

horizontal. They were of various sizes and shapes, the average granary being about as large as a gentleman's gold watch."

"I was greatly surprised to find that the seeds, though quite moist, showed no trace of germination, and this was the more astonishing, as the self-sown seeds of the same kinds were then coming up abundantly in gardens and on terraces." In order to investigate this matter thoroughly he collected and carefully examined large quantities of the grain and seeds taken at different times from the stores of twenty-one distinct nests, the first of which was opened on October 29th, and the last on May 5th. In these twenty-one nests, out of the thousands of seeds taken, he only found twenty-seven in seven nests which showed trace of germination, and of these eleven had been mutilated in such a way as to arrest their growth. Yet the vitality of the seeds was not destroyed, as he proved by raising crops of various weeds from seeds taken out of these granaries.

"When the seeds do germinate in the nests," he relates, "and it is my belief that they are usually softened and made to sprout before they are consumed by the ants, it is very curious to see how the growth is checked in its earliest stage, and how, after the radicle or fibril—the first growing root of dicotyledonous and monocotyledonous seeds—has been gnawed off, they are brought out from the nest and placed in the sun to dry, and then after a sufficient exposure, carried below into the nest. The seeds are thus in effect malted, the starch being changed into sugar, and I have myself witnessed the avidity with which the contents of seeds thus treated are devoured by the ants."

In an appendix, Mr. Moggridge gives corroborative testimony from other observers, from which the following extracts are taken. Lieut. Colonel Sykes, in his descriptions, of new Indian ants, relates: "In my morning walk at Poonah, June 19th, I observed more than a score of little heaps of grass-seeds in several places, on uncultivated land near the parade ground; each heap contained about a handful. On examination, I found they were raised by a species of ant (*Atta providens*), hundreds of which were employed in bringing up the seeds to the surface from a store below; the grain had probably got wet at the setting in of the monsoon, and the ants had taken advantage of the first sunny day to bring it up to dry. The store must have been laid up from the time of the ripening of the grass-seeds in January and February. As I was aware this fact militated against the observations of entomologists in Europe, I was careful not to deceive myself by confounding the seeds of a *Panicum* with the pupæ of the insect. Each ant was charged with a single seed, but as it was too weighty for many of them, and as the strongest had some difficulty in scaling the perpendicular sides of the cylindrical hole leading to the nest below, many were the falls of the weaker ants with their burdens from near the summit to the bottom. I observed they never relaxed their hold, and with a perseverance affording a useful lesson to humanity, steadily recommenced the ascent after each successive tumble, nor halted in their labour until they had crowned the summit, and lodged their burden on the common heap."

"On the 13th of October of the same year, after the closing thunderstorms of the monsoon, I found this species in various places similarly employed as they had been in June preceding; one heap contained a double handful of grass-seeds. It is probable that the *Atta providens* is a field species of ant, as I have not observed it in the houses."

Dr. Jerdon, in a Madras journal, gives a somewhat similar account of the same ant, stating that it digs up small garden seeds immediately after they are sown, and carries them off to its nest, to the great annoyance of the gardener. Mr. Home gives an account of similar observations in another part of the East, and Mr. Buchanan White records the harvesting performances of a colony of ants at Capri. With all this testimony we cannot but believe that the ancients were right and modern European entomologists wrong as regards this interesting characteristic of these species of ants.

Miss Mary Treat, whom we have already quoted, gives, in a paper communicated to *Lippincott's Magazine*, a very graphic and interesting account of her observations on harvesting ants in Florida. Their nests are abundant in the low pine barrens of that State, and consist externally of a little mound, surrounded by a circle of small chips and bits of charcoal, often brought from some distance; the mounds are regular in outline, with a crater-like depression on the summit, in the centre of which is the entrance. Their colour is reddish brown, and they are furnished with stings, which inflict about the same