CURRENT NOTES ON METEOROLOGY.

FROST PREDICTION AND PROTECTION.

BULLETIN No. 23 of the Weather Bureau is entitled *Frost: When to Expect it and How to Lessen the Injury Therefrom*, and is by Professor W. H. Hammon, Local Forecast Official at San Francisco. This paper is a revision of one prepared three years ago, and is the result of careful study extending over a long period. The *Bulletin* classifies the different methods of frost protection under five heads. Of these the most important ones are as follows: I., diminishing radiation; II., raising the dew point of the air, and, III., increasing the temperature of the air. Under the first class come screens of various kinds, such as glass, cloth or laths; and the well-known 'smudges.' The raising of the dew point is accomplished by burning damp 'smudges;' by evaporation from water tanks heated by fires; by spraying and by irrigating at times of frost, etc. The heating of the air by means of small fires, scattered about through the orchard or over the field, has also been found a very effective protector against frost in the drier parts of California. Among the various ingenious devices cited by Professor Hammon, the following is worthy of note. The machine, designed by Mr. George F. Ditzler, of Biggs, Cal., consists of a large, deep, sheet-iron tank, three or four feet square, mounted on a truck. About six inches from the bottom of the tank a wire grate is erected. Through a hole in the bottom of the tank, beneath the screen, a blast of air is admitted, which is produced by a revolving fan, operated by a sprocket chain and wheel attached to the wheel of the truck. A water cask and force pump, operated by the movement of the wagon, complete the outfit. A little tar or other fuel is placed upon the grate and ignited, and the tank is filled with wet straw or manure. When the machine is put in motion the blast produced by the fan causes an intense fire. All the heat of the fire has to pass through three feet of wet straw before it can reach the air. Thus evaporation is very active, and the vapor, rising from the wet material, immediately condenses, forming a dense fog or mist. While the machine is in motion, being driven forward and back between the rows of trees in the orchard, water is continually pumped from the cask and discharged from small holes about the top of the tank upon the fuel. One such machine is said to evaporate 100 gallons of water an hour. The fog thus formed is stated to be so dense that the driver has frequently to go ahead and lead the horses.

A FOG DISPELLER.

WHILE the *production* of fog, as a means of protection against frost, is an extremely desirable thing in some districts on land, the possibility of *dispelling* fog over the oceans is another matter which is no less anxiously sought for. The following account of the so-called *Tugrin Fog Dispeller* is found in the *Monthly Weather Review* for January. The apparatus consists of an outlook pipe, eight feet long and three inches inside diameter, with a wide flange at the mouth, placed so as to be convenient to the navigating officer. A tube enters the pipe from below, and a blower sends a powerful stream of warm air through the tube and the pipe straight ahead, blowing a hole right through the fog, which is rolled back in every direction. It is said that the navigating officer is thus enabled to see through the densest fog for several hundred feet.

NOTES.

THE report of the Meteorological Council to the Royal Society for the year ending March 31, 1898, shows that of the 8:30 p. m. forecasts issued daily the percentage of verification was 81. Fifty-five per cent. of these forecasts were fully verified, and 26 per cent. were partly verified. The highest percentage of verification attained during the decade 1888–1897 was 84, in 1893. Of the storm warnings issued during the past year, 91.8 per cent. were justified by subsequent gales or strong winds.

THE progress of the investigation of the free air by means of kites continues. From the *Monthly Weather Review* for January it is learned that a kite corps has been formed at Bayonne, N. J., and that nearly 40 ascents were made between April and December of last year. The altitudes reached were in most cases not above 500 feet, and observations of temperature only were made.

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