

Bees—Continued

laboratory without going near the bees themselves. These thermometers gave records accurate within 0.09 degrees Fahrenheit and within 0.05 Centigrade.

To insure uniformity the readings were made consecutively on a carefully calibrated instrument at the rate of two a minute, an impossible feat with widely scattered mercury thermometers. After the investigators had studied the temperature of various fixed points within each hive, they found it was possible to use the temperature readings as a substitute for direct observations, and to follow closely the activities of each bee cluster without opening the hives or even going near them.

Through this piece of research it was found that 57 degrees Fahrenheit was the critical temperature of the outside layer of the bee cluster in winter. If the bees are kept where the temperature goes above this point they break the cluster and leave the hive. If for any reason they fail to keep it up to this point for any length of time they die of the cold. Consequently it has been found advisable, explained Mr. Hambleton, to keep colonies in dark cellars where a constant temperature of around 45 to 47 degrees can be maintained. This has proved to be the golden mean, neither too low nor too high, at which the bees seem to survive best.

When bees are kept out of doors all winter it is necessary to pack up the hive with insulating materials like straw, ground cork, or sawdust. Many bees are saved if this is done before the first killing frost of autumn. Beekeepers are urged by the bee specialists to find out from maps of the U. S. Weather Bureau the average date of the first hard frosts in their community and fix up their bees accordingly. Sometimes it helps if the honey made from the fall flowers is taken out and more digestible clover honey or even artificially made sugar syrup substituted, so that a supply of the right sort of food is assured. A single colony consumes as much as 45 or 50 pounds of honey in a winter. The packing is not removed until the frosts of spring are over and the early flowers are in blossom, in May or June usually, except in regions well to the south.

There are in all about 10,000 described species of bees occurring in all parts of the world, of which about 2,000 species are found in Europe alone. When the North American forms have been more thoroughly studied, they will (*Turn to next page*)

Alaska's Golden Age Unearthed

Archæology

Alaska, like Greece, had its golden age, when the people attained the high point of their culture and then dropped to a less admirable level. Evidence of this prehistoric golden age in the Arctic has been brought back to the Smithsonian Institution by Henry B. Collins, Jr., who conducted an expedition to St. Lawrence Island this summer for the Smithsonian and for the American Association for the Advancement of Science.

On the narrow strip of land called St. Lawrence Island, Mr. Collins found a remarkable mound about 20 feet high and large enough to be the site of a compact village. The mound was composed of trash, the refuse and sweepings from an entire village over a period of many centuries. Animal bones and broken tools, bits of ivory and whalebone, pieces of wood carved in fantastic designs, all were mixed in with a binding of earth and permanently hard and frozen from the cold climate.

The most surprising moment in the digging came when the frozen bodies

of some of the oldest inhabitants were discovered encased in ice. Six children had been buried there in the side of the mound, each one dressed carefully in his fur and feather garments. The place where they lay happened to become filled with water, which froze, thus preserving the bodies through many centuries. This is the only time that human bodies have been found in such condition, Mr. Collins states.

Ruins of houses made of driftwood and whalebone were in the top layer of the great mound, Mr. Collins said, in describing his excavation of the site. Digging to the bottom of the mound, he found the ruins of the homes of the oldest inhabitants. To reach the most deeply buried deposit, where the oldest layer of ruins lay, Mr. Collins had to dig six feet below the reach of the storm tides. In other words, he explains, the land has sunk since those houses were built on the beach, and this in itself indicates the passage of considerable time.

This oldest layer of houses dates back to pre-Russian days, the ethnologist declares. They are surely 300 years old, and more likely are nearer to being eight centuries old. The village is the most extensive Eskimo settlement ever excavated.

Many harpoons and other tools and weapons were brought back to the Smithsonian collection. Objects displaying the finest art in carving and design were taken from the lowest and oldest level of the mound. These were made in the days of the highest Eskimo culture. The precision of the lines and the fine designs used indicate that these inhabitants were far more clever with their hands and had a keener sense of beauty than any of their descendants in the Arctic. Whether they were some of the "first Americans", some pioneer Asiatics who brought knowledge and skill to the new world, cannot yet be stated, Mr. Collins says. But it is certain that the Eskimos of historic times have lost a heritage of finer things, as the simpler carvings in the top layers of the mound show.

Present-day Eskimos, possibly direct descendants of the artists, came to the island and helped the scientist excavate. In some cases they were able to enlighten him as to the use of the peculiar articles discovered in the deserted village.

Science News-Letter, October 27, 1928

New Metal Cuts Glass

Physics—Mechanics

A new metal so hard that it will bore smooth holes in concrete, or cut screw threads in a glass rod, was exhibited for the first time at the convention of the American Society for Steel Treating in Philadelphia. With present-day tools such feats are difficult or even impossible.

The new material, known as carboly, and consisting of tungsten carbide, a compound of tungsten and carbon, and cobalt, a metal like nickel, is the invention of Dr. Samuel L. Hoyt, of the research laboratory of the General Electric Co. It is so hard that it will cut glass like a diamond, and will even scratch a sapphire, which is next below the diamond in the scale of hardness. Ordinary steel tools are quickly worn down when held against an emery wheel, but the new metal itself wears down the wheel.

One important use for it described by Dr. Hoyt is in the cutting of materials containing metal inserts, as the fiber and metal gears used in automobiles to give quietness. Cutters of cobalt and chromium alloy, the best previously used for this work, require sharpening after machining 150 parts, but carboly tools have cut 11,000 before they required re-dressing. *Science News-Letter, October 27, 1928*