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ON DESLOTHING THE SLOTH

DURING several visits to Panama and while making other observations, the possibility of raising the level of activity of the sloth made an interesting appeal. Considered academically and also to test the action of certain substances or conditions, this animal makes an excellent subject. Its basal level of movement is exceedingly low, and increments may readily be observed. Other features make it almost ideal for study, including its ease of handling and training and the plentiful supply in the tropics. Tests were made on both two-toed and three-toed species, the experimental work having been carried out mainly at Barro Colorado Island Laboratory, Canal Zone, and Gorgas Memorial Laboratory, Panama. It may be said that several ways were found of speeding up their activities.

Recognition that the body temperature of the sloth is normally much lower than that of other mammals suggested a temperature test. Mere exposure to the tropical sun for an hour or two raised the rectal temperature 4° or 5°, and thereupon the activity of the animal became much greater. This was evidenced by its rate of travel along the under side of a twelve-foot horizontal pole, timed by stop-watch. Again, setting up an emotional reaction in the sloth, by simple feints and passes before it, augmented its speed very markedly. Extract of the adrenal cortex made in this laboratory, when given in moderate doses (5 cc or so every hour or two), also provided an adequate stimulus to increased activity. Two other substances, adrenalin and prostigmin, were also found to be effective in raising the sloth from its (anthropomorphically considered) sluggardy. Several other preparations which were tested over several days (thyroid and pituitary, also benzedrine and strychnine solutions) gave negative results.

Raising the body temperature appeared to be the best stimulator; on the average the increments in rate of walking on warming approximated 50 per cent., and several cases showed increases of over 100 per cent. Cortico-adrenal extract was observed to maintain the increased rate of upside-down travel by the sloth for some ten or twelve hours after injection. This is in keeping with the earliest observations on the influence of the cortical hormone in augmenting activity.[1] Prostigmin as well as emotional excitement appeared to bring out the fighting instinct in sloths, along with the greater ability to "run" away.

The rate of progress of the sloth may be given interestingly on a mileage basis. It appeared from several hundred tests that the two-toed sloth normally averaged a little over three hours to the mile, and three-toed animals almost four-and-a-half hours. The slowest individual tardigrades, however, took over six hours for the distance. Under excitation such as that noted above, the mile was possible in about two hours, and in a burst of speed by one animal only, a mile an hour was accomplished.

It is likely that in the wild the higher rates of progress indicated would not obtain, because of difficulties of arboreal travel, lack of stimulus, etc. In some cases the sloth rests, indeed, for weeks on end, in the same place in the same tree. Beebe has written very engagingly on its habits.[2] It may be recalled that the sloth possesses only about one half the amount of muscle (percentally) found in other mammals, and that about one quarter of its weight is made up of stomach and contents—both serious handicaps to fast movement.[3] The present observations indicate, nevertheless, that several fairly effective methods of deslothing the sloth may be employed.

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[1] R. H. Roberts and B. E. Struckmeyer, *Jour. Agr. Res.*, 56: 633–678, 1938.