place (probably 80 to 90 per cent), that about half the structures are rodded, so that during these four years out of each hundred fires five to six occurred in rodded structures of which nearly 20 per cent had defective rods and 15 per cent started from lightning coming in on wires, both of which can be prevented.

It is interesting to note that a little over 17 per cent of the fires occurred in town barns and dwellings, but such fires gave only about 9 per cent of the money loss. The reason is not far to seek. Fires in rural districts usually result in the more or less complete destruction of the structure, while fires in town are generally stopped before they gain much headway. The average loss per building in 390 fires in farm barns and dwellings was $2,532, while in town the average was $1,146 for 110 fires among the same kinds of buildings. There would be more lightning fires in town were it not for the presence of overhead wires generally protected by lightning arresters and to other grounded masses of metal, such as stacks, roofs, structural framework of buidings, etc., which take the place of the usual lightining conductors.

Other unrodded structures which are rather frequently fired are grain elevators, churches, granaries, and hay, grain and straw stacks. The buildings should evidently be given protection against lightning by suitable rodding, and it is a relatively simple matter to protect a stack in the field by stringing a bundle of two or three wires across and well above the stack from two supporting poles on opposite sides where the ends of the wire are grounded to iron pipes.

The table was arranged from data compiled by Mr. J. A. Tracey, the fire marshal of Iowa, secured by him from chiefs, mayors and others, and presents the most complete and detailed information regarding lightning fires of which we have knowledge.

TABLE 1.—*Details as to rodding, kind of structure, location and estimated money loss.*

Number.	Kind.	Loss.	Per cent of total loss.	Number.	Kind.	Loss.	Per cent of total loss.
	UNRODDED STRUCTURES.				UNRODDED STRUCTURES—con.		
363	Farm barns	$894,546	61.1	2	Railroad depots	1,200	.....
37	Town barns	49,199	3.4	1	Restaurant	965	.....
27	Farm dwellings	92,894	6.3	7	School houses	7,595	.....
73	Town dwellings	76,928	5.3	1	Smoke house	300	.....
1	Auto sales room	200	.....	30	Stocks, hay, grain or straw	5,213	.....
1	Bank	400	.....	3	Storage houses	10,864	.....
3	Blacksmith shop	4,060	.....	2	Stores	8,144	.....
2	Cafes	200	.....	1	Street car	62	.....
1	Carpet cleaning	2,332	.....	1	Substation	511	.....
1	Cheese factory	7,000	.....	1	Tank-wagon station	2,000	.....
14	Churches	36,471	2.5	1	Telephone cable box	50	.....
1	Dry cleaning	75	.....	1	Transformer station	5	.....
1	Electric light plant	26,000	.....	3	Warehouses	1,468	.....
2	Factories	65	.....	1	Water tank	75	.....
1	Fair ground building	3,000	.....	629		1,363,704	.....
1	Feed mill	5,000	.....		RODDED STRUCTURES.		
1	Foundry	350	.....	28	Farm barns	81,281	5.6
7	Garages	12,716	.....	6	Farm dwellings	17,330	1.2
8	Grain elevators	58,684	4.0	5	Town dwellings	1,865	.....
11	Granaries	17,040	.....	39		100,476	.....
3	Hay sheds	3,800	.....		TOTAL.		
1	Hen house	100	.....	668	Rodded and unrodded	1,464,180	.....
3	Hog houses	3,725	.....				
1	Hotel	150	.....				
1	Ice house	2,128	.....				
2	Implement sheds or houses	2,000	.....				
1	Machine shed	2,500	.....				
2	Office buildings	665	.....				
1	Printing office	349	.....				
1	Produce house	21,525	.....				
1	Public library	100	.....				
1	Pump house	1,050	.....				

Average yearly loss, 167 structures, valued at $366,045.

NOTES, ABSTRACTS, AND REVIEWS.

DAILY WEATHER BULLETINS TRANSMITTED BY RADIO FROM THE UNITED STATES TO FRANCE.[1]

By E. B. CALVERT, Chief of Forecast Division.

[Weather Bureau, Washington, Sept. 27, 1923.]

The United States Weather Bureau sends each evening, Sundays and holidays included, to the French Meteorological Service at Paris, a bulletin containing observations taken at a number of stations in the United States, Alaska, and Canada, the position at the same hour of dominating high and low pressure areas, and weather reports from a limited number of ships in the North Atlantic Ocean. All land observations are of hour 0100 G. M. T., and Alaskan reports of hour 2100 G. M. T., current date. The bulletin is addressed to "Angot, Paris," and is forwarded through the United States naval radio station at Annapolis (NSS) to the radio station at Lyons (YN). The transmissions are made on a wave length of 17,145 meters, C. W., as the first message in the Annapolis schedule with France. This schedule begins at 0530 G. M. T., and transmission commences as soon thereafter as communication with Lyons (YN) can be established.

The messages are coded in a modified form of the International Meteorological Code, except that a date word is used to show the day of the month and the period of the day (a. m. or p. m.) that the land observations were taken, and key letters instead of numerals to desig-

[1] Reprinted from U. S. Hydrographic Bulletin No. 1776.

nate such places. The date word immediately follows the address (for date words see page 9, United States Weather Bureau Radiographic Code for vessel weather observers).

The arrangement of the messages are in coded groups, as follows:

Land stations.—Index letters, BBBDF.
Ship reports.—Ship call letters, JQLLL, IIIGG, BBBDF, TTC.
Center of predominating high and low.—Name of station, BBBDF.

MEANING OF SYMBOLS.

BBB=pressure reduced to sea level, in inches (initial figure, 2 or 3, omitted).

D=wind direction on scale 0 to 8, in which 0=calm, 1=N., 2=NE., 3=E., 4=SE., 5=S., 6=SW., 7=W., and 8=NW.

F=wind force in Beaufort scale.

J=day of week, numbered 1 to 7, beginning with Sunday.

Q=quarter of globe in which ship is situated (always in north latitude represented by figure 1, for ship reports included in Angot message).

LLL=latitude in degrees and minutes. The actual minutes are determined by multiplying the third coded figure by 6.

III=longitude in degrees and minutes. Minutes are determined in same manner as for latitude.

TT=temperature in Fahrenheit to nearest even degree.

C=state of sky according to scale, in which 1=clear (three-tenths clouds or less), 2=partly cloudy (four to seven-tenths), 3=cloudy (eight to ten-tenths), 4=raining, 5=snowing, 6=thunderstorms, 7=sleeting, 8=dense fog.

EXAMPLE OF BULLETIN.

Following is an example of a bulletin:

(Address)	ANGOT, PARIS.	
(Date word)	HOODOO.	
(St. Johns, N. F.)	J	02652
(Sydney, N. S.)	S	01264
(Father Point, Can.)	FP	98662
(Parry Sound, Can.)	PN	00000
(White River, Can.)	WR	99800
(Winnipeg, Can.)	WI	99641
(La Pas, Can.)	LP	97861
(Edmonton, Can.)	ED	97081
(Nantucket)	T	00062
(Washington)	WA	00271
(Hatteras)	H	00263
(Charleston)	C	00471
(Bermuda)	B	02852
(Key West)	K	00231
(Little Rock)	LR	00431
(Nashville)	NV	01081
(Cleveland)	V	00441
(Chicago)	CH	00431
(Duluth)	DU	99871
(Huron)	HN	00051
(Salt Lake City)	SLC	97683
(Helena)	HL	98261
(Denver)	DV	99211
(Roseburg)	RO	98481
(Tatoosh Island)	TAT	99453
(San Francisco)	SF	99073
(San Diego)	DI	98681
(Fort Worth)	FW	99411
(El Paso)	EP	98431
(Juneau, Alaska)	JU	99651
(Tanana, Alaska)	TN	98281
(Dutch Harbor, Alaska)	DH	98200

KMI	41389	73819	00021	723
KDE	41392	74119	98800	703
ZTR	41386	74219	00400	723
KEGM	41392	74219	00451	703
(High)	BERMUDA		02852	
(Low)	FATHER		98662	

NOTE.—Words in parenthesis are not transmitted.

The following partial translation will serve to illustrate how the messages are decoded:

HOODOO=29th day of the month, p. m. report.

J 02652: J=St. Johns, N. S.; 02652=(026) sea-level barometer pressure 30.26 inches, (5) winds from S., (2) wind force of 2 in Beaufort scale.

KMI 41389 73819 00021 723: KMI=steamship *Tivives;* 41389=(4) Wednesday, (1) north, (589) latitude 33° 54′; 73819=(738) longitude 75° 48′, (19) time of observation 1900 G. M. T.; 00021=(000) sea-level barometer reading 30.00 inches, (2) wind direction NE., (1) wind force 1 in Beaufort scale; 723=(72) temperature 72° F., (3) state of sky, cloudy.

BERMUDA 02852: Bermuda=Bermuda Islands, the location of nearest reporting station to center of predominating high; 02852=(028) barometer reading 30.28 inches, center of high, (5) wind direction, (2) wind force of 2 in Beaufort scale.

FATHER 98662: Father=Father Point, N. S., the location of nearest reporting station to center of predominating low; 98662=(986) barometer reading nearest center of low, 29.06 inches, (6) wind direction SW., and (2) wind force of 2 in Beaufort scale.

Each evening during a period of more than 25 years the United States Weather Bureau has been furnishing the French Meteorological Service with a bulletin showing current weather from a few stations. The messages formerly were sent by cable. The address "Angot" was utilized because Dr. A. Angot was director of the service. The address was perpetuated in honor of that distinguished meteorologist, who retired several years ago. The bulletin in its present expanded form began in July, 1922, and was the result of arrangements made during a visit to the United States Weather Bureau by Capt. Phillippe Wehrle, Assistant Director of the French Meteorological Service, and Prof. Marcel Coyecque, meteorologist of the French training ship *Jacques Cartier*. These arrangements provide for a daily exchange by radio of European and American meteorological reports, and were made possible by the cooperation of the Office of Communication of the French and American Navy Departments.

The American reports are broadcast from the Eiffel Tower (FL) radio station for the benefit of other European meteorological services and ships in western European waters. The broadcasts from Eiffel Tower are the same in form in which the bulletins are transmitted from the United States and follow immediately after the regular European weather report bulletins, which are transmitted at 11.30 G. M. T., on 2,600 meters, spark, and, in case of a breakdown of the spark apparatus, on 6,500 meters, C. W.

Although the "Angot" bulletins are specially addressed to the French Meteorological Service, they are intended for the general benefit, and shipmasters are at liberty to pick them up during trasnmission from Annapolis to Lyons and to use the information contained therein.

The bulletins containing European reports that were sent by radio to the United States Weather Bureau in exchange have been interrupted for several months. Consequently the time of their transmission and the wave length used is not available for publication herein. An announcement giving the details of this bulletin will be made as soon as the messages are resumed.

WEATHER REPORTS IN SOUTH PACIFIC BY RADIO.

A wireless service for furnishing weather reports to vessels in the South Pacific waters and for studying the course of storms traversing the waters adjacent to the Pacific Islands has been inaugurated by the Navy Department of the New Zealand Government. The attention of all masters of ships is drawn to the importance of their cooperating with the department in reporting at intervals the weather conditions experienced in southern waters, particularly when low barometer readings would indicate the approach of hurricanes, typhoons, etc. It will hereafter be possible for vessels, by intercepting the routine broadcasted reports from New Zealand or Aus-