year, and also that we get no honey till the second season from the seed.

Another serious difficulty is the chance that the seeds may not come. I planted five acres of seed this spring. The seed seemed excellent, the ground was in fine condition, and we had frequent and abundant rains; yet so few of the seeds came, that I ploughed all up, and sowed to buckwheat.

We see, then, that the special planting for honey alone, of the *Echinops*, is not encouraging. The fact that the plant is a biennial, that it is so terrible to thresh, that the seed is likely to fail to germinate, and the fact, if we may judge from analogy, that the plant may not always secrete nectar even though it bloom profusely (our experiments do not prove or refute this point),—all would tend to make the wise bee-keeper hesitate before he grew this plant. It seems more than probable that it will never pay to do so.

The Rocky Mountain Bee-Plant.

I had previously learned that to grow *Cleome* we must plant in autumn. Spring-sown seed will rarely germinate. So in the fall of 1888 I sowed eight acres of *Cleome*. The seed was procured fresh from Colorado. To my great disappointment, the seed did not germinate well. In many places the plants were exceedingly scattering. These plants were on sandy land. Other seed was planted on clay, and did not germinate nearly as well as that sown on sand. The blossoms commenced to open the first of July, and continued to bloom even into September. The season was very dry, the excessive drouth reaching from July till late autumn,—just the time for a Colorado plant to show its virtues. The plant grows from one to three feet high, the foliage is smooth, the leaves compound, and the flower an umbel. The flowerets commence to open below, and continue for a long time.

To my great disappointment, the flowers seemed to furnish very little nectar. The bees worked on the plants only occasionally, and then not excessively. Thus there were two disappointments,—failure of the seeds to germinate, and failure of the flowers to secrete.

We sowed in 1889 three acres with seed of our own raising, which failed almost entirely to germinate. We left three acres uncultivated where the plants were thickest in 1889, to see if the plants would self-seed the ground. Here, too, we were disappointed. There were so few plants, even though the season seemed exceptionally favorable, that both pieces—the one planted and the one supposed self-sown—were ploughed up.

Thus these plants, like the *Echinops*, two as promising species as we could hope to find, promise little in the way of special planting exclusively for honey. The expense and labor; the doubt of growing a crop even though we plant; the chance that the season may not be propitious, and so there be little or no nectar secreted, even though the plants do grow and bloom,—all this makes the prospects for profit in such planting not encouraging.

Melissa.

The *Melissa* is an annual. We planted it for two successive years. It did well, blossomed freely, and was visited very generally by the bees. It grows well on both sand and clay, and, by sowing early, will commence to bloom early in July, and continue in bloom for a month or more. I regret to say that it will not self-seed, and must be planted annually. This is expensive, and it is doubtful if it will pay. It is to be said, however, that *Melissa*, in common with the other mints, seems to attract the bees at all times of bloom, whatever the season: so I am of the opinion, that, if any plant will pay exclusively as a honey-plant, it will be some mint. Many of these are perennial. As the three acres of *Melissa* last season *were* singing with bees all through the time of blossoming, and as our bees swarmed in early August, a thing unprecedented in Michigan, it gives reason to hope, that, with a large average, we might secure a honey-crop each year despite the season.

Thus I believe our experiments indicate that special planting for honey alone is of doubtful practicability; that *Echinops* and *Cleome*, at least, are not the plants for such special planting, if it is ever to be a success; and that while *Melissa*, or bee-balm, is not profitable, as it is an annual, it is possible that the perennial mints are the plants, if any such there be, that will pay us to grow exclusively as honey-plants.

Unless *Cleome* will seed itself, it is not the plant even for wayside planting. I think we must look to some of the persistent mints, or, more probably, to some plant valuable for other purposes even, to plant on the roadside and in waste places.

I hope next to try *Melilot*, or sweet clover, not so much to find whether it is a valuable honey-plant, as we know that now, but rather to find if this luxuriant and vigorous clover may not have other important uses, possibly for silage. I shall also hope to plant small beds of promising mints, in hopes for hints of some plant that will pay just for nectar, and nothing else.

A. J. COOK.

THE RELATION OF GROUND WATER TO DISEASE.

AT the meeting this year of the Royal Meteorological Society, held on Nov. 19, the president, Mr. Baldwin Latham, delivered an address on the above subject.

The pages of history show that when the ground waters of our own or other countries have arrived at a considerable degree of lowness, as evidenced by the failure of springs and the drying-up of rivers, such periods have always been accompanied or followed by epidemic disease. In all probability, ground water in itself, except under conditions where it is liable to pollution, has no material effect in producing or spreading disease. As a rule, it is only in those places in which there has been a considerable amount of impurity stored in the soil that diseases become manifest; and the most common modes by which diseases are, in all probability, disseminated, are by means of the water-supplies drawn from the ground, or by the elimination of ground air into the habitations of the people. It is found that the periods of low and high water mark those epochs when certain organic changes are taking place in the impurities stored in the ground, which ultimately become the cause, and lead to the spread, of disease. Mr. Latham defines "ground water" as all water found in the surface soil of the earth's crust, except such as may be in combination with the materials forming the crust of the earth. It is usually derived from rainfall by percolation, and it is also produced by condensation. In dry countries, ground water is principally supplied by the infiltration from rivers, as, for example, in the Delta of the Nile.

The absence of water passing into the ground for a long period, naturally leads to the lowering of the free ground water-line, and may lead to the drying of the ground above the water-line; and it is curious to note, with reference to small-pox, that the periods marking the epochs of this disease are those in which there has been a long absence of percolation, and a consequent drying of the ground preceding such epidemics. On the other hand, small-pox is unknown at such periods as when the ground has never been allowed to dry, or is receiving moisture by condensation or capillarity.

The study of underground water shows that certain diseases are more rife when waters are high in the ground, and others when the water is low. The conditions that bring about and accompany low water, however, have by far the most potential influence on health, as all low-water years are, without exception, unhealthy. As a rule, the years of high water are usually healthy, except, as often happens, when high water follows immediately upon marked low water, when, on the rise of the water, an unhealthy period invariably follows.

Mr. Latham has found that those districts which draw their water-supplies direct from the ground are usually more subject to epidemics and disease than those districts in which the water-supply is drawn from rivers supplied from more extended areas, or from sources not liable to underground pollution. In the case of Croydon, one portion of the district (under three-fourths) is supplied with water taken direct from the ground, whilst the remaining portion is supplied with water from the river Thames. It is curious to note, that, even so recently as 1885, the zymotic death-rate in the districts supplied with underground water was twice as great as in that part of the district supplied from the Thames; and

in this particular year 41 deaths from small-pox occurred in the district, not one of which was recorded outside the district supplied by the underground water.

Mr. Latham, in his address, dealt largely with zymotic diseases as affected by ground water, and showed that cholera ordinarily breaks out when there is the least ground water; a high air and ground temperature is also necessary for its development; and, as a rule, the low-lying districts are favorable to the production of these high temperatures. Small-pox is almost always preceded by a long period of dryness of the ground, as measured by the absence of percolation. Typhoid-fever is most prevalent after a dry period, and the first wetting of the ground or percolation from any cause takes place. The condition essential to the development of diphtheria is a damp state of the ground marked by extreme sensitiveness to percolation of rain. Scarlet-fever follows the state of the dryness of the ground which is essential for its development, and it occurs in the percolation period. The conditions that precede small-pox are those favorable for the development of scarlet-fever, and, like small-pox, the dampness of the ground for any considerable period in any particular locality may check its development or render it less virulent, and it is most rife in low-water years. Measles are least prevalent at the low-water periods, and mostly rife at and near high-water periods. Whooping-cough follows the percolation period in its incidence, increasing with percolation, and diminishing as the waters in the ground subside. Diarrhœa is generally more prevalent in a low-water year than in other years; that is, with a very much colder temperature in a low-water year there is a very much higher death-rate from this disease.

Mr. Latham finds that the general death-rate of a district is amenable to the state of the ground water, years of drought and low water being always the most unhealthy.

HEALTH MATTERS.

A Faster in the Seventeenth Century.

Now that Succi, the Italian fasting man, is attracting universal attention, it may be interesting to recall a case of total abstinence from food for forty days, which occurred more than two centuries ago. In the winter of 1684, according to *The Hospital*, a certain Isaac Henry Stiphont of Haarlem was confined in a lunatic-asylum. At this date he was forty years old, and, although born of an insane mother, had learned a handicraft, married, and conducted himself like other people, until, in the previous autumn, he quarrelled with his brother-in-law, and in a scuffle accidentally broke the man's leg, when the fear of falling into the hands of justice drove him mad. He had been in the asylum a few months, when he suddenly took it into his head that he was the Messiah, and resolved to fast forty days and forty nights. Accordingly, on Dec. 6 he began to abstain from all food, and continued to do so until Jan. 15, 1685. During all this time he took no sustenance whatever. Nothing passed his lips but an occasional sip of water for the purpose of cleansing his mouth. If a little broth or brandy was put into the water, he discovered the addition instantly, and thrust the cup away untasted. Every effort was made to persuade or compel him to take food. It was even sought to influence him by the pretended apparition of an angel, who brought to him the express command of God that he should eat. He does not appear to have doubted the reality of the visitation, but continued to declare that it was the will of his heavenly Father that he should fast forty days and forty nights. Stiphont had been a smoker before the commencement of his fast, and continued the daily use of tobacco during the whole time of his abstinence from food. The case had excited great interest, and when the fast was ended the doctors desired the man to take some medicine to stimulate the action of the stomach. He refused, and would only take fish and a special soup to be prepared by his wife. So singular an occurrence made a great noise at the time. Some people ascribed it to a miracle, others to the combined effect of madness and tobacco. A madman, it was said, could endure a temperature that froze his companions; so, if insanity made a man impervious to cold, why should it not render him insensible to hunger? The wild hordes of Canada were known, during times of scarcity, to exist for weeks upon water and tobacco, so why should not Stiphont, the civilized, do the same by the help of his madness?

Deafness for High Notes.

We learn from the *Medical Record* of Nov. 29 that Mr. Edwin Cowles, editor of the *Cleveland Leader*, who died last March, had a peculiar form of deafness. He never heard the sound of a bird's note, and until he grew to manhood he always thought the music of the bird was a poetical fiction. "You may fill the room with canary birds," he once said, "and they may all sing at once, and I would never hear a note, but I would hear the fluttering of their wings. I never heard the hissing sound in the human voice: consequently, not knowing of the existence of that sound, I grew up to manhood without ever making it in my speech. A portion of the consonants I never hear, yet I can hear all the vowels. About a quarter of the sounds in the human voice I never hear, and I have to watch the motion of the lips and be governed by the sense of the remarks, in order to understand what is said to me. I have walked by the side of a policeman going home at night, and seen him blow his whistle, and I never could hear it, although it could be heard by others half a mile away. I never heard the upper notes of the piano, violin, or other musical instruments, although I would hear all the lower notes."

Summer Drinks.

The *Medical Record* of Calcutta contains some interesting remarks upon the beneficial effects to be derived from non-alcoholic drinks in the height of summer, says the *Lancet*. After remarking that the very bane of European existence in India lies in the habits of eating and drinking, physiological arguments are adduced to show that highly carbonized materials are very deleterious in hot climates. The custom of the Moguls, who for luxury have had no equal in Indian history, is referred to as offering a fitting example. Their drinks consisted of milk, sweetened waters, or sherbets prepared from sub acid fruits, such as lemons, tamarinds, pomegranates, etc., flavored with rose or Keora essences, date-juice, numerous vegetable tisanes, and some infusions of glutinous seeds flavored with sugar and essential oils. These were often cooled with ice collected in pits, where it was stored during the winter months. The Oriental races, it is asserted, suffer from few of the diseases which are common to the copious meat-eating, wine-drinking Europeans. For a hot day, a light vegetable diet is recommended, with a spare quantity of meat food and an abundance of cooling, non-alcoholic drinks. Ice is regarded as a necessity, and coffee, tea, and cocoa are to take the place of whiskey-and-soda. The use of aërated waters, prepared from pure and wholesome ingredients, and the admixture in them of the numerous fruit flavorings which abound in the tropics, are regarded with favor, as likely to offer a lucrative source of income to persons engaged in such trade, while also giving the European community a very acceptable form of summer drinks.

Antiseptics among the Ancient Greeks.

Professor Anagostakis of Athens has published some interesting facts in reference to the employment of antiseptic measures among the ancient Greeks, as we learn from the *Druggists' Circular*. Hippocrates and Galen were aware that an unclean condition of wounds retarded healing. They were also well acquainted with the fact that by thorough hæmostasis, suture, and the employment of antiseptic measures, infection of wounds might be prevented. Hippocrates warned his disciples against the use of moist dressings, on account of the danger of suppuration, and forbade the employment of drugs before the wound was dry. Above all, says Galen, avoid dirt, as it prevents healing. The ancient Greeks boiled their water before applying it to wounds. Sponges were avoided, and charpie recommended in their stead, which was to be destroyed after use. One of the principal antiseptic substances then in use was wine, which was usually heated before using, and with which, according to Hippocrates, all wounds were to be washed. Dressings dipped in wine were also applied to the wound. Salt was in very general use, either in solution or in the form of sea-water. The solutions were rendered aseptic by boiling. Sulphate of copper was relied upon as an antiseptic for foul wounds, and