recorded rainfalls in Madras, Calcutta, and Bombay for the past 64 years, comes to the conclusion that no real connection has been established between rainfall and sun spots, and shows that, even if such were apparently the case as regards Madras, the same would be true in Calcutta and Bombay, whereas the rain tables of those localities show no such coincidence.

THE AGRICULTURAL VALUE OF WORMS.

In 1837 Mr. Darwin, in a paper read before the British Geological Society, explained how the formation of vegetable mold which forms a covering several inches in depth on the surface of productive land was directly due to the common earth worm. The soil, he stated, was simply the non-nutritious matter contained in the earth originally eaten by the worm and rejected by it, and the accumulated deposits of large numbers of worms produced the extensive layers commonly found. Quite recently Herr Von Hensen has investigated further into this subject and has confirmed Darwin's conclusions while supplementing with many of his own. An abstract of his investigations appears in the XIXth Century.

He states that the adult worms come to surface at night and, with their tails in their burrows, collect the twigs, leaves, etc., which serve as their food. This material is heaped around the orifice of the burrow and is drawn in piece by piece, the leaves in time becoming macerated and decomposed, and thus rendered suitable for the worms eating. The investigations were conducted in a garden having a layer of mold 9 inches deep and a subsoil of yellow diluvial sand. The worm tubes were not easily traced in the mold, but were perfectly clear in the sand, running vertically downwards to a depth of from 3 to 6 feet. On the walls of these burrows the black masses of excrement of the worms were plainly visible. Some tubes were entirely filled with this substance, the black color of which was diffused into the adjacent soil. In about half the inhabited tubes, plant roots had entered, following their course. By extended observations the author states that the roots of annuals can only penetrate into the subsoil through channels opened out to them by earth worms, and he observes that this penetration must be of service to the plant, as the subsoil retains moisture longer than the surface layer of the mold.

In order to ascertain the precise part taken by the worm in making this vegetable mold, two worms were placed in a glass vessel filled with sand, on the surface of which was spread a layer of fallen leaves. The worms set to work at once, and after about six weeks the surface of the sand was found to be covered with a layer of mold nearly half an inch deep, while many leaves had been carried to a depth of three inches. Worm tubes ran in all directions through the sand; some were quite fresh, others had a wall of mold an eighth of an inch thick, others again were completely filled with mold. In short the soil of the vessel was already perfectly well prepared for the growth of plants.

Herr von Hensen finds that, although the earth worm weighs only about 46 grains, it produces in four hours nearly 8 grains of excrementitious matter. On an average he finds about 34,000 worms to an acre of ground. Their combined weight is therefore over 220 pounds and they produce about 37 pounds of mold in 24 hours. Besides this, they produce a uniform distribution of the mold, open up passages in the subsoil for roots, and render the subsoil fertile.