

"METEOROLOGICAL MAGAZINE"

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CUMULUS FROM LENTICULAR CLOUD.

It is well known that castellatus clouds indicate oncoming thundery conditions. There seems, however, more than one form which this type of weather may take. Usually cumulo-nimbus develops from ordinary bands of alto-cumulus castellatus which at the very first stage may appear as simple alto-cumulus, but at other times a rather peculiar type of thundery conditions develops from isolated patches of alto-cumulus lenticularis. The purpose of this note is to describe an example of this second type.

On May 1st, 1941 from 0800 to 0900 (B.S.T) there were a few isolated alto-cumulus lenticularis clouds in the sky. In the next hour these clouds increased slightly in size and number, one cloud manifested castellatus turrets and another was thick with a fibrous top, showing a marked ovoid formation. In the next hour, the clouds, whose bases were at 7000 ft., assumed a definite cumulus form although they were still unmistakably lenticular and by 1200 the sky was 9/10 cloudy with large cumulus in places and elsewhere processions of small cumulus, still of peculiar ovoid form, headed by large threatening clouds.

By 1400 the sky was filled with large cumulus, lenticular alto-cumulus was not in great evidence but the cumulus bases were definitely lenticular, the centres of the bases being at about 4000 ft. sweeping away to 6000 ft. at the edges. Occasionally, when there was a gap in the clouds, the smaller almond-shaped cumulus could be seen with lenticular bands of castellatus clouds round their heads.

The Aldergrove tephigram showed an inversion of 2 degrees from 6000 to 7500 ft. and only in the region of 14000 ft. did the lapse rate exceed the saturated adiabatic. The critical temperature for small diurnal heating cumulus to form was 54 degrees. This was reached at Stranraer at 1400, when small clouds formed at 3000 ft. distinctly lower than the cloud under consideration and therefore not likely to be connected with it. It is noteworthy however, that the lenticular clouds and the resulting cumulus showed a marked diurnal character, since they increased in the morning and disappeared at sunset. The clouds themselves did not indicate great instability and the tephigram certainly did not justify the formation of cumulus at that level, nevertheless the clouds were very heavy and it is probable that there were showers in the neighbourhood.

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The following day there were similar conditions on a smaller scale, but the clouds were at a much higher level, there being some beautiful developments of cirro-cumulus lenticularis, so that there was no formation of large cumulus.

Obviously these weather conditions cannot be explained by instability or turbulence originating at low levels so the only possibility seems to be that convergence causing ascent of air up to nearly medium cloud heights was the cause but there is no evidence to support this idea. However, the facts themselves may be a useful guide to forecasting in such conditions.

R. Cade.

Meteorological Office,
Stranraer,

May 1st 1941.

NOTE:

The possibility of orographic influence should also be considered. In my experience this type of cloud is chiefly characteristic of hill country. There is no reason to suppose that a bulging cumulus head can be formed without instability for saturated air in the layer penetrated. The only evidence relevant to that question would be that supplied by a trained observer flying close to the cloud itself.

C.K.M. Douglas.

July 24th, 1941.

THE SEVERE FROST OF JANUARY 1941 IN SOUTHEAST SCOTLAND.

Some striking facts about the great frost of January last are given in a recent paper * by Colonel F.R.S. Balfour of Dawyck, F.L.S. In a considerable area embracing West Lanarkshire and the counties of Selkirk, Peebles, Berwick and Midlothian the cold spell from January 3rd to 6th was probably the most severe since systematic records were first kept. It was certainly more intense in this district than the prolonged frosts which continued through January and February 1940. Ground minima of -9° , -10° and -11° F. (43 degrees of frost) were registered at West Linton on January 3rd, 4th and 6th respectively. Still lower readings were reported from some places but in these cases information is lacking as to the accuracy of the thermometers in use, or their conditions of exposure are unorthodox.

Such extreme conditions had a devastating effect on trees and shrubs. The native Gorse is browned everywhere in Peeblesshire, and Broom - a much hardier plant - has been killed. Laurel, Ivy, Holly and even *Rhododendron ponticum* have in some cases been killed. By May the effect of these frosts on many of the common as well as the less generally cultivated trees and shrubs was not fully to be seen, but enough was evident to enable a long list of casualties to be compiled. Conifers suffered greatly, one fine example being a tree of *Araucaria imbricata* grown from seed sent from Chile in 1844 and now over 60 feet high with a trunk girth breast high of 6 feet 8 inches. The list of killed or injured plants includes *Cedrus Deodara*, every species of *Buddleia*, all roses climbing on walls, all Chilean *Berberis*, and species and hybrids of *Rhododendron*. Col. Balfour mentions that woods around his estate hold many Japanese deer. Starvation brought them down in droves from the hills to the environs of the house where they did damage to plants which had never before been attacked.

Included in the paper are some notes by Sir William Wright Smith, who gives a list of trees and shrubs killed in the Royal Botanic Garden, Edinburgh. Sir William describes the past winter as "quite the worst for 50 years". He mentions that *Rhododendrons* suffered abnormally and

* Low Temperatures in January 1941 in S.E. Scotland and their effect on Shrubs and Trees. By F.R.S. Balfour, Journal of the Royal Horticultural Society, Vol. LXVI, July 1941.

concludes "other evergreens have had a very tough time and I can hardly say yet which ones are likely to come through, for genial conditions are so slow to come, and even in May the east wind continues to threaten".

H.E.C.

AN EXCEPTIONALLY HOT SHORT SPELL IN JUNE.

June 1941 was not notably warm as was, for example, the corresponding month of 1940. The period 21st-22nd was, however, exceptionally warm and deserves special consideration.

A large number of stations in the eastern half of England registered a maximum shade temperature of 90°F. or slightly above on the 22nd, the highest reported being 94°F. at Camden Square. Individual stations in the western half of the country registered values approaching 90°F. on the 21st. On neither day was the area with a maximum of 90°F. or more as extensive as on the 9th August 1911 or 19th August 1932, but the occurrence of 90°F. is more unusual in June than August.

At Southport the temperature 87.7°F. on the 21st was the highest registered in June since records were taken locally in 1871, and at Ross-on-Wye 88°F. on the 21st was the highest June maximum since 1893. At Wakefield, Oxford and Hampstead the values 90°F. 89.3°F. and 89°F. on the 22nd were the highest for June since observations were begun in 1889, 1881 and 1910 respectively. At Oxford a temperature of 88.8°F. was recorded in 1917. The nights were also warm; at Wakefield and Oxford the minimum temperatures on the 22nd 63°F. and 66.2°F. respectively were the highest on record for June and at Ross-on-Wye 66°F. was the highest minimum in any month since August 13th, 1911.

It is interesting to note that earlier in the month some unseasonably low temperatures were recorded: at Oxford the maximum on the 2nd, 51.2°F. was the lowest in June since June 4th, 1909 and at Southport the minimum on the 11th, 35°F. was the lowest there in June since 1903.

L.F.L.

METEOROLOGICAL STATIONS.

The following health resort stations have closed for the duration of the war:-

Herne Bay, Paignton, Selsey Bill, Southend, Wallasey and Withernsea.

The health resort station at Bexhill which was closed (see Met.Mag. Oct.1940) has now re-opened.

The climatological stations at Bristol (Horfield) Halton and Waldron have closed but at Bristol (Horfield) the rainfall observations are being continued.

The sunshine record at Watergate maintained since 1898 by the late Mr.W.M.Christy and subsequently by Mrs.Christy has now ceased but rainfall observations are being continued.

New crop-weather stations have been opened at Warburton and Stratford-on-Avon.

New climatological stations have been opened at Castlerock, Farnham, Lake Vyrnwy, Milford, Newcastle, Oaken, Peterborough, Prestwood, Shipston-on-Stouff and Totnes. Most of these stations have been set up by private enterprise and this interest in meteorology during the war period is encouraging.

Many stations have suffered badly from enemy action but in most cases the interruption to the records has been slight. The following note received from the Senior Coastguardsman at Gorleston may be of interest. The autographic records were not badly disturbed.

I thought it would be of interest to you to explain the marks on the anemometer and Barograph Charts for a.m. 24th June. There was a very heavy air attack on the entrance of harbour here. Six bombs fell within a radius of 15 to 35 yards from both instruments, one unexploded bomb was taken to safety on 30th June although we had to pass within 30 yards of it we were able to keep our weather reports and records going without one break.

The only damage to Weather Instruments and fittings was one bottle of marking ink smashed and lock on anemometer lock slightly bent, this was put right by ourselves.

Time of attack was 0030 to 0230
G.M.T. 24.6.41.

J.H. Matts.

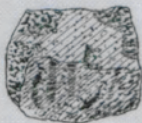
BOMB FRAGMENT



Side Elevation



End Elevation



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