

The Unpublished Tracks of Snowman or Yeti

By W. TSCHERNEZKY and C. R. COOKE*

This is the first of two articles concerning the Snowman or Yeti. The first part discusses the nature of the animal responsible for the tracks. In the second, C. R. Cooke contributes a note on one area in which similar footprints have been seen.

UNNOTICED DISCOVERIES BY E. SHIPTON AND M. WARD

The mysterious footprint photographed by E. Shipton in the Everest region during his reconnaissance in 1951 is well known (Figure 1A) and has aroused special interest by virtue of the very clear impression and the footprint's quite distinctive character. This article, apart from discussing in constructive manner the kind of creature which can have left such a unique print, intends also to show that Shipton's discovery is not isolated and that there is corroborative support from two earlier photographs by C. R. Cooke.

Shipton took two shots of the same exclusively clear and well-preserved footprint: first one with an ice-axe laid alongside and another with an alpine boot. Unfortunately the hand of the photographer moved slightly between the shots and slightly different aspects of the surroundings were fixed. In the right lower corner of both photographs can be seen the fore part of a second footprint. If the photograph with an ice-axe is superimposed on the photograph with the boot, there will be received a much more complete picture of the fore part of the second footprint and particularly of its first toe (Figure 1B). In the first track are seen the smallest details down to the snow partitions between imprints of each particular toe. Unfortunately, print B is not clear, it is larger and

* We are most grateful to the Royal Geographical Society, Alpine Club and Mount Everest Foundation for helping us with the precise photographs of Yeti tracks; to Professor J. Napier, Dr G. B. Schaller, Dr W. C. Osman-Hill for permission to use their materials; to Dr K. P. Okley and Mr J. E. Hill for kind assistance in using materials of the Natural History department of the British Museum; to mountaineers and explorers, Mr E. Shipton, Dr M. Ward, Mr H. Tilman, Lord Hunt and Mr G. Creighton, for information and important details; to Mr J. B. Kirkham and Mr J. Pacey for help during photographic experiments; to my mother, Mrs Helene Tschernetzky, for skilful advice during illustration work.

The discovery, photographing and first original description of the Yeti tracks on the ground belong to Cooke; the zoological aspects of the article are written by Tschernetzky.

details have disappeared. Presumably the difference is accounted for by localised differences in the surface layer of crusted snow and of the hardness of the underlying stratum when the footprints were made and the effects of strong sun at the time when the photographs were taken. But the general outlines show the same characteristics for Snowman's foot structure — the short, thick and deviated big toe, the longest and also very thick and clearly separated from the neighbouring second toe, and small and closely pressed together third, fourth and fifth toes.

To some extent it is possible to reconstruct the basic shape of two other footprints. The rows of Snowman's tracks were photographed by Shipton from the rear side (Figure 2) and from the front with Dr M. Ward staying near them (Figure 3). Because the photographs were taken from an angle, the original shape of footprints was changed. If during printing the photographic papers are kept not parallel to the negatives as is usual, but at an angle similar to that at which the camera was held by Shipton, positive pictures will then appear to some extent restored to their original shape.

On Figure 4 is shown the first reconstructed track from Figure 2. On it is clearly seen the deviating big toe, but other details disappeared.

On Figure 3 the third Snowman's footprint is not damaged and after reconstruction it is possible to see restored the Snowman's track and also restored in the same way the imprint of the alpine boot (Figure 5). The reconstructed imprint of the boot demonstrates objectively the degree of exactness of the reconstructions of the Snowman's tracks: the details are missing, but the general outlines restored correctly. It also shows again, that the Snowman's footprint is slightly longer but about twice as broad as the large alpine boot. On Figure 5 and on the enlarged picture (Figure 6) is clearly seen the imprint of a short, thick and slightly bent big toe well separated from the second one by a snow ridge. These two reconstructed tracks show common features between themselves and also with the precisely clear one on Figure 1A, like very large size, great breadth, separated big toe, and complete absence of imprints of claws. Figures 2 and 3 also indicate that the Snowman walks in a human bipedal manner and not like a bear.

First, the Snowman's toes appeared to be directed outwards, similar to the tracks of Dr Ward on Figures 3 and 5, but not inwards as is seen clearly in the row of tracks (trail) of the brown bear (Figure 7).

Second, it is impossible to find among them shorter and longer tracks of fore and hind paws as it is also clearly seen on the previous picture.

PHOTOGRAPHY BY C. R. COOKE

It seems probable that Shipton and Ward's discovery is not isolated or even the first occasion when such prints have been individually photographed. In 1940 Cooke took two photographs of similar tracks, not on snow, but on stony soil (Figures 8 and 9). In a letter to me he wrote:

The only two photographs I have of the footprints are one of the right foot and one of the left foot crossing a footpath at an altitude of about 13,500 ft. near a place called Megutang, shown on the 1" - 2 miles Survey of India Map of Sikkim at about seven miles due south of Kang La. The prints are not quite clear enough for publication, so they have never been published, but one at least shows such a remarkable similarity to the prints seen by Shipton on the Everest reconnaissance (1951) that they are beyond doubt made by the same animal.

It is a pity that the prints are not more clear, but the reason was that it was late in the afternoon and the prints were not fresh, perhaps 3 or 4 days old.

The two tracks, of which I am sending you the photos, were found in the month of May (29th or 30th) 1940. The situation was above tree line with a certain amount of shrub, bushes and dwarf rhododendrons and rocks on a gently sloping hillside. The prints showed that the Yeti was walking uphill amongst the rocks and had crossed the footpath which was stony and slightly soft and muddy from rain which had fallen three or four days before. The stride was about the same as that of average man. From the depth of the impressions I would say that, considering the large area of the foot, the weight must be above that of an average man. We thought of all sorts of possibilities, such as a coolie wearing grass shoes (a habit more common in the Western Himalayas) and carrying a load. But this was extremely unlikely, as the place was very far from any sort of habitation, there were no yak herds in the area and there would not be occasion for any ordinary man to walk across the path up the hillside. The place was extremely desolate, bare, rocky and featureless.

The prints were seen first by the coolies and porters who were walking ahead of my wife and myself. They stopped and gathered round them and when we came up we asked them what they were looking at. They pointed to the prints and said "jungli admi sahib" (meaning the wild man). I was impressed by the matter of fact way in which there was no doubt in their minds as to the cause of the prints. They were not trying to impress *us* they were merely interested on their

own account. We had three Sherpa porters with us and about six coolies and Ang Tharkay as Sirdar, and we questioned them all at some length in camp that evening in order to collect as much information about the Yeti as possible. All agreed that the Yeti has brownish rather long hair over most of the body, walks mostly on two feet and is about the size of a man. One of them said that the female has rather long breasts which hang down. We asked them of course if anyone had seen one, but none had.

Cooke's photographs as compared with Shipton's are not so clear and complete. Also the photographs were taken late in the afternoon in cloudy conditions so lighting was poor, and the pictures were taken at an angle instead of directly over the prints because in the case of Figure 9, he tells me, it was at the side of the path and partly under bushes through which the animal had pushed its way, and in the case of Figure 8, because his camera was not capable of focussing sharply to less than about $3\frac{1}{2}$ feet. Also, Cooke's photographs have the advantage of showing prints made on soil and any question of alteration or enlargement due to melting snow does not arise. Also, the animal walking on stony ground was forced to expand its toes more which helps to throw some light on the anatomy of the foot.

On the basis of Cooke's photographs the following can be inferred about the structure of the animal's foot.

1. They may be fractionally shorter than Shipton's prints but still very large, not less than 12 inches long.

2. Correcting from Figure 8 with the sunglasses as a clue for the angle of the photographs, they were broad, i.e., about 50 per cent of its length across the middle of the foot, and much broader in shape than the foot of any existing human race or known living primate or the fossil impression of Neanderthal man.

3. The hallux or big toe is flexible and can be adducted (Figure 8) or abducted (Figure 9) resembling the mobility of the big toe in footprints of the mountain gorilla,¹ see Figures 14 and 15. In Cooke's photographs this digit is less bent and pressed into the ground than we see in Figure 1A where a step has been taken on snow. Thus the big toe appears longer than in Shipton's photograph and, taking their lengths in conjunction with the slope of the hill (slightly upwards to the left) the toes show signs of being placed in the order 2-3-4-1-5 (digital formula), the second toe being the longest. The same digital formula can be observed on

¹ G. B. Schaller, *The Mountain Gorilla*, University of Chicago Press, Chicago, 1963, pp. 86-87.

the atavistic foot of the Australian Aborigine described by Klaatsch (Figure 16).²

According to the Shipton photograph the shortest is the first toe and digital formula is 2-3-4-5-1, which means that the hallux is shorter than on the tracks discovered by Cooke, unless as would seem probable, the toes were deliberately retracted to grasp less solid substances while walking on crusted snow.

To clear up this contradiction the following experiment was conducted: as in my previous experiments³ an exact copy in paraffin-wax (Figure 17) was made of the plaster cast and this produced the tracks very similar to the Shipton photograph. The exactness of the plaster model was proved by the production of artificial tracks (Figure 18). When this new paraffin-wax model was softened in warm water and its hallux, second toe and the outside half of the hill were stretched out, there appeared the model of Snowman's foot as if the creature was treading on firm ground (Figure 19). Its general length increased up to 34 centimeters or 14 inches. The hallux appeared to be slightly longer than the fifth and slightly shorter than the fourth toe. It means that the digital formula is the same as on the tracks photographed by Cooke and the feet of the Australian Aborigine photographed by Klaatsch.

4. In Cooke's photographs the tracks are not clearly distinguished from the surroundings and there is no clearly visible separate imprint of the very characteristic second toe. To make contours of the footprints more clear, on the Figures 10 and 11 the background was covered by process white and also schematic drawings were prepared (Figures 12 and 13). On the second footprint (Figures 9, 11 and 13) it will be seen that the second toe is the longest, more protruding forward than the first and the third one. On the first footprint (Figures 8, 10 and 12) the big toe or hallux is less deviated than on the previous one and even as on the track on Figure 1A.

The imprint of the second digit is not at all clear in Cooke's photograph because there is a stone exactly where the toe must come on the ground. This stone shows signs of having moved under pressure and furthermore, in the original contact photograph, with the help of a magnifying glass, it is possible to distinguish on the white surface of the stone the darker shade of mud left on it by the long second toe. This is indicated in the schematic drawing (Figure 12) by rows of dots. The imprints of the third, fourth and fifth toes are more separated than in Shipton's photograph as might be expected under the changed conditions.

² H. Klaatsch, "Schluse ericht über meine Australien in den Jahren," *Zeitschrift Für Ethnologie*, Berlin, 1907, Heft IV and V, pp. 670-671.

³ W. Tschernozky, "Reconstruction of the Foot of the 'Abominable Snowman,'" *Nature*, Vol. 186, No. 4723, pp. 496-497.

Another important common feature, clearly seen in Figures 1A, 8 and 10, is that the deepest depression in the ground is on the outer side of the print between the fifth toe and the front part of the heel, except that in Cooke's case more weight has been placed on the outside of the foot and heel. The rear outline of the heel shows some similarity in both cases, in particular a tendency to an obtuse angle in the outer curve of the heel.

Superimposed across the middle of the footprint is a foreign squarish imprint, but Cooke comments on this in the second part of this article.

STRANGE FOOTPRINTS ON THE STONE DESCRIBED

BY H. W. TILMAN

In the Tibetan monastery near the Rongbuk glacier on the north side of Mount Everest Tilman and his companions were shown in a shrine reserved for the Abbot, an unusual object which Tilman⁴ describes as follows: "In one of these was a large lump of greenish-black rock, probably crystalline, measuring about 18 in. cube and weighing perhaps $\frac{1}{2}$ cwt. On its smooth flat surface was the very clear impress of a large human foot." The stone was found near the Rongbuk glacier about eight miles from Mount Everest and was associated with the "Abominable" Snowman, according to information received from the monks. A relic of this kind is not readily destroyed and there is a chance that it still exists and, if one could obtain permission to visit the monastery, it could be photographed and studied. Had this print been located on a piece of clay rather than crystalline rock, it could be a fossilized print from the floor of a cave, as in the case of the tracks of Neanderthal man found in Italy. As it is, one can only guess at an explanation for a footprint, if such it be, on a crystalline rock surface, and the following suggestion is made: In ancient times human footprints were used for magical or ritual purposes and there is evidence that this tradition has persisted from prehistoric times. For example, on the rocks of Karelia in the North Western part of European USSR prehistoric people engraved on the sides of rocks outline pictures of beasts, birds, human figures and also the profiles of bare human feet — the so-called "devil's tracks" of the local population. Similar rock carvings or *helleristninger* of prehistoric origin are found in one or two places in southern Norway.

Possibly a similar tradition could have survived in Tibet up

⁴ H. W. Tilman, *Mount Everest 1938*, University Press, Cambridge, 1948, pp. 99-100.

to historic times, whereby magic powers were ascribed to large humanoid footmarks which, to preserve them, were engraved or copied on rock and kept in a monastery. The origin of such a relic could conceivably arise from finding a clear muddy imprint of a Snowman on a convenient rock in the Rongbuk region and subsequently "preserving it for ritual use by known methods dating back to the late Stone Age." Alternatively, of course, a very large human foot imprint in a rock surface could be a modern artefact and carry no significance. A study of the structure, size, proportions and digital formula as well as an examination of the material of the rock itself would probably produce an explanation.

TRACKS OF KNOWN ANIMALS WHICH CAN BE CONFUSED WITH YETI FOOTPRINTS

Ralph Izzard in his book⁵ mentions opinions expressed by some scientists that Yeti tracks are those of a langur monkey, and by others that they are simply bear tracks. Figure 20 illustrates an imprint on snow made artificially from the plaster cast of a langur right foot. One glance is sufficient to show that the narrow track of the langur with its long, thin, pointed heel bears no resemblance to the Yeti print.

Other more realistic candidates, the black and brown bears and the Giant Panda, are discussed. The small differences between the tracks of the two bear species can be ignored, but footprints as large as 12 inches in length can only be made by the largest forms, *i.e.*, the Polar, the Grizzly, or Kamchatka and the Kodiak bears. Tracks of any middle Asiatic bear cannot be longer than 10 inches without claws and usually much smaller with other obvious differences between bear and primate prints. Neither the fore nor hind paws of the black or brown bear possess a deviated big toe so characteristic of apes. In man and Snowman this digit is the thickest but in the bear it is not only the shortest but also the smallest. In a bear's paw all toes are closely pressed together and the longest are the middle ones, *viz.* third and fourth (Figure 22). Bear claw marks are also another distinguishing feature, however, bears living in rocky regions can have very short claws which are worn back, and therefore could leave nearly no marks on snow or soil.

When a bear walks, the hind parts of the paws bear much less pressure as compared with the heels of man, Yeti or gorilla, apart from which the bear's heel is comparatively narrow so that

⁵ R. Izzard. *The Abominable Snowman Adventure*, Hodder and Stoughton, London.

its heel marks appear much more pointed than the other types of plantigrade animal mentioned. In the bear the fore paws are even less plantigrade than the hind paws so that any print of the carpal region of the fore paw is usually absent, and therefore the print is shorter and relatively broader. Thus the spoor of the fore and hind limbs are readily distinguishable and show up as those of a quadruped and not a biped (Figures 7, 21 and 22).

The Giant Panda is more plantigrade than the bear, and when it walks the imprint of the carpal part of the front paws is more clearly seen. At the same time, in spite of having a broader heel the tarsal part of the print is less clearly seen on snow as the soles are abundantly covered with hair. The basic difference between the tracks of bear and panda is the imprint of the pseudo digit of the panda's fore paw. The pseudo digit is the enlarged and flexible radial sesamoid behind the first toe and acting like a sixth grasping thumb (Figure 23).

If tracks on snow have been enlarged by melting and details have disappeared, the old advice of Ernest Thompson Seton is worth following.⁶ He says that the "trail" or a series of tracks with their spacing and alignment are much more valuable than a single imprint. If the quadrupedal animal was walking normally, the prints of bear or panda will be irregularly spaced and the pace shorter than the $2\frac{1}{2}$ stride of the Snowman (Figure 7). However mistakes can easily be made for, if the snow is wind-blown or otherwise thinly crusted and the animal has proceeded up or downhill, it may change its gait to what Thompson Seton (*ibid*) called "perfect treading," that is to say, the hind foot is placed on the print left by the front foot. The impression is created of the quadruped having walked on two feet. This mode of walking helps in that the animal sees where he is placing his front foot on a safe spot and the hind foot automatically finds the same secure spot, at the same time the gait saves effort as less force is needed to break trail once instead of twice for each pace. Thus it is that the superimposed tracks of bear, panda or snow leopard can be confusing (Figure 24). Clear fresh tracks would nevertheless be readily distinguishable from the Yeti print on account of multiple impressions of digits in two rows. With old prints which have lost detail it would be impossible to guarantee to what type of animal they belong as the spacing would be more or less regular and would approach a human or Yeti stride, and in such case the only hope would be to follow the tracks carefully noting whether or not the pace changes at any point from a regular to an irregular pace characteristic of a quadruped.

⁶ E. Thompson Seton, *Animal Tracks and Hunter Signs*, Edward Ward, London, 1960, pp. 54, 56, 69 and 157.

THE YETI FOOTPRINT AS A KEY TO HIS SYSTEMATIC POSITION

Skeletons (Figure 25), described by Bonch-Osmolowsky,⁷ and even the footprints of Neanderthal man are well known. They look like very broad human feet and tracks but do not exceed the average human foot in length and the big toe is longer and less deviated than in some cases of modern tropical races who walk barefoot all their lives, as instance in Figure 16 already referred to and in Figure 26, the skeleton of a Veddah foot discovered by W. C. Osman-Hill.⁸ The basic parts of the *Australopithecus* foot with the metatarsals but without capitulums and phalanges is also known, thanks to a discovery by L. S. B. Leakey and a reconstruction by M. H. Day and J. R. Napier.⁹ Clearly, in general shape, it is a human foot (Figure 27) and superficially appears to be even less atavistic than the above-mentioned Australian aboriginal and Veddah feet.

The Yeti foot is nearer to the apes in such important features as the deviated and flexible big toe, which indicate that it belongs to a lower evolutionary level than the Australopithecine and more on a level with that which has been suggested for fossil *Gigantopithecus*. It is conceivable that a representative of this genus penetrated to remote elevated regions, like the wild Yak and the Giant Panda, and has survived there into the present century. Ecologically a Yeti primate could occupy a similar niche as the brown mountain bear as one would expect it to be similarly omnivorous and even more powerful than this representative of the Ursidae.

The following evidence shows that the Snowman or Yeti must be a real giant. On Figure 3 it is possible to compare the depth of imprints of Snowman and M. Ward, who is a tall and strong sportsman. The tracks of his alpine boot are so shallow that the instep of the boot does not touch the surface of the hard snow and the spines of the boot do not leave clearly visible impressions.

The Yeti's tracks are much deeper imprinted in hard snow — the same feature which Cooke observed on the “jungli admi” footprints on hard ground. At the same time, the surface of the Snowman's sole is not less than twice as large as that of the alpine boot (Figures 3 and 5) and not less than $1\frac{1}{2}$ times larger

⁷ G. A. Bonch-Osmolowsky, *The Skeleton of the Foot and Shin of Fossil Man from Kiik Koba Cave*, Edition of Academy of Science of USSR, Moscow-Leningrad, 1954, plate A.

⁸ W. C. Osman-Hill, “The Physical Anthropology of Existing Veddahs of Ceylon,” *Ceylon Journal of Science*, Vol. III, Part 3, p. 223.

⁹ M. H. Day and J. R. Napier, “Hominid Fossils from Bed I, Olduvai Gorge, Tanganyika,” *Nature*, Vol. 201, No. 4923, March 7, 1964, pp. 967-970.

than the sole of gigantic gorilla, 1m. 95cm. tall (compare Figures 1 and 14). If M. Ward's weight in alpine clothing was about 12 stone, then the Yeti's weight must be much more than 24 stones. The mountain gorilla of this height must have a weight of around 500lb.; so the Snowman must be about $1\frac{1}{2}$ times heavier than the gorilla or about 700-800lb.

The length of the Yeti's stride measured by Shipton was 2 feet 6 inches, which corresponded to a man at least 6 feet tall. Being a more primitive, ape-like creature Yeti must possess a much larger body comparatively with the length of the legs, or must be no less than 7 feet tall.

THE IMPORTANCE OF THE DISCOVERY

The photographs of Cooke and Shipton prove documentarily that an unknown large bipedal primate existed in Himalayas up to 20 years ago. No new evidence has appeared since Shipton's photographs so there is a danger that the second half of the twentieth century will see the extinction of this unique creature, just as the last mastodons were exterminated on the American continent a few hundred years before Columbus, as estimated by Henry F. Osborn¹⁰ and Franz Spillman.¹¹ So, if the Snowman or Yeti is still alive, its discovery or more concrete details of its nature and anatomy are now matters of great scientific importance. It would be a supreme triumph for zoology, anthropology, theory of evolution and psychology if a single specimen could be found alive and studied.

¹⁰ H. F. Osborn, *Proboscidea*, The American Museum Press, New York, 1936, Vol. 1, pp. 571-574.

¹¹ F. Spillman, "Las letzte Mastodon von Südamerika," *Natur und Museum LIX*, Heft II, February 1929, pp. 119-123.



A

X

B

1



2

Y



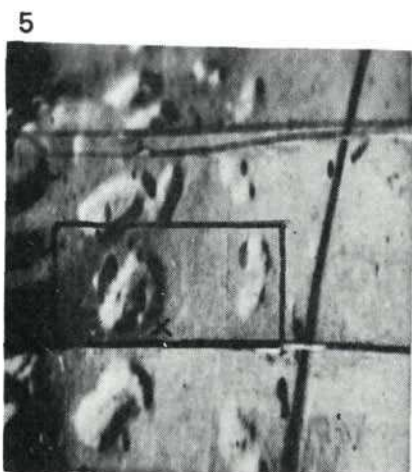
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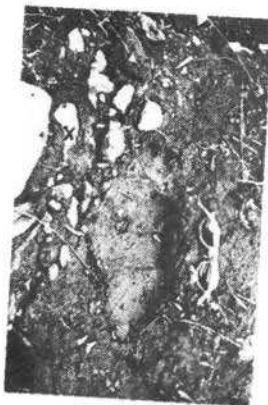
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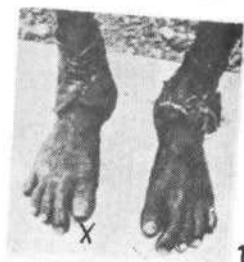
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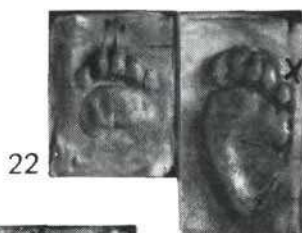
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ILLUSTRATIONS

- Figure 1—Snowman's tracks photographed by E. Shipton. First digit marked by X as on all following pictures. A—Well-known photograph with ice-axe. B—Second Snowman's footprint with more complete picture of the first toe after superimposing two photographs.
- Figure 2—Snowman's trail photographed from behind.
- Figure 3—Snowman's trail photographed from the front.
- Figure 4—Reconstructed first footprint from Figure 2.
- Figure 5—Reconstructed third Snowman's footprint from Figure 3 and imprints of alpine boots.
- Figure 6—The same Snowman's footprint as on Figure 5 enlarged.
- Figure 7—The trail of European brown bear.
- Figure 8—The Snowman's footprint on the ground photographed from left side (copyright C. R. Cooke).
- Figure 9—The Snowman's footprint on the ground photographed from behind (copyright C. R. Cooke).
- Figure 10—The same footprint as on Figure 8 with covered background.
- Figure 11—The same footprint as on Figure 9 with covered background.
- Figure 12—Schematic drawing of the footprint on Figure 8. The figure indicated the toes.
- Figure 13—Schematic drawing of the footprint on Figure 9. The figure indicated the toes.
- Figure 14—The footprint of gigantic mountain gorilla with expanded toes taken by S. Freshkop from dead animal.
- Figure 15—The footprint of mountain gorilla with contracted toes (G. B. Schaller).
- Figure 16—Atavistical feet of Australian Aborigine (H. Klaatsch).
- Figure 17—The paraffin wax model of Snowman's foot.
- Figure 18—Artificial Snowman's track on snow produced by model.
- Figure 19—Expanded paraffin wax model of Snowman's foot.
- Figure 20—Artificial track of Langur's right foot on snow made by cast.
- Figure 21—Footprints on the snow of left fore and hind paw of brown bear.
- Figure 22—Artificial footprints on the clay of left fore and hind paw of brown bear taken from skin.
- Figure 23—Footprints of the left fore and hind paw of Giant Panda on the snow.
- Figure 24—Artificial superimposed footprint of brown bear on clay taken from skin.
- Figure 25—Skeleton of the right foot of Neanderthal Man. (G. A. Bonch-Osmolowsky.)
- Figure 26—Skeleton of the left foot of Veddah (W. C. Osman-Hill, in custody of British Museum of Natural History).
- Figure 27—The foot of *Australopithecus* (M. H. Day and J. R. Napier).