

supply of Canadian motor spirit by the pyrolysis of natural gas in Alberta and by treatment of the bitumen. By hydrogenation of Alberta bitumen, yields of gasoline reaching 75 per cent could be obtained.

Severe Tornado at Nashville, Tennessee

In the *Monthly Weather Review* for March 1933 there is an account dated April 5, 1933, by R. M. Williamson, of the Weather Bureau Office at Nashville, Tennessee, of a severe tornado that visited that city, on March 14, 1933. Although the storm has in Mr. Williamson's opinion been exceeded in violence by others, even within the state of Tennessee, the account is of more than usual interest in that it has been written by a meteorologist, who was extremely near to the centre of the storm's path. He was so near in fact that common prudence prevented him from making what would probably have proved fatal to him—direct observation of the storm's near approach. One of his assistants, F. V. Jones, gives a graphic account of the phenomenon as it appeared from a point about three-quarters of a mile north of the track of the funnel cloud, describing the latter as "moving rapidly across a light-coloured background of rain, looking very much like a shadow moving across a motion-picture screen". The right hand side of the path of destruction passed within about 400 ft. (to the north-north-west) of the Weather Bureau Station, where the wind after veering suddenly from south-east to south-west rose to a maximum of 65 miles an hour for about a minute, a speed which must not of course be confused for a moment with that probably reached in the vortex itself. A thunderstorm, with unusually large hailstones, preceded the tornado by several minutes, and the more permanent veer of the wind to north-west, the direction of the main wind-current of the rear of the V-shaped trough with which the storm was associated, did not take place until about an hour later. Material damage amounted to nearly half a million pounds, but the loss of life in Nashville, in spite of the eight-mile track through a densely populated city, was eleven only. The writer described a number of cases that seem to be a common feature in tornadoes, where comparatively fragile objects have penetrated or severed much more solid wooden objects, making clean holes or cuts without any splintering.

Meteorology in Cornwall

REFERENCE was made in NATURE of July 29, p. 163, to a lecture by Sir Napier Shaw, delivered to the Royal Cornwall Polytechnic Society at its centenary celebrations on the opportunities for useful meteorological research that are open to amateurs notwithstanding the growth of professional meteorological study in recent years. One of that Society's activities consists in the maintenance of the climatological observatory at Falmouth—an observatory which was at one time under official control—the work being carried out by Mr. W. Tregoning Hooper, the present superintendent. The small annual

publication of the Observatory entitled "Meteorological Notes and Tables for the Year 1932" has recently been received. As is pointed out in the introductory notes, the influence of the sea that almost surrounds the Cornish peninsula has a moderating effect upon the temperature. In 1932, the range for the whole year was only just over 50 deg. from 28.4° on February 11 to 80° on August 19 (the hottest day over England, generally, for twenty-one years). Such a variation can be approached, if not equalled, during calm clear weather in spring in eight hours or less in the interior regions of England far from the influence of the sea. Cornwall is, of course, a recognised place to which invalids can go so as to escape severe frost, but its immunity from excessive heat is probably not so well known. This immunity is well illustrated by a fact to which attention is directed in these notes, namely that temperatures above 80 deg. had from 1880 until the end of 1932 been recorded only six times at Falmouth. At Kew, it may be noted this figure had in this year alone been exceeded eight times up to July 24.

Ringling of British Birds in 1932

THE *British Birds* marking scheme has, for the fifth year in succession, established a record of number of birds ringed, 29,554 for 1932 as against 28,610 in the previous year. The grand total of British birds marked under this scheme has now reached the enormous figure of 347,548. It is a gratifying feature of the past year's work that one-fourth of the total for the year is made up of birds ringed and released from traps. Trapping ought to give a larger proportion of recoveries than examination of birds casually found, and this is most desirable if general deductions are to be made from the recovered birds. It is surprising how small a proportion of accessible bird life comes under close scrutiny. From the inception of the scheme until the end of 1932, no less than 25,171 swallows have been ringed, and of these only 189 (0.8 per cent) have been recovered. The warblers also are an elusive race; of 8,054 willow warblers only 34 have been seen again, of 892 and 824 sedge- and garden-warblers respectively only one each; and of 567 blackcaps none at all have been reported again. On the other hand, the birds of prey and the ducks generally yield high recoveries, suggestive perhaps of intensity of slaughter; and of common resident birds the red-breast has the relatively high (but actually surprisingly low) return of 761 out of 12,696 ringed, 6.5 per cent. The low returns throughout point in part to the high death-rate amongst young birds.

Taxonomy and Cytology

THE Hooker lecture of the Linnean Society delivered on February 16 last, by Sir William Wright Smith (*Proc. Linn. Soc.*, Part II, 1932-33), dealt with this subject, with specific reference to the genus *Primula*. Sir William examined the taxonomic value of the criteria submitted by the cytologist. This genus is particularly suitable for such a comparison