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On register rain-gauges

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cisely similar to the bones of hyænas and other animals, that were discovered in the fissures of the break-water limestone rock, near Plymouth, embedded in similar diluvial loam and pebbles. It is highly probable that at Boughton, as was the case at Plymouth, the caves communicating with these fissures will be found to contain an abundance of similar bones. Mr. Braddick's workmen say they have frequently found them in his quarries, but always neglected to preserve them; one fine head was thus lost but a few weeks ago:—enough, however, has already been done to show that the hyæna was among the antediluvian inhabitants of Kent, as it has been proved to have been among those of Yorkshire and Devon; and it is highly probable that if the proprietors of quarries in this country will reward their workmen for preserving whatever teeth, or bones, or fragments of bones, they may dig up in the course of working their stone, many similar discoveries will soon be made. Professor Buckland and some other gentlemen of the Geological Society of London have this week visited Mr. Braddick's quarries, and entertain the most sanguine expectations that his further researches therein will be attended with success. Mr. B. has added materially to the value of his discovery, by communicating information of it immediately to the Geological Society of London, as well as by presenting the specimens to their museum.—*Maidstone*, June 12, 1827.

ON REGISTER RAIN-GAUGES. BY B. BEVAN, CIVIL ENGINEER.

To the Editors of the Philosophical Magazine and Annals.

Gentlemen,

Observing on the cover of your Magazine for the present month a request by one of your readers, relative to my rain-gauges, I take the first opportunity of complying therewith, by giving the following specification of the several parts.

The part usually called the gauge, we may distinguish by the name of the *collecting* vessel, which is in the form of an inverted cone, with a base of 12 inches diameter: from the bottom of this collecting-vessel passes a tube of about $\frac{3}{4}$ of an inch diameter to the *receiving*-cylinder of 6 inches diameter and 36 inches depth. In the receiving cylinder is a copper float, of about $5\frac{1}{2}$ inches diameter and about 2 inches height, having a socket on the middle of the upper side, to support a light rod of deal about 5 feet in length, near the upper part of which is fixed a small frame with friction rollers to support a black-lead-pencil; the pencil is kept upon the rollers by a small weight, and is also pressed forwards by another small weight, against a sheet of paper which is fastened upon a brass cylinder of 2 feet in length and about 5 inches in diameter; the brass cylinder is connected by a line and pulley wheel with a time-piece, so as to revolve uniformly at any pace that may be required. The whole of the apparatus, except the first-mentioned conical vessel, is placed under cover, where most convenient: the deal rod which carries the pencil is about 4 inches wide and $\frac{1}{4}$ inch thick, and passes between two vertical guides, to insure the parallel position of the pencil.

From this description I presume it will be easy to comprehend the

the operation. Thus the moment the rain begins to fall into the conical collector, it is conducted by the tube into the receiving-cylinder, and begins to raise the float, and with it the deal rod, with its pencil, which makes an oblique line upon the paper, compounded of the vertical motion of the pencil and the horizontal motion of the surface of the brass cylinder, and shows the quantity fallen by the total height of the oblique line, and the rate of falling by the angle of obliquity, and the time of commencing and termination of each shower by the distances along the line.

All the attention requisite is to wind up the time-piece from time to time, and to take off the paper from the cylinder and replace it with a fresh sheet, marking the time on the paper when it is put on.

The following table is an abstract of one of my gauges for the year 1817: in the course of this year, there were 21 days in which the time-piece was more or less out of order, or omitted to be wound up; there were, however, eight complete months.

It appears by the following abstract, that in 344 days there were but $614\frac{4}{5}$ hours *actual rain*, being at the rate of $1^h 47^m$ per day.

The greatest *rate* of raining, I found to be on the 30th of June, which for a few minutes was at the rate of $42\frac{1}{4}$ inches per day.

Yours, truly,

B. BEVAN.

Leighton, June 11, 1827.

Abstract of Registering Rain-gauge, 1817, at Leighton Buzzard. Latitude $51^{\circ} 54' 56''$. Longitude $2^m 39'$ West: the collecting vessel about 10 feet above the surface of the ground, and about 300 feet above the level of the sea.

| 1817. | Number of days the time-piece was in action. | Number of wet days. | Number of separate showers. | Longest time of a single shower. | Greatest amount of one shower. | Average time of each shower. | No. of hours rain in the time registered. | Depth of rain in same time. | Depth of rain in the whole month. |
|----------------------------|--|---------------------|-----------------------------|----------------------------------|--------------------------------|------------------------------|---|-----------------------------|-----------------------------------|
| | | | | h | inch. | h. | h. | inch. | inch. |
| January..... | 23 | 8 | 8 | 11 | 0.11 | 2.6 | 20.8 | 0.22 | 2.01 |
| February | 27 | 11 | 12 | 7.5 | 0.19 | 2.4 | 28.7 | 0.75 | 0.85 |
| March | 31 | 14 | 15 | 10.2 | 0.47 | 2.8 | 42.2 | 1.40 | 1.40 |
| April | 30 | 2 | 2 | 3.3 | 0.06 | 2.2 | 4.4 | 0.07 | 0.07 |
| May | 21 | 9 | 8 | 16.0 | 0.22 | 7.1 | 56.7 | 0.42 | 2.87 |
| June | 30 | 14 | 17 | 13.3 | 0.34 | 3.5 | 59.4 | 1.98 | 1.98 |
| July | 31 | 16 | 24 | 7.5 | 0.54 | 2.4 | 57.2 | 2.83 | 2.83 |
| August | 31 | 21 | 34 | 13.5 | 0.59 | 2.8 | 94.7 | 4.35 | 4.35 |
| September .. | 30 | 9 | 9 | 7.2 | 0.12 | 4.4 | 39.2 | 0.50 | 0.50 |
| October | 31 | 11 | 11 | 8.0 | 0.21 | 3.9 | 42.4 | 1.21 | 1.21 |
| November.... | 30 | 11 | 11 | 18.5 | 0.36 | 6.5 | 71.6 | 1.42 | 1.42 |
| December.... | 29 | 17 | 21 | 20.6 | 0.52 | 4.6 | 97.1 | 2.32 | 2.72 |
| Time omitted. | 21 | | | | | | | | |
| Quantity not registered .. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4.74 | |
| Total | 365 | ..... | ..... | ..... | ..... | ..... | ..... | 22.21 | 22.21 |