growing tips of purely vegetative shoots occasionally serve as points of infection. Mr. Waite has said that 'it is only in the blossom blight that the honey bee is concerned,'* but Professor A. J. Cook has thrown a light upon this subject which suggests a need for further investigation. Professor Cook states that the bee men claim that the inoculation of pear flowers by means of bees 'cannot be the exclusive method of spreading this disease, as it often attacks and plays fearful havoc with nursery stock and young trees that have never blossomed at all.' To this Professor Cook replies that "It is well known that buds secrete a sort of glue for their protection in winter or spring. This attracts bees and other insects. The bees secure the main part of their bee glue or propolis from such resin-coated buds"; stating also that "it seems quite likely in such visits the bacteria are taken from diseased buds [or other sources of infection] and conveyed to healthy plants."† I would add to these views of Professor Cook that infection through growing buds of walnut branches is also of very common occurrence in the walnut bacteriosis caused by *Pseudomonas juglandis*.

This distribution of *Bacillus amylovorous* (Burrill) De Toni, through the agency of bees and other insects has been carefully demonstrated by Waite. The relation existing between the number of bee visits and the virulence of an epidemic of blight has, however, received less attention. Relative to this phase of the subject the writer has made several field observations having a direct bearing. A few miles north of Hanford, California, a large colony of bees was located within one fourth mile of two of the most valuable pear orchards of that region. These orchards were practically destroyed by blight before those more distant had become seriously affected. A second case of like nature was observed near Fowler and a third at Banning, California. The contrast between the number of infections in orchards near large colonies of bees and those more distant was very striking in both cases noted in the San Joaquin valley. The field conditions presented convincing evidence that near proximity of large colonies of bees to pear orchards greatly increases the danger to, and hastens the time of destruction of the latter.

* Paper read before the National Bee Keepers' Convention, Pan-American Exposition—printed in *California Cultivator*, Vol. XVIII., No. 25, pp. 390–391.

† *California Cultivator*, Vol. XVII., No. 6, pp. 83–84.

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THE ARC OF QUITO.

At a meeting of the Société de Géographie in Paris, France, on May 2, 1902, a communication was made to the Society by M. R. Bourgeois, Commandant du Service Géographique de l'Armée, Chef de la Mission française de l'Equateur, giving an account of the recent operations of the French Officers in remeasurement of the old arc of Peru now called the arc of the meridian of Quito.

An account of the reconnaissance for the extension and remeasurement of this arc can be found in Science for November 2, 1900.

The following is taken from *La Géographie*, the bulletin of the Société de Geographie for May 15, 1902.

As has been stated the reconnaissance was made in 1899. The time to complete the work was estimated at four years and in 1900, 500,000 francs (about $100,000) was appropriated for the field expenses.

The mission, composed of five officers, a military surgeon and seventeen non-commissioned officers and privates started to Equador in 1901 and began the work immediately after their arrival in June.

The first year's work has been completed, and M. Bourgeois has returned to France to report the progress made, leaving the Mission to continue the work under the direction of Captain Maurain.

The Mission reached Guayaquil June 1 with geodetic and astronomical instruments, camp outfit, baggage, etc., weighing 20,000 kilos (about 40,000 lbs.). This immense outfit was transported with difficulty to the scene of operations, and during 1901 the work was

extended over the region between Guayaquil and Riobamba, at the center of the valley region between the double range of the Andes which exists in this latitude, and the triangulation is now in progress in this valley region.

Three months were spent at Riobamba, and during this time the determination of the fundamental astronomical elements, longitude, latitude and azimuth were made and the fundamental base line was measured.

The base is ten kilometers long and two measures of the base were made in two and a half months with a resulting difference between them of seven millimeters. A four-meter bar was used in measuring this base.

After measuring the base the mission was divided into two parties, one of which continued the triangulation in the vicinity of Riobamba while the other proceeded to Quito for the purpose of measuring a base of verification and to determine the latitude of the northern extremity of the arc. One of the officers returned to Guayaquil and proceeded to Payta in Peru by sea in order to do similar work at the southern extremity of the arc.

The programme of the work for 1901 was successfully completed and the measurement of angles now in progress in the region to the north will be complete in 1902.

In 1903 and 1904 work in the region to the south between Riobamba and Peru will be completed and the measurement of an arc of the meridian six degrees in amplitude will be an accomplished fact with only a delay of four years, or within the time fixed in the beginning.

The difficulties are great as a description of the country shows; the altitude of the work is unusual, the resources are meager, the climate unfavorable and the means of communication very inadequate. Numerous vexations have been encountered, owing to the lack of intelligence in the inhabitants, such as the destruction of signals, the digging up of the marks, etc., but these are not of a nature to stop the observers before they have completed the work they have undertaken.

In conclusion M. Bourgeois expresses his pleasure in rendering homage before the Société Géographie to the knowledge and energy of his comrades, the officers of the mission, and also to the zeal and endurance of the non-commissioned officers and soldiers who accompany them, all of whom have exerted themselves to the utmost for the honor of French science.

I. W.

A FOSSIL MAN FROM KANSAS.

IN April of the present year, two young men living in the vicinity of Leavenworth, Kansas, in the excavation of a fruit storage cave near their residence, discovered a number of human bones. They paid but little attention to them, supposing them to be of little interest, but a brief reference to the discovery finding its way into the newspapers induced Mr. M. S. Long, the curator of the museum of Kansas City, a gentleman well known for his interest in, and as a collector of, things anthropological, to visit the locality. He recognized the scientific value of the find and secured such as remained of the bones discovered. Unfortunately, while the larger part of, if not the complete, skeleton had originally been present, many of the bones had been mutilated beyond repair or lost. A newspaper account of the find was widely published as that of a glacial man.

At the request of, and in company with, Mr. Long I have recently had the pleasure of making a careful examination of the locality whence the bones came, as also of the preserved remains themselves. This examination leads me to the firm conviction that the specimen is of great interest as representing the oldest reliable human remains hitherto discovered in North America. The reference of their age to the glacial period, though erroneous, was easily inferred from the presence of the characteristic glacial boulders lying on the side hill above the excavation.

The tunnel or cave excavated by the Concannon brothers is directed horizontally into the side of a hill to a distance of seventy-three feet, near the mouth of a small though deep ravine opening on the flood plain of the Missouri River, nineteen miles northwest of Kansas City, and within a few miles of Lansing, Kansas. The skeleton was found at the