

and made a collection both of its plants and of its animal life. With the exception of my birds and a few of the insects, my collections were destroyed by sea water, so that it is now impossible for me to give a definite list, but I may note that rats were in such numbers as to have become almost a plague. A goodly herd of introduced *Rusas*, a cross between the Sumatran (*C. equinus*) and Javan (*C. Hippelaphus*) species, were in excellent condition, and were living wild on Direction Island, where also pigs were living in the same state. Among birds, the *Gallus bangkiva* (introduced) was in considerable numbers; I saw also the nest of the *Ploceus hypoxanthus*, which comes, not every year, but very often to breed there, but the progeny seems either to die or to return to Java (?). I did not see the snipe, but of the *Rallus philippinus* I got several specimens. Egrets, blue and white, abounded and rested on the high trees on some of the islands. Lizards of several species are now found on most of the islands in large numbers. Of insects the number of species is very considerable. Coleoptera were represented by *Melolonthidae*, *Cetonidae*, *Carabidae*, *Elateridae*, *Chrysomelidae*, but as I have not my journals of that date by me, I cannot recall other families nor state the number of genera represented. Of Hemiptera I caught a good many species, mostly of small size. Many species of ants were observed. Neuroptera are represented, unfortunately, by the *termite*, introduced some years ago in furniture, it is said, but it occurs now on every islet of the group in myriads. I am told that during the cyclone of a few years ago, the whole surface of the sea was covered with the mangled bodies of dragon-flies for miles out to sea, but that since then very few have been seen. Of Lepidoptera I caught many species both diurnal and nocturnal, some very handsome, of which I sent a small collection to London in 1879. The Atlas Moth is rather common. Orthoptera were represented by the ubiquitous cockroach, and a few *Acrididae*.

Mr. Ross told me that on several occasions the large fruit bat, called the flying fox, has reached the islands, and once a pair arrived together, but died, from exhaustion apparently, soon after arrival. Under favourable circumstances, as in the case of an unusually strong pair, these may yet become inhabitants of the islets.

There are, I believe, considerable additions to the flora since Mr. Darwin's visit. It is only within recent years that the islands have become so greatly covered with cocoanut plants. Their original vegetation consisted principally of "iron wood" (*sideroxylon*?) and other trees, and of low shrubs. These were nearly all burned out by accidental fires, one of which burned for three months.

HENRY O. FORBES

Fatunaba, Timor Dilly, January 21

"Festooned" or "Pocky" Clouds (Mammato-Cumulus)

UNDER one of these names letters have appeared at different times in NATURE, notably on October 19, 1871. These were followed by a paper read before the Meteorological Society by Mr. R. H. Scott in February, 1872, in which he collects all the observations which had then been recorded, and the theories which had been propounded to explain them.

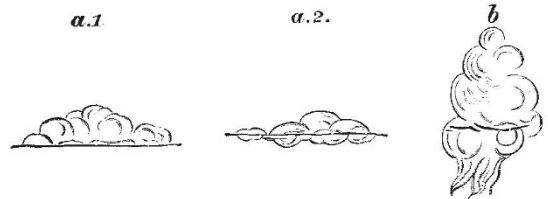
For several years I have been watching this kind of cloud, and I think that its formation is capable of a very simple explanation, partially in agreement with that suggested by Mr. Jevons in the earliest notice of these clouds (*Phil. Mag.*, July, 1857). The name is applied to a peculiar festooned appearance sometimes seen below cumulus and stratus clouds. In Orkney Mr. Clouston has found that it is usually followed by a severe gale; but in Lancashire, where the festoons are called "rain-balls," it is only considered a sign of rain. Other observers in the tropics have also seen it with thunderstorms, and not necessarily with wind. In this country I have observed it both in heavy gales and also in an ordinary summer thunderstorm. The method by which I have endeavoured to discover its origin has been to try and trace its life-history; that is to say, to follow its growth from other forms of cloud and to watch the forms into which it develops.

On one point almost all observers are agreed, that the festoons are frequently seen just before a cloud begins to break up. The first time that I was fairly able to trace the formation of the cloud was one summer evening in London, when towards sunset a flat-based cumulus, like that marked *a 1* in the figure, suddenly became festooned at the base and diminished on the top, as marked *a 2* in the figure. A few minutes afterwards the whole cloud evaporated. The succeeding night was fine. The

explanation which immediately suggested itself was that the ascensional current which had formed the flat-based cumulus had suddenly failed, and that the festoons were simply the masses of vapour falling downwards for want of support.

Another very striking case is marked *b* in the figure, and was observed before a shower. Here a detached cumulus was observed to form first festoons, and then they in turn degenerated into raggy cloud, the whole disappearing very shortly, but was quickly followed by fresh rain-bearing clouds. The impression which the whole conveyed to me was that the festoons were formed by a sudden drop of the cloud, and that the "rag" was produced when the drop was less sudden. The appearance of the "rag" is not very well rendered in the diagram, but it is very difficult to delineate clouds by any engraving.

These are two typical cases of many which I have observed, and always with the same result—that the constant condition necessary for the formation of festoons was the sudden failure of an ascensional current of air. If so, the explanation of its prognostic value is very simple. Before many squalls or showers we are all familiar with the short, abortive gusts which so frequently precede them. Now we have only to assume that the ascensional uptake in front of the main body of the shower is as unsteady as the surface wind, and we have at once all the conditions of the formation of festoons. Almost all observers agree that they are usually formed at the edges of cloud masses. In the case of rain or thunder they ordinarily appear just before or after the rain; but in the case of a gale following some time afterwards, as observed by Mr. Clouston, the festoon must have been formed by some local squall or shower which bore some



relation to the disturbed weather which produced the gale. I once saw festoons in the west of Scotland during the hardest gale I have ever seen in this country. They were formed on the outskirts of a north-westerly squall.

Allied to festooned cumulus we may mention festooned stratus and festooned cirrus. The former is quite common in London during the summer, associated with showers or thunderstorms, while the latter is rare. In both the same idea seems to hold good as for cumulus, that they are formed by the sudden failure of the current, whatever it may be, that forms the stratus or cirrus.

It might appear, at first sight, that a uniform stratus could not fall in lumps; but however uniform it may seem, viewed from below, there is probably no such thing as a uniform stratum of cloud. Some portions are always denser, or composed of larger drops, and these, falling first, give the "pocky" appearance. In many simple cases, which I have been able to follow, there often seems to be a rough correspondence between bosses on the upper surface and festoons on the lower. In *a 2* there is an unsuccessful attempt to depict such a case, which is drawn from nature.

The name of "festooned cloud" has been objected to as suggesting a lengthways arrangement of vapour, like the cloud called "rolled cumulus," with which it has probably nothing in common. Mr. Clement Ley has proposed the name of "tuberled cloud" as more applicable. Prof. Poey, who has also studied this cloud, has proposed the name of "globo-cumulus."

The general conclusion then, is that festoons are caused by a sudden failure of an ascensional current associated with showers or squalls, but whether they portend rain or wind depends on the circumstances under which they are observed.

21, Chapel Street, S.W., April 27 RALPH ABERCROMBY

The Sacred Tree of Kum-bum

PERHAPS the following statement may throw a little light on what was the tree seen by the Abbé Huc:—

On his voyage home from China the Abbé touched at Ceylon. This must have been in 1852 or 1853, as far as I can recollect. I was invited to meet him at breakfast, at the house of my kind