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In 1904 the writer published a brief account of the breeding of American black bears at Silver Lake Park, near Akron, Ohio, during a period of 12 years which ended with January, 1903.¹ The breeding of these animals has continued there up to the present time, so that data are now available for a period of 21 years, and it seems worth while to give a further account of the matter, in view of the interest which has recently developed in the breeding of fur-bearing animals.

The place where the bears are kept is a small summer resort. Early in its development a collection of hardy animals was started, with the central feature a "bear pit," and the first bears there were a pair of cubs obtained in 1888, from two different localities near Lake Superior. These bred when three and a half years old and produced their first cub seven months later, on January 23, 1892. Thereafter, the pair had young very regularly, missing only five times in 18 years, with a total of 34, or possibly 35 cubs. Two younger females which were allowed to breed had their first offspring in January, 1902 and 1906. They had produced, up to January, 1912, 10 litters with 22 cubs, and 5 litters with 12 cubs. This gives a total of 68 or 69 cubs in 21 years.

The original pair occupies a circular brick pit 20 feet across and 12 feet deep, which is connected by an underground passage with another similar pit to which the bears can be transferred when necessary. The pits are located in a dry hillside which slopes toward the east. The floor is of terra cotta blocks set in cement, so that the place can be easily washed out with a hose, and this is frequently and thoroughly done. There is also a bathing tank in the pit; and the brick-lined entrance passage, through which access to the pit is

¹ Smithsonian Miscellaneous Collections, Vol. 45, pp. 175-179.

had, can be made into a separate compartment for shutting the bears apart when desired. As more bears were kept, additional accommodations were provided.

An important feature of the bears' quarters is the retiring den, which provides a suitable place for the animal to hibernate. There are two of these connected with each pit and one with the entrance passage. Each den is 5 feet by 6 feet and 4 feet high, lined with brick. They are excavated in the earth, back several feet from the pit, and 8 or 10 feet below the surface of the ground. Each has a small ventilating flue extending to the top of the ground.

The male and female are placed together about June 1, and breed during the last ten days of June and the first week of July. Only one male has been used for breeding, and the younger females which have been bred are offspring of the original pair. In all cases, the first breeding was at three and a half years. Usually all of the breeding bears are together during breeding time, and they are not separated until ready to go into hibernation.

In the fall the bears become very fat. As cold weather approaches, large quantities of dry leaves are thrown into the pit, which the bears carry into the dens. They spend much of their time there, but come out for an occasional meal till the advent of settled cold weather, usually about the middle of December, when they finally retire to the dens for the winter. They generally come out from hibernation early in March. Each female that is expected to have young hibernates by herself: the male and a young female remain together in the pit through the winter.

Mr. W. R. Lodge, manager of Silver Lake Park, states that the bears have always come out, after hibernating for two or three months, in practically as good condition as they went in, not even the females, with cubs a month old or more, showing any thinness. Nor do they appear to be hungry, for at the first meal they take but very little food, putting out the tongue and touching the apple, parsnip or whatever is offered, before biting it; and it is only after three or four days, or even a week, that they eat with the usual appetite.

The young have been born between January 21 and 27, with the exception of two litters, one February 1 and the other a day or two earlier. Their whimpering can be heard through the ventilating shaft, and this at once gives notice of their presence in the den. From the very few which have been examined immediately after birth, it would appear that the weight of new-born cubs ranges be-

tween 9 and 12 ounces. They are plump little fellows, with short velvety hair of a grayish-brown color; their eyes remain closed from 30 to 40 days, and they do not come out of the den until two months old or more.

Each family has its own quarters, though the mothers have shown no inclination to injure each other's cubs when the cubs were playing together on a gate of widely spaced bars which separated them. The male was twice allowed to be with the family for a short time in April and did not injure the cubs, though he carried one about, taking nearly the whole cub into his mouth. During two seasons he was with the mother and cubs from the first of June, but she then failed to have young the next winter. When it is desired to have the mother breed that season, the cubs are taken away in May and raised by hand. Only milk is fed for the first few weeks, after which they are gradually accustomed to the mixed diet of the older bears. The births have been as follows:

Original female, births 1892 to 1909 (no cubs 1910 to 1912) 13 litters, 34 cubs.

2 litters of 1 cub,
3 litters of 2 cubs,
6 litters of 3 cubs,
2 litters of 4 cubs.

Second female, births 1902 to 1912, 10 litters, 22 cubs.

1 litter of 1 cub,
6 litters of 2 cubs,
3 litters of 3 cubs.

Third female, births 1906 to 1911, 5 litters, 12 cubs.

3 litters of 2 cubs,
2 litters of 3 cubs.

This gives 2 litters of 4 cubs, 11 of 3 cubs, 12 of 2 cubs, and 3 litters of 1 cub; but as one of these last was the first litter produced, and the male was with the female at that time, he may have destroyed one or more of the cubs. The two litters of four cubs were from the oldest female, and each followed a year when she had failed to have cubs.

Record of the sexes was kept only for the first 9 litters of the original female, which included 15 males and 6 females.

No cubs have been lost except through accident, and the death of a bear 20 months old was the only one from disease.

The food which is supplied to the bears is a very good approximation to the diet which the animal gets in the wild state. Hotel and

picnic tables of the Park afford a large amount of miscellaneous scraps, to which is added an abundance of green food from farms near by. This begins with dandelion tops in the spring, followed by clover, green corn, watermelons, berries and other fruit. Acorns are gathered for them in the fall and they then get, also, dried sweet corn and "windfall" apples. Occasionally a venturesome hen or pigeon is eaten, but the bears get no other meat except a little that has been cooked.

The time of going into hibernation seems to be determined mainly by the weather, as the bears do not retire to the dens to stay before severely cold weather comes. It happened that the month of December, 1911, was unusually mild, and they did not finally hibernate until the first days of January. However, the bears have uniformly been very fat, and it is probable that, if they were lean, they would not hibernate steadily, but would come out occasionally to seek food. The cubs have hibernated about the same as the older bears.

The surplus bears have been disposed of from time to time, most of them going to animal dealers, when 8 or 10 months old, at \$25 to \$30 each. The highest prices obtained were \$75 for a grown bear and \$50 each, for two cubs. A few were sold for meat when two years old, bringing from \$25 to \$30, with skin and head reserved. For the last eight or ten years, however, there has been sufficient demand for live cubs to take all the surplus, more than a dozen having gone on the vaudeville stage; and there is stated to be a standing offer of \$25 each for future cubs. No skins have been sold.

The value of black bear fur at the present time is about \$25 for No. 1, large northern skins, and 20 to 40 per cent less for those from middle and southern regions. For ladies' wear, prime silky skins of cubs and yearlings are preferred, and these are worth up to \$15. It is a very durable fur.

The Messrs. Lodge, of the Silver Lake Park Company, have been very kind in furnishing information regarding their bears, and this paper is made up almost entirely from data which they supplied.

Both bears of the original pair, now 24 years old, are still in excellent health, although the male does not become as fat in the autumn as he did when younger and the female has had no cubs for the past three years.