

The migratory springbucks of South Africa (the trekbokke) : also an essay on the ostrich and a letter descriptive of the Zambesi Falls / by C.S. Cronwright-Schreiner.

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THE
MIGRATORY SPRINGBUCKS
OF SOUTH AFRICA

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Samuel Cron



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The MIGRATORY
SPRINGBUCKS OF
SOUTH AFRICA

BY THE SAME AUTHOR
THE LIFE OF OLIVE
SCHREINER.

THE LAND OF FREE
SPEECH.

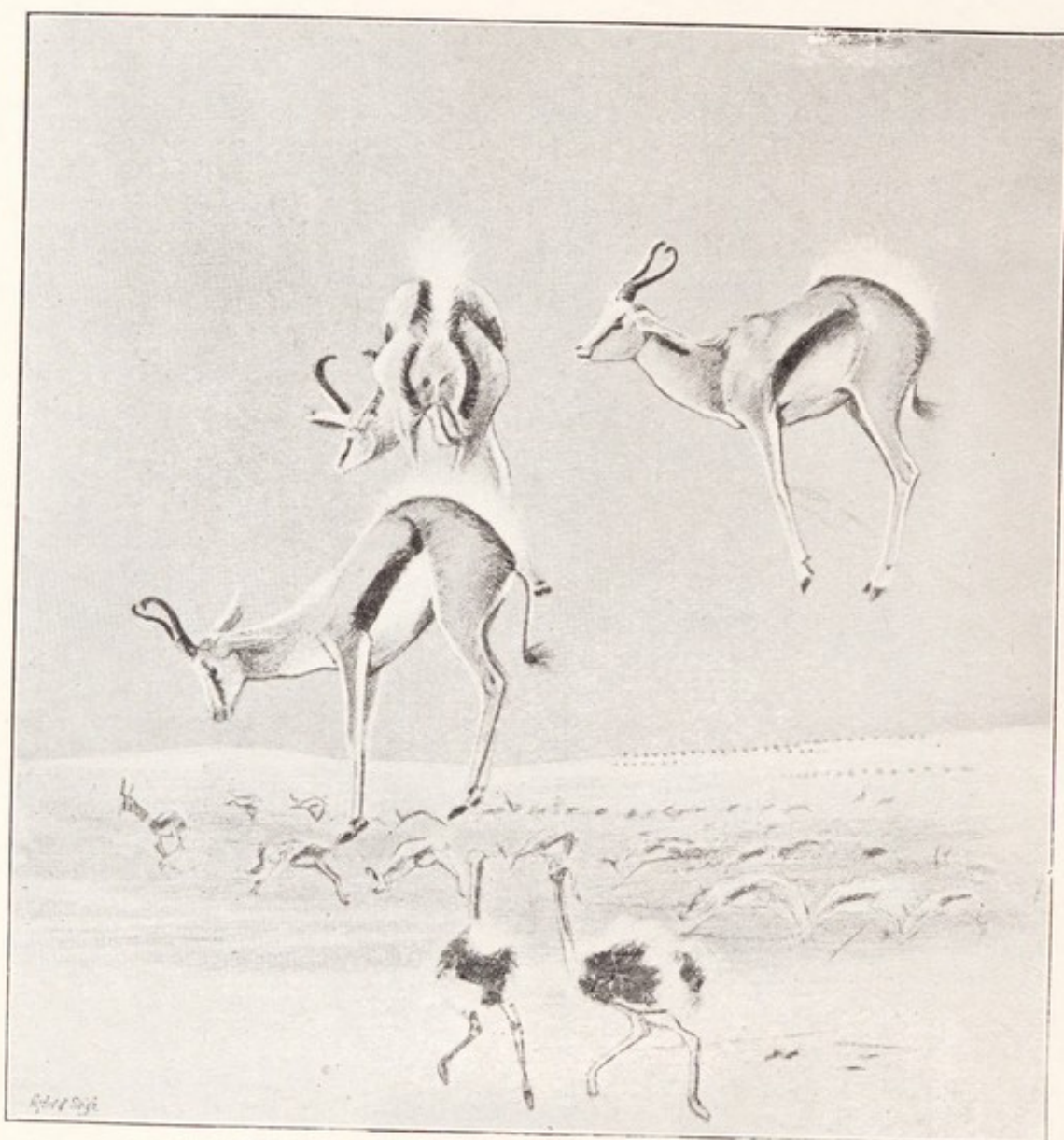
THE ANGORA GOAT.

Printed Privately :
LITTLE SONGS FOR SOUTH
AFRICANS.

Edited :
THE LETTERS OF OLIVE
SCHREINER.



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"PRONKING" (BOUNDING) SPRINGBUCKS.

From *A Breath from the Veld*, by J. G. Millais. (By the courtesy of the Author and Messrs. H. Sotheran & Co.) (See p. 17.)

1902
The MIGRATORY SPRINGBUCKS
OF SOUTH AFRICA (*The Trekbokke*)

Also an Essay on THE OSTRICH *and a Letter*
descriptive of the ZAMBESI FALLS ♀ ♀

By S. C. CRONWRIGHT-SCHREINER ♀

ILLUSTRATED

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NOTE.—“*Trekbokke*” is pronounced almost like *Trek-bawker*, the “*baw*” being short. It almost rhymes with “*hawker*.” It is the invariable term used even in *English*. *Bokke* is the plural of *bok*.

THE MIGRATORY SPRINGBUCKS AND THEIR VELD

INTRODUCTION

THIS little book contains articles on and references to the Migratory Springbucks of South Africa by men who have had personal acquaintance with the subject. There are, of course, numerous other references in stories dealing with South African hunting and travels, but I do not know of any others of importance dealing directly with the "Trek-bokke"—the Migratory Springbucks—a wonderful occurrence with which this little book is mainly concerned. It seems to me that the days of the great treks have passed and that it cannot be without interest to naturalists and hunters that a record should be made of what people have written on the subject. It would seem strange that so little should have been written on these migrations but for the fact that, almost without exception, those who knew most were men unaccustomed to writing—in many cases farmers of the early days who would as little wonder at the phenomenon, or think of writing about it, as the usual denizen of London would think of wondering at or writing about the swarming

crowds and traffic of the London streets. I know of no written record, worthy of being so termed, from South African men of bygone generations, people on the veld, who must have seen almost incredible sights on the endless flats, not only of springbucks, but also of wildebeest, hartebeest, blesbok, quagga, not to mention other large four-footed game, such surely as no other country in the world has ever been known to exhibit; but I have never heard of these astounding migrations except of the springbuck; presumably it is only the springbucks that thus migrate.

I do not know whether springbucks were found originally between Cape Town and the southern mountain rampart (Hottentots Holland, Hex River and other ranges) which separates the low-lying coast country from the elevated plateau of the interior; I think it likely; but, once beyond the rampart, there is probably hardly any part (mountains and forests excepted) throughout an enormous tract of country where springbucks were not found. They were found on the open flats towards Port Elizabeth and between Grahamstown and Port Alfred. I do not know that they were found, and do not think they swarmed, on the open grass veld of what are called the "Native Territories"—beyond Queens-town, Kingwilliamstown, Indwe, Cala and Xalanga—but elsewhere, throughout the vast territory whose boundaries would be roughly about $27\frac{1}{2}$ longitude and $27\frac{1}{2}$ latitude, and especially in the

Karoo, they literally swarmed in millions and millions, in numbers so vast that they cease to convey any definite idea. The coastal parts below Grahamstown and towards Port Elizabeth have no wild springbucks now as far as I know. I knew Lower Albany (below Grahamstown) well as a boy in the seventies and there were none there then; but my father, who knew it from about 1850, used to speak of them. (My maternal grandmother, who, as a child of sixteen, came out with her mother, one of the British Settlers, in 1820, told us she remembered elephants and buffalo between Grahamstown and the coast.) When I was a lad there were a good many wild springbucks on the Fish River Rand (north of Grahamstown), but the town nearest the coast which I personally have heard of as having been visited by the trekbokke (from persons who saw them) is Cradock, a town in the Karoo about 107 miles north of Grahamstown: in the middle eighties an old English-descended land surveyor, then a farmer near Cradock, told me that, when a young man, one morning before breakfast he walked across the Fish River, on whose eastern bank the town stands, and shot a springbuck where the railway station now is, as the trek surged between the koppies just beyond the station and the western bank of the river. In the eighties there were still many quite wild springbucks in the Cradock and other up-country Karoo districts; to-day, such as survive in the more populous settled parts

of the Karoo are preserved in immense wire-fenced camps, so that on the whole a large number survive in a wild (if protected) state; otherwise they would, no doubt, be extinct in those parts. In the western parts of the Karoo (beyond Prieska, in Calvinia and so on) the bucks are still to be found uncamped but in almost negligible numbers.

Concerning the Karoo, which is the country referred to almost exclusively in the articles that follow, some idea of the vastness of the territory will be realised if the reader will consider that (including the desert parts to the west) it covers about one million square miles. Now it is a hard cold fact that, throughout almost the whole of this immense territory, springbucks were found in prodigious numbers and that, at times and in varying parts, that veld literally swarmed with millions on millions of one of the fleetest and most beautiful antelopes in the world, whose flesh, moreover, can hardly be surpassed as venison.

The trek of 1896, to which my own article refers (p. 40), was the last trek. Mr. Davie's article refers to this trek also, as well as to some earlier ones.

It can hardly be without interest to say something about the buck itself. In doing so I think I should give my "credentials." I was born in January 1863 in the district of Bedford, where my father was sheep-farming and where, at that time, springbucks were numerous. Except for a short line from Cape

Town to Wellington, there were no railways in South Africa then. As late as 1881, Cookhouse (until recently Bedford's nearest station) was the railhead on the construction from Port Elizabeth to Kimberley; only in 1883 did the railway reach De Aar Junction. When I was a baby, my father removed to Grahamstown, where I was reared. As a youth I remember unconfined springbucks on Fish River Rand. In 1877 I accompanied my father by cart from Grahamstown to Alicedale and from there by rail to Port Elizabeth and Uitenhage, and from this town (on the “ construction ”) to Mount Stewart Station in the Karoo. But what may be considered my first intelligent experience of the Karoo was gained in December 1880 and January 1881 at the farm Kuilfontein, near Colesberg, whither I went for a holiday with a college friend, whose father, Mr. James Murray, owned Kuilfontein. Cookhouse was then the railhead to the north; from there we went by mule wagon via Cradock, Middelburg, Naauwpoort and Colesberg. I shot my first springbuck in January 1881. I again visited Kuilfontein in December 1881 and January 1882, and again shot springbucks, which were still uncamped and numerous. In 1884 I farmed in the Karoo, first near Pearston (between Somerset East and Graaff Reinet) and then, from December 1894, for over nine years, near Cradock; and, except for a break of between five and six years (of which four were spent close to Kimberley and about one in Johannesburg), I then

lived in the high middle Karoo, at and near De Aar, up to the end of 1919. I speak and write Afrikaans ("the Taal") and was for eight years a member of Parliament, first for Colesberg and then for Beaufort West, which includes Prince Albert, and had to travel by cart all over that huge Karoo constituency. I am thus well acquainted with the Karoo by residence and by travel, and have a wide experience of springbucks and ostriches, of the Karoo and of the people who live in the Karoo.

W. C. Scully (extracts from whose writings follow) gives the size¹ of a springbuck, I presume from measurement, as 2 ft. 9 in. at the shoulders and its weight at about 101 lb. Springbucks skinned and cleaned will not average anything like so heavy

¹ My friend, Mr. L. Peringuey, Director of the South African Museum at Cape Town, kindly supplied me with the following measurements of the springbuck exhibits there:

	Ram, head erect.	Ram, head bent down.	Ewe, young.
	cm.	cm.	cm.
Height at shoulders	78	74	67
Height at rump	80	79	71
Length of back	66	66	62
Length along side	75	73	66
Height of bottom edge of breast . .	52	45	41
Length of horns (in straight line) . .	24	28	15
Length of horns (along curve) . .	30	33	17

The horns of adults are lyre-shaped; in the young they are shaped like the horns of the chamois.

cm. = centimetre.

33 cm. = 13 inches.



YOUNG SPRINGBUCK EWE.

Photo of a specimen in the South African Museum, Cape Town.
(By courtesy of the Museum.)



ADULT SPRINGBUCK RAM.

Photo of a specimen in the South African Museum, Cape Town.
(By courtesy of the Museum.)

as that. It would be a very large ram indeed that would weigh 90 lb. cleaned and skinned.

The springbuck is exquisitely graceful and is beyond description beautiful when in rapid motion, especially when "pronking" (bounding, prancing). Both sexes are horned, the horns being dark in colour, ribbed and lyre-shaped, and lighter in make and weight in the ewe. In the young (immature), the points of the horns are not turned in, but stand forward, almost as the horns of the chamois do.

The springbuck has three colours; the lower parts are white; then comes a dark-brown stripe; the upper parts are a rich lighter brown; along the back is a "fan" or "mane," generally recumbent. When shooting, one may roughly judge the shorter distances by the visibility to the naked eye of the horns and then of the dark-brown stripe; at greater distances, in the sunshine, the buck appears whitish, due perhaps to the brown merging into the dull tints of the Karoo herbage. The eye is large, gentle and lustrous.

The unique adornment of the springbuck is, however, the fan; its characteristic habit is pronking; and, as these two are associated, it may be well to describe the buck in greater detail.

The fan begins at about the middle of the back and is formed of long hairs, the outer brown, the inner and longer white, which gradually increase in length along the backbone to the rear. The

opposing edges of the fan, leaving a thin white line between them, almost meet along the ridge right up to the root of the tail, but gape a little over the loins ; they divide at the tail, and, just under it, are about four inches apart, widening farther as they run down the outer edges of the thighs. The tail, bare underneath, is covered with short white hairs with a thin erect fringe of longish brown hairs on the upper edge of the tip. The dark-brown stripe is from about two to four inches wide, with its greatest expanse about the middle; its lower edge begins just above the " knuckle joint " of the shoulder and slants slightly upwards, ending where the hollow of the flank joins the hindquarters. Above this the colour is light brown, darkening somewhat towards the top of the rump ; the lower part of the body, including the chest bone, is white, displaying the abdomen, especially as the white follows the upward slant of the dark-brown stripe. The insides of the legs are white also, as is the head except for a small brown spot on the forehead at the base of the horns and a narrow brown line, from the eye to the upper lip, on each cheek. Between the bases of the two lines, whence grow the long hairs of the fan, is a correspondingly widening patch of very short white hairs.

The fan generally lies flat, but when it is raised, especially when the back is well arched, as in pronking, the long hairs stand up erect, showing externally a brown base with a glittering white fringe above, especially on the curved crest of the

arch, where the white hairs are longest and stand high above the brown. At the same time and by the same movement the broad white patch between the inner edges of the fan is exposed along the back and down the thighs.

The buck is in an instant transformed in shape and size and colour. This is seen to perfection in pronking. The creature is then a beautiful and amazing spectacle. One does not know which to admire most, its exquisite beauty or its superb grace and agility.

I have never seen in any museum, not even in South Africa, a springbuck set up in the act of pronking, which is remarkable, because pronking is its most characteristic attitude and gives the antelope its name.¹ The attitude of the pronking springbuck is very like that of a bucking horse. The head is lowered almost to the feet, the legs hang fully extended with the hoofs almost bunched together; this arches the back sharply and throws the haunches down, making the legs appear almost unduly long. In an instant the buck seems to spurn the earth as it shoots up into the air to an incredible height, perhaps straight up; for an instant it hangs arched, then down it drops. As it touches the earth on its descent, the action of the feet and legs is so quick (and one is seldom very close) that my eyes

¹ The buck has been sketched in characteristic attitudes by Mr. John G. Millais in that superb book of his with its delightful title, *A Breath from the Veld*.

have never been able to follow it accurately; but there is no doubt as to what happens. The buck seems scarcely to touch the earth when it bounds up into the air again like a rocket, perhaps with a prodigious leap forward and as high as before; for a second you see it in the air, its mane up, its fan raised and opened in a sharp arch, the white patch blazing in the sun and the long hairs glittering, the legs and head all hanging in a bunch under the body; then it touches earth again, only to bound up once more at a sharp angle to one side, then straight up, then to the other side, then forward, and so it goes on. Then it will pronk away straight on end, with prodigious leaps, until eventually it will set off at full speed with the fan down, the neck extended, ears and horns laid back until nose and neck are almost in the same straight line, with a wonderful stride and pace. I have had them thus race past me on each side, say within twenty yards. It is grand to see the leaping, raking stride and the great muscles of the thighs as it "streaks" past you; you want to cheer! See the little kids do all this—short-bodied, long-legged, exquisite things only a few days old, with fans upspread, like so many fairy creatures dancing in the sunny air. I have seen all this pronking done at comparatively short distances, say a couple of hundred yards. (I have seen tame, pet springbucks pronk within a few yards.) When a clump are all doing it, it is difficult to shoot with any certainty; you find it almost impossible to draw a

bead on any one of them. If not really alarmed, or if a not very fleet dog is after them, they will sometimes trot along with their fans up with a high, bounding, stiffish step, now and then giving a leap to one side or the other, or straight up, tossing their heads, as if at play. But when a buck is really racing, his fan is not up; it does not appear; smooth and hard, he goes along like a bolt.

I have nowhere seen any explanation of this habit, this instinct as I take it to be, of pronking, but it seems to me not difficult to account for it. The habit, in which even the young kids are perfect, is akin to the "waltzing" habit of the ostrich, common to chicks as well as to adults. The ostrich will often race rapidly a short distance, then spin round several times, then go off again, zigzag at a great pace, throwing its body at varying angles and so on.¹ In both cases I take the habit to be protective; in play the young ones perform all the tricks of exercise which in later life they will need seriously in the struggle for existence. The buck lives on the open flats; his veld enemies were wild carnivora (lions, leopards, lynxes, etc.), which, unable to catch him by speed, had to do it by lying in hiding, rushing him and pouncing on him. It is obvious that the sudden "pronking," as I have described it, is the buck's safeguard; the very kids, only a day or two old, do it perfectly; it is an instinctive act of protection.

¹ See my article on the Ostrich later in this book.

But it has another utility ; it also affords a warning—a protection extended to the herd ; the white patch at once comes into view and the high bounds make it doubly conspicuous, especially when associated with such violent action. On the wide flats this “ warning ” can be seen at immense distances. If one has any doubt about this argument from analogy (e.g. the white under the hare’s tail), any person with some relative scientific knowledge and power of applying it has only to see the “ warning ” at work for all doubt to vanish. Possibly also the buck is enabled, from the height it attains, to see farther. I have often seen it at work. There will be a wide flat with many bucks on it, in clumps and scattered, all peacefully feeding. Suddenly a buck or a clump of bucks will pronk ; at once the warning is recognised and the alarm spreads ; others pronk, and soon all over the great plain you will see the startled bucks pronking or in uncertain motion. They may not know at the moment in which direction to run, but they soon get it and move off, generally, it seemed to me, away from the point where the first alarm was given.

It is certain that the springbuck, even in the intense heat and aridity of many parts of the Karoo and beyond, can go for long periods without water. Much of the Karoo (for instance the Gough—pronounced “ Cope ”—lying partly in the districts of Prince Albert and Beaufort West), large portions

of Prieska, Calvinia and the arid country towards the west coast, are simply an arid and in summer a scorching desert, where, if two or three storms fall in the year, the farmers are fortunate, and where, in parts, up to five morgen¹ are required for each sheep or goat. It is true that springbucks are fleet of foot and might travel long distances to drink, if there were water; yet normally, in my experience, they do not do so, nor do they seem to suffer from this deprivation. F. C. Selous comments similarly on the gemsbok; the same comment is applicable to the ostrich. Trekking would not seem to be primarily in search of water: for instance the great Trek of 1896 did not follow the Orange River, but struck into very dry parts and kidded on the Kaaiken Bult.

The normal profusion of game over the inland flats of South Africa one hundred years ago, or a little less, seems now incredible, but there is no ground to doubt it. In addition to the overwhelming testimony of the South African farmers on the spot, many books of the early hunters from Great Britain (e.g. Cornwallis Harris, Gordon Cumming and others) dwell upon it with amazement. I do not now refer to the treks, but to the normal amount in many parts. In December 1880, just before my eighteenth birthday, I was at Kuilfontein near Colesberg, as related earlier in this Introduction.

¹ A morgen is a little more than 2 acres, and contains 10,240 square yards. (An acre contains 4,840 square yards.)

The owner, Mr. Murray, must have been born in about 1820 or perhaps a few years earlier. One day, standing with me near his house, he was telling me of the enormous numbers of game (not only springbucks) when first he knew Kuilfontein. Pointing to a low rand, some two or three miles away, he assured me that, in the mornings before driving his sheep out of the kraals (folds) to graze, he used often to send a "boy" (coloured servant) to drive the game off the proposed grazing ground under the rand. One of the reasons, as I take it, would be that, if his Afrikander sheep got mixed with the game, they might be stampeded away and lost—a by no means unknown incident, these sheep being fleet and often not very tame. I have no reason to doubt Mr. Murray's assertion; indeed it cannot seem extraordinary to one who has heard from many old men of the amazing profusion of antelopes and other game in the early days.

The springbuck is an almost silent creature as far as my experience goes. I have heard them, on a few occasions, give a kind of snort. But the kid has its cry. Thomas Pringle, in his beautiful lyric, *Afar in the Desert* (so much admired by Coleridge), refers to it in the opening couplet of the following lines :

O'er the wild Karoo where the bleating cry
Of the springbuck's fawn sounds plaintively ;
And the timorous quagga's shrill whistling neigh
Is heard by the fountain at twilight grey ;

Where the zebra wantonly tosses his mane,
With wild hoof scouring the desolate plain ;
And the fleet-footed ostrich over the waste
Speeds like a horseman who travels in haste,
Hieing away to the home of her rest
Where she and her mate have scooped out their nest,
Far hid from the pitiless plunderer's view
In the pathless depths of the parched Karoo.

It may well be believed that the men reared on the Karoo in the old days were wonderful shots with the rifle. Everything tended to make them so. They began to shoot as soon as they could hold a gun ; after that, the beloved rifle was seldom far from their hands. And, as they learned to shoot, so, without effort, they got to judge light and distance. The early rifles (shot-guns were probably unknown) were all muzzle-loaders, and, as every time the trigger was pulled it meant a long process of reloading, every shot was well aimed ; additional care was taken because powder and lead and caps (after the flint-lock gun was superseded) were scarce, in many instances being bought from itinerant "smouses" (hawkers) who travelled about those vast districts with wagons. I wonder if ever a race of men could shoot as well as those fellow-countrymen of mine. They had advantages that probably no other race ever had. There have been individual good game shots with the rifle in many countries, Cooper's "Leatherstocking" being a type ; but here was *a race of men* practically all of whom could shoot

well, the vast majority being exceptionally good shots.

To give a few instances: it was a point of honour not to shoot the "ghaum paauw" (the great bustard) anywhere but through the neck as he walked through the low scrub at, say, one hundred yards. A man was pointed out to me, a medium-sized, wiry, dark, black-bearded man, as one who could shoot an ostrich through the neck as it ran past across him. A famous man at Cradock, in the generation before mine (his niece being an aunt of mine by marriage), was old Mr. Thackwray, whose image was still, in my time, roughly engraven on a stone in one of the side walks of a street in that town. He used to put the muzzle-loading rifles "opskoot" (adjust the sights). A farmer would bring a rifle, probably a "Hayton gun"¹ and take it to Mr. Thackwray to be put "opskoot." When purchased, the rifle would have, as foresight, a thick, darkened, flat bar of steel, running in a groove across the barrels just above the muzzle, with a slight projection or "bead" on the middle; the back-sights would be metal leaves, one for each hundred yards, raised or shut down at pleasure by the thumb

¹ I owned one of these heavy double-barrelled "Hayton guns"; we used to test our arm-strength by holding it at the muzzle and lifting it with a straight arm and wrist until it and the arm were in the same straight line with the shoulders—a very severe test. It took a conical bullet of somewhat small diameter and shot uncommonly well if you used "straight powder." I put it "opskoot" myself.

of the left hand as it supported the gun when aimed ; each leaf had a small " nick " in it, through which the eye caught the foresight as it " squinted " along the barrel. Mr. Thackwray had to adjust the sights so that the rifle should shoot straight. As a preliminary, he used to substitute a white bar of bone for the steel bar at the muzzle, for the " bead " of the steel bar used to get shiny and glare in the sun, a defect which I have often seen temporarily remedied by blackening it with smoke. The bone bar was much better and caught the eye quicker. An old friend of mine, now dead, when a boy used to be taken out by Mr. Thackwray on to the Cradock commonage, where there were numerous skeletons of oxen—victims of the days when all transport was by ox-wagon and many oxen died. Thackwray was a gaunt, bony man with a quiet face. " George," he would say to my friend, " put up the ribs." George would get twelve ox-ribs, weathered clean and white, and hammer them into the ground in a row at intervals of about a foot, and then stand aside. Thackwray, standing upright, would shoot at the ribs at one hundred yards' distance, beginning at one end of the row and taking them seriatim, each with a single ball, to the other end—twelve shots. If he missed a rib, he would at once say, " Put 'em up again, George, " and George would put up twelve ribs as before, and the old man, having adjusted the sights a bit, would again stand and shoot, his left foot a little forward, his long arm out under the

barrel, his deadly eye running along the sights. So he would stand for a second or two, like a rock, without any rest or support, until he had pulled the trigger; and he would keep on shooting, readjusting the sights after a miss, until he had shot down the twelve ribs consecutively in twelve consecutive shots. Then he would give a quiet smile, say, "Come on, George," and go home. *That* rifle was "opskoot" anyhow! I knew a son of his, who told me he could not shoot like the "old man," but that, at short range, he could shoot a row of small stones off a beam, one at a time, placed thereon for the purpose.

Except for a few springbucks and several other kinds of antelopes (the grysbok, the lovely steenbok, the duiker, here and there, rare and far scattered, the fleet oribi, the vaal-rhebok and the rooi-rhebok on the mountains, and, on a few lonely krantzes, the klipspringer), the endless flats and koppies of the Karoo have now but little to show of the myriad life that swarmed over them only a few short years ago.

THE VULTURE

With the disappearance of the game, and, to some extent, aided by the railway having superseded the old "karwei" (transport) ox-wagon, another denizen of the waste—the vulture—has practically disappeared; his food has gone. I do not think that during the thirty years previous to 1920, nearly all of

it in the Karoo, I saw a dozen vultures. Yet they swarmed when I was a boy. Not lovely birds, these great flyers, when you see them at close quarters on the ground around a dead and partially devoured ox, except for their perfect adaptation to their life ; with wild, magnificent eye, powerful beak and talons, bare neck and mighty wings. This useful scavenger seems repulsive seated near a decaying carcase, so engorged at times that he can hardly rise from the ground. But see him in the air, and you look upon what is surely one of the most beautiful things in the world. He goes off from the ground, beating the air heavily with his wings, heaving along for a short distance on his feet, until he pushes off and floats. Away he sails, his neck straight as a ramrod in front of him, his head just turning slightly from side to side with gleaming eye, his short and powerful legs and feet straight back under his tail so that you are not conscious of them, and his great wings straight across. No more beating of the wings, no more apparent effort ; a quaver now and then perhaps, an adjustment of the tail at times : seemingly, that is all. The air hisses and " hushes " as he tears past you, curving as he begins to ascend ; and then, curve after curve, in widening circles, he climbs his mighty spiral : up and up the smooth, winding stair, with wings apparently motionless, the whole creature tilted and adjusted to the right plane, higher and higher, until, at a great height, he may abandon his glorious ascent, and you will see him,

with strong level pinions, "sailing in the everlasting blue," keeping a course like an arrow, sinking it would seem towards the horizon until eye can no longer follow him. On mountain tops, unseen, I have had them pass quite close to me when on that direct line of flight. The air hisses past the cutting wings. But, alas, he is no more; he has "gone west!" No one is ever likely to see again at one time the wonderful sight of scores of these great birds circling with unbeating wings, in great spirals, tier over tier in the vault of heaven, so that you can trace them one above another until they become little black specks, and then no more!—the others are there, but at a height beyond your ken. Many is the hour I have watched these "sailors of the atmosphere," these monarchs of the sky, floating in the blue; but such sights will not be seen again—only a solitary bird, or maybe two or three, now and then, perhaps! In 1880, 1881 and 1882, when (as related earlier) I was at Kuilfontein, near Colesberg, they were numerous. You could not with safety leave a dead buck on the veld; if you could not load it on your horse, you had to hide it, if possible, or cover it; or the vultures would devour it. I have seen them dropping out of the blue, one after the other, over a buck while I have been standing near it; and I have seen them alight on the offal when I had not gone three hundred yards from it; in quite a short time some were on the spot, tearing at the offal, while others could be seen approach-

ing from different directions and dropping down out of the great sky. The dropping of one towards the earth is a sign to any others that may be in its neighbourhood: they know what it means.

THE LOCUST

Before closing these introductory remarks on the main subject-matter of the book, it may not be without interest to dwell for a few minutes on another migratory phenomenon associated almost wholly with the Karoo—the locust migrations.

As a lad in Grahamstown I remember what may well have been considered a “trek” of caterpillars. These creatures were black and hairy, and so numerous, so thickly crowded together, and covering so large an extent of country, that they actually, on one occasion at least, stopped a railway train; their crushed bodies made things so slippery that the engine wheels could not grip the rails. Again, quite recently, in the Karoo and beyond, there were so-called migrations of the “Army Caterpillar”; vast swarms of them slowly crawled over a very much greater extent of country, doing enormous damage not only to cultivated “lands,” but to the veld. A moth laid the eggs from which they were hatched. But these great marches of caterpillars were not truly migratory, as I understand the term. I have seen many thousands of the small locust bird flying rapidly in swarms over the Karoo veld; but neither was this, at the time,

migratory; they were in search of, in pursuit of, their food. But it seems otherwise with the locusts, which are held to be truly migratory; though, truth to tell, I am doubtful whether either springbucks or locusts "migrate" in the scientific sense of the term—if indeed that much-abused word has yet a strict and clearly defined meaning.

To one who has not seen the locust migrations, they must seem as incredible as those of the springbuck. As a boy in the seventies I remember the locusts coming in large numbers as far south as Grahamstown. In play we boys went through them and ran them up, each swishing a stick from side to side as he ran, with each swish cutting several locusts. But that is nothing to what I have since seen in the Karoo.

The locust myriads of the seventies disappeared, I know not when; but each visitation lasts some years. The cause of these disappearances of great migratory swarms is an interesting problem; it may be due, in part any way, to a sarcophagus fly which lays a maggot in the slit between the locust's head and its body. (I avoid technical terms throughout.) The maggot eats its way into the locust, often into its head. These flies are few at first, but increase rapidly. I once had to abandon a walk over the veld at Hanover (between De Aar and Naauwpoort) after I had gone about a mile; the locust swarm had flown on, and the large and buzzing flies, quick on the wing, with hairy speckled

bodies, were such a nuisance that I was unable to keep them from my face and neck even by the incessant waving of my arms and hands. Later, in some swarms, nearly every locust has a maggot in it; then it is only a matter of time for that swarm to perish, probably before laying its eggs, for the maggot kills the locust. Possibly it is in this way that the locust visitation ends—a fight between locust and fly.

The great migrations always come from a northerly direction, it is said from Namaqualand and the Kalahari (as is generally said also of the later spring-buck migrations). The second invasion of "The Colony" (as the Province of the Cape of Good Hope used to be called affectionately) in my lifetime was in the late eighties, I think about seventeen years after the visitation in the seventies. I was then farming on the farm KrantzPlaats, about eleven miles south of Cradock. It takes these migrations several years to overwhelm the country; the distances are immense and they breed on the way, thus enormously increasing their numbers as they advance. We heard they were coming. I had no recollection of what these prodigious swarms looked like as they flew—if, indeed, as far south as Grahamstown (which is not in the Karoo) any adequate conception is obtainable, as it is on the wide expanse of the Karoo. One day I was standing near my homestead with my Afrikander foreman when I noticed a big, brownish-looking cloud far to the north-west, extending widely

with points tossed high into the clear sky. Turning to my foreman, I said, "What is that? It looks like a dust storm, but there's no wind!" "No," he replied, "that cloud is locusts." And so it was, and for several years, as the saying is, we "knew all about it." They ate everything before them until satiated. I suppose, at its worst, half a million square miles were actually infested at one time, though a much greater extent was visited, thicker in some parts, thinner in others, with spots clear at times. One swarm, as far as you could see them, straight up and on all sides, was five hours passing over my house. There is an incessant whirring. As the swarm passes, numbers keep dropping out of it to earth, eating their fill and then resuming their flight, until every blade of grass is devoured; when the swarm is in flight, those which descend for a feed do not stay long, and, under such circumstances, seem to confine themselves mainly to "lands" and grass. And they look beautiful with the sunlight on them, like silver feathers, like huge dragonflies, glistening and gleaming high up in the air. Beautiful they may be, but you know your camps are ruined.

The locust, he is strong and grim
And an armed man is afraid of him!

I have seen them resting at night on the veld, miles and miles of them, every little Karoo bush packed with them; for they leave the ground at

night and crawl up anything near them, being helpless and inert when cold. (I have heard of them flying on a warm, bright moonlight night, but I do not remember seeing it.) In the morning, when the sun warms them, they descend to the ground and spread themselves out. I have often tried to start the swarm when they seemed warm enough to fly, but never with success. I have driven lanes through them; those in the way fly up, go a short distance and settle again. Then suddenly a curious and startling thing occurs: with a loud whirring of myriad wings, the whole swarm, miles of it, will rise almost simultaneously and fly away, keeping the same direction, as far as possible, that they were pursuing when they settled. Everything eats them; even dogs get fond of them; fowls and ostriches get fat on them and their eggs increase in quality, the "yellow" becoming much darker. Some native tribes roast the locusts, grind them into powder and mix it with their meal or "mielie-meal" (ground maize) and make nourishing cakes. But all these devourings (every bird of the air assisting) make no appreciable difference whatever, no more than shooting the trekbokke does.

Locusts are perhaps in their most interesting and destructive form as "voetgangers"—hoppers, the wingless, immature stage. The female has a long ovipositor with which she deposits a "nest" of eggs (a bunch stuck together) in a hole she has made

in the earth. After rain these eggs hatch out into millions of tiny black locusts. The locust grows by moulting his "skin"; like Tennyson's dragon-fly:

An inner impulse rends the veil
Of his old husk; from head to tail
Come forth clear plates of sapphire mail.

But this is only after the last moult, for they moult several times, each time coming forth larger, in the later moults (before the last) changing colour and appearing as "rooi-baatjes" ("red-jackets"—soldiers!) of considerable size. After the last moult they fly, they are full-grown. Before that they hop; they are "voetgangers" ("foot-sloggers"); in the red-coated stage they "march"; they set out as a countless army, all in one direction, and are almost irresistible. Once they get their direction they keep it, hopping along, generally in close, narrow streams, one behind another, across that illimitable veld, over or through almost anything. I have known them to be thus hopping as one practically unbroken swarm of some forty miles through. The poor Karoo farmer, with his lands, very valuable to him, though not often large because of the scarcity of water! The dread report reaches him. "Die voetgangers kom aan!"¹ ("The

¹ The adult locust (the flyer) is called "Springhaan," which is simply Afrikaans for "locust."

locusts are coming!") His heart sinks within him, but, on the off-chance of winning, he must put up a fight. As far as possible he surrounds his precious lands with scrub and "mest,"¹ gets all the tins he can together with sticks to beat on them, makes flags to wave and generally does all he can in advance to repel the invasion which is coming and of which he knows the import by tradition if not by personal experience. When the "voetgangers" approach, he and his family and servants try to head them off and turn them past the cultivated lands, but are gradually driven back. The fires are then lit at the "lands" and the unfortunate people stand around, waving flags, beating tins and keeping the fires burning. The locusts extend perhaps ten or twenty miles in front of him and perhaps five or ten miles on each side of him as the swarm advances to the lands. It is a hopeless fight if the swarm is big; the locusts bank up in front, some pass along the sides of the lands and take the defenders "in the flank." At dark the wearied farmer and his people retire to bed. But they must be up and stand around the lands again early, before the locusts start. And so the terrible fight goes on until human nature can

¹ "Mest" is the South African "peat." In the Karoo the sheep and goats are "kraaled" (put into folds) at night, largely on account of the numerous jackals. Their droppings accumulate and are trodden into a solid layer, which is then cut with a spade into square cakes and taken out for fuel. It is excellent fuel and is very generally used as such, any other fuel being often practically unobtainable.

endure no longer ; weary and defeated, his crops doomed, his fuel wasted, his prayers unanswered, the poor farmer gives up the hopeless fight and retires to his house, and the "voetgangers" devour his crops and pass on ! It is a heart-breaking business.

I saw the "rooibaasje voetgangers" (the red-coated hoppers) come through the town of Cradock. This town is bounded on the west by the Great Fish River ; there is no defence on the other sides. Down the streets the hopping locusts came from the northern end of the town, with large eyes, their antennæ poked forward making them look so knowing and wicked, and with their short hop, hop, hop. When trekking the hop is quite short, only an inch or two, very much less than the distance they can jump when put to it, as can be at once seen if one walks among them, when they bound off on both sides with surprising leaps. It was like a nightmare (except that it had its humorous side) as they came through the town, in an almost straight line across the streets, just hopping, hopping. They filled and devoured the gardens and swarmed into open doors and went through the houses, if they could, or wandered about the rooms and crawled up the walls inside and outside. They streamed into the hotel ; I saw them going up the stairway and up and down the upstairs corridors, climbing the walls and jumping and crawling everywhere ; as I passed the open upstairs windows, where many were sitting on the sills, they

just jumped out into the air ! Everything chased them and nearly everything devoured them. Reinforced from behind, on they went and out the other side. Some went into the river and into the water (which was not broad at the time ; it was “ running low,” as the saying is) ; those that were not drowned eventually got out on one side or the other, hopped up the steep banks and just went on, looking “ as fresh as paint.” On one occasion some of them came out of the river at my homestead at Krantz Plaats, hopped up the banks and went on. I do not know where these entered the river, but the distance from Cradock, allowing for the curves, is about 12 to 15 miles ! I saw all this.

One curious incident that often occurred was that the “ voetgangers ” stopped the trains ! Sometimes on asking how a train was running, you would get the reply, “ So many hours late ; stopped by locusts ! ” I have seen such a train come in with the backs of the carriages splashed with broken bodies of locusts thrown up by the front wheels of the carriages immediately following those splashed. As with the Grahamstown caterpillars, the wheels crushed the locusts and became slippery, as did the rails also. The railway authorities tried various plans to overcome the difficulty, one of which was to affix brushes in front of the wheels of the engine. All plans were futile ; the “ voetgangers ” just crowded in.

The great visitation I have been writing of lasted

many years, after a time with decreasing severity ; it must have been over sixteen years, I should think, before the country was again clear. Dare one think that so severe a visitation may, perhaps, not rage with unchecked intensity and destructiveness again ? The Union of South Africa has now an elaborate and carefully detailed system of locust destruction, ready when the danger threatens, with locust scouts, locust officers, spray pumps, poison, etc., to wage war on the tiny black locusts as soon as they hatch out. It is, however, beyond the scope of this article to enter into details of the excellent organisation kept ready by the Government ; but it would be a bold statement to make that any organisation can adequately cope with a great visitation in so enormous and difficult a country.¹

I have added my own footnotes, where they seem necessary, to the various articles that follow, and, after the last of the springbuck articles, a note on Migration.

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I thank Mr. John G. Millais, author of *A Breath from the Veld*," and Messrs. H. Sotheran & Co., its publishers, for their courteous permission to reproduce the "pronking springbucks" from that book ; on which matter a footnote appears on p. 17 of

¹ The last two or three years this fear has been justified, the locusts have again "had it all their own way."

this Introduction. My cordial thanks are offered (a) to Sir John Fraser, whom I have not the pleasure of knowing, and who, I feel sure, will not object to the reproduction of the brief but valuable extract from his book ; (b) to my friend W. C. Scully for permission to use extracts from his books ; (c) to my friend T. B. Davie for his excellent article, which, with my Introductory Note, is reproduced, by arrangement, from *The Cornhill Magazine* ; (d) to the South African Museum, Cape Town, for the excellent photographs of the springbuck ram and ewe, and (e) to the Springbok Tobacco Company, of Cape Town, for the use of their striking poster, a much reduced photo-copy of which adorns the cover of this book.

S. C. C.-S.

CAPE TOWN,

November 1923.

CHAPTER I

THE "TREKBOKKE" (MIGRATORY SPRINGBUCKS); AND THE "TREK" OF 1896

BY S. C. CRONWRIGHT-SCHREINER

(Reprinted from "The Zoologist" for March 1899)

SOUTH AFRICA has probably never been surpassed in the variety and profusion of its wild animals; it has certainly had nothing more wonderful than its prodigious numbers of springbucks. These fleet and beautiful creatures still exist in numbers incredible to people unacquainted with the country, though they have lately so decreased that it is almost impossible now to form any conception of the hosts that infested the endless flats only a few years ago.

Where springbucks run wild in large numbers, they are distinguished as "houbokke" and "trekbokke," the "houbokke" being bucks (we term all antelopes "bucks") that live permanently on the same veld, the "trekbokke" those that congregate in vast hosts and migrate from one part of the country to another in seasons of drought. When the country was so densely covered with all kinds of



THE AUTHOR ON THE KAROO VELD IN THE GREAT "TREK" OF 1896, WITH SPRINGBUCK RAM AND CAPE-CART, MORE THAN 100 MILES FROM THE RAILWAY, IN THE DISTRICT OF PRIESKA.

game, the vast herds of springbucks quickly felt the effects of the frequent droughts that devastate the inland up-country parts and began to "trek." Congregating in millions, they moved off in search of better veld, destroying everything in their march over the arid flats. The "trekbokke" can be compared, in regard to number, only with the bison of North America or the pigeons of the Canadas. To say they migrate in millions is to employ an ordinary figure of speech, used vaguely to convey the idea of great numbers; but in the case of these bucks it is the literal truth.

Gordon Cumming, who shot in South Africa in the early forties, and whose book (*The Lion Hunter in South Africa*), more than any book with which I am acquainted, gives some idea of the extraordinary variety and profusion of game which then existed, refers to a "trekbokken or grand migration of springbucks" which he saw between Cradock and Colesberg and vividly describes how he stood on the forechest of the wagon, watching the bucks pass "like the flood of some great river," during which time "these vast legions continued streaming through the nek in the hills in one unbroken compact phalanx"; then he saddled his horse, rode into the midst of them and shot until he cried "Enough!" But this vast and surprising trek was, he says, "infinitely surpassed" by one he saw some days later. He "beheld the plains and even the hillsides, which stretched away on every side, thickly covered,

not with herds, but with one vast mass of springboks; as far as the eye could strain, the landscape was alive with them, until they softened down to a dim mass of living creatures." It would be vain, he says, to attempt to form any idea of the number of antelopes he saw on that day, but he has no hesitation in saying that "some hundreds of thousands were within the compass of my" (his) "vision." A Boer with whom he was shooting acknowledged that "it was a very fair trekbokken, but observed that it was not many when compared with what he had seen." "This morning," remarked the Boer, "you beheld only one flat covered with springboks, but I give you my word that I have ridden a long day's journey over a succession of flats covered with them as far as I could see and as thick as sheep in a fold."¹

A generation back they trekked in such dense masses that they used sometimes to pass right through the streets of the small up-country towns. I have known old people who have walked among them and actually now and then touched them with their hands. Men have gone in armed with only a heavy stick and killed as many as they wished. Native herdsmen have been trampled to death by the bucks and droves of Afrikander sheep carried away, never

¹ Compare this statement from Gordon Cumming with that of T. B. Davie in which he tells how, for forty-seven miles, the bucks moved just sufficiently out of the road to avoid the wheels of his cart, moving at "a steady, plodding walk march."

to be recovered, in the surging crowd. So dense is the mass at times and so overpowering the pressure from the millions behind, that if a "sloot" (gully) is come to, so wide and deep that the bucks cannot leap over or go through it, the front ranks are forced in until it is levelled up by their bodies, when the mass marches over and continues its irresistible way. Again, when they come to our large rivers, which run almost dry before the summer storms fall, the thirsty creatures stream over the steep banks into the beds of the river and drink themselves heavy with water. They crowd into the river bed quicker than they can get out, and the crush is so great at times, as they climb the steep banks, that men have gone in on foot unarmed and secured as many as they wished, simply by catching them with the naked hand and breaking their hind legs. There was a certain element of danger in doing this, for, if the bucks turned, the hunters ran the risk of being trampled to death. The density of such masses may be imagined when one remembers how timid and wary of approach these antelopes are.

The Cape Colony has from time to time during recent years been visited by the trekbokke, though not in such numbers as the old farmers used to describe, and, I have no doubt, truthfully described. In 1895, however, the up-country was suffering from a long drought, which was particularly severe in Namaqualand, and the trekbokke began to move well into the Colony. There were rumours of their

coming and then it was said that they were unusually numerous—that it was a "big trek." This soon proved to be the case. It was eventually known that they had not appeared in such numbers for thirty or forty years. They kidded on the Kaaïen Bult, in the district of Prieska, and then resumed their trek in search of better veld. J. W. Wright, a relative of mine, was then living at Karree Kloof, a farm about ten hours by cart (six miles to the hour) west of the railway in the district of Hopetown. In July 1896 he wrote that the trekbokke were approaching Karree Kloof and invited me to come and see them. Believing that such a large "trek" might never be seen again, I accepted his invitation.

Starting by train from Kimberley, I alighted at Kran Kuil, a railway station not far south of the Orange River. Leaving Kran Kuil by post-cart early next morning and passing the little village of Strydenburg with its immense "pan," the home when full of thousands of wild fowl, after a ten hours' drive in a rickety cart, one of whose wheels was dished the wrong way and threatened to fall to pieces every moment, I reached Karree Kloof at sundown. Our conversation that evening was, of course, largely about the springbucks. Some hundred yards to the back of the house stands a kraal (a fold for sheep). Ten or fifteen years earlier Wright saw the trekbokke stream through between the house and the kraal. The present trek had

approached within about four hours of Karree Kloof and then turned, and was now some distance farther away.

We started in a four-in-hand cape-cart next day to see the bucks. Passing through veld where the trek had recently been and by many a dead buck, we slept that night at Omdraai Vley, in the district of Prieska, where two young Englishmen had an accommodation house and a country shop. Over a large fire that evening (it was mid-winter and freezing hard every night) we heard the latest news of the trek. The nearest bucks were then about two hours farther on. A portion had passed over Omdraai Vley, taking their way through a wire-fence ostrich camp, breaking some of the wires. To clear the camp of those that remained in, about one thousand had to be shot, one of which was an albino. A large number had, of course, been wounded, and many kids, whose mothers had been shot, died. In that camp alone two thousand must have perished. The owners of the shop were buying springbuck skins at fivepence and sixpence each, at the rate of three thousand a week, and had already purchased thousands of pounds weight of "biltong" (the raw flesh cut into narrow strips and dried), as Wright at Karree Kloof had also done. It was reckoned that, in the district of Prieska alone, some hundreds of thousands of bucks had been shot and nearly as many wounded, while the little kids were dying in thousands; yet there was no appreciable diminution

in their numbers. Among other things, we heard that various wild carnivora were following the trek, a leopard having been shot in the open veld, and "wild dogs" (*Lycaon pictus*) having been seen in pursuit; also that antelopes, unknown in those parts for many years, had appeared, carried along in the living flood that was pouring over the country. In fact, at Karree Kloof, which the bucks had not actually encroached upon, a koodoo and three hartebeest had been found in the camps, the koodoo (a bull) having broken off a horn in jumping over the wire fence.

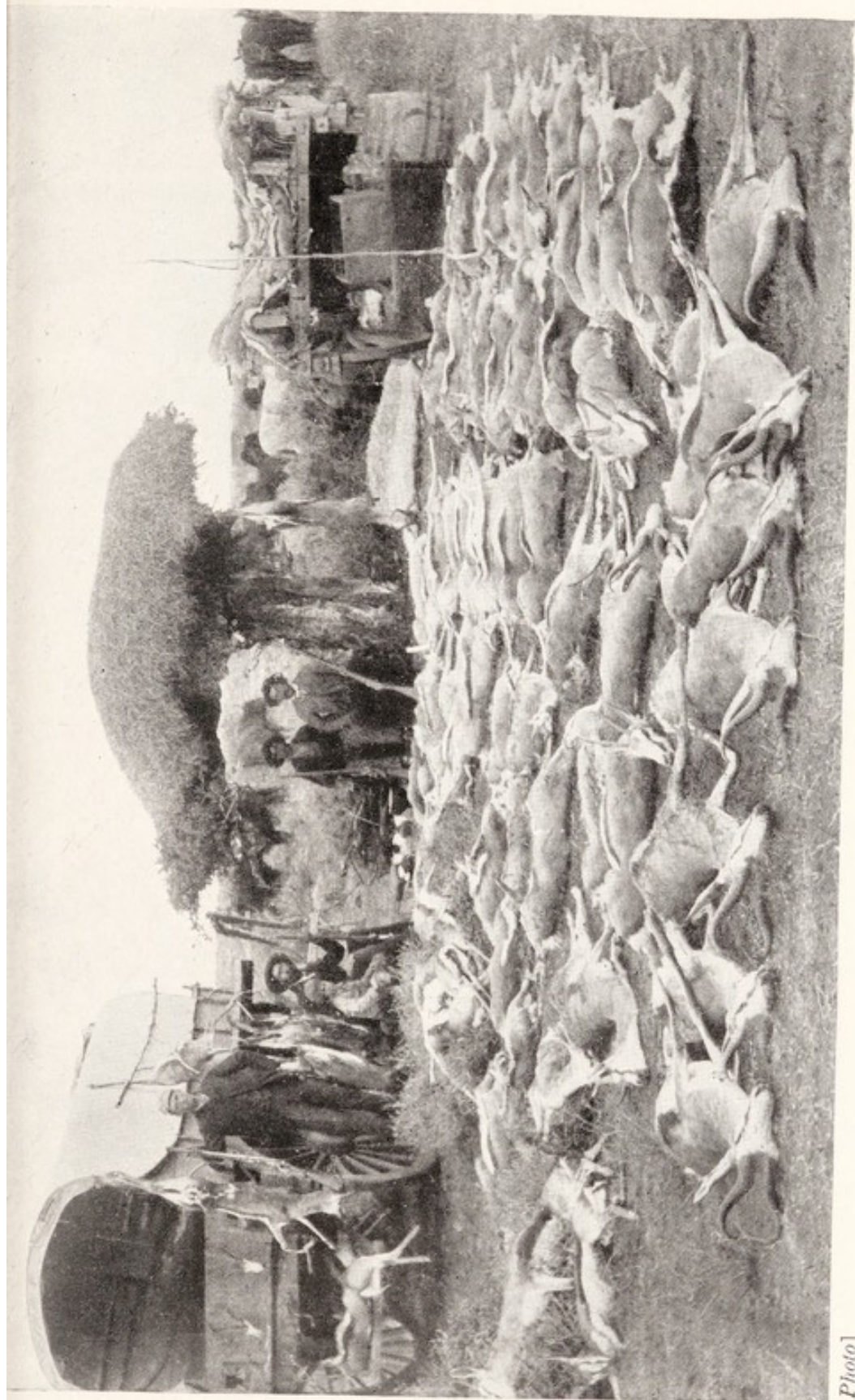
Taking an early breakfast next morning, we inspanned, and after several hours' drive, passing a pair of wild ostriches with chicks on the way, saw the first of the bucks, some ten or fifteen thousand, in several lots. One lot began to run, to cross the road in front of us. Whipping the horses up until we were close enough, we alighted with our rifles, and as the bucks came bounding past us shot several; then, cutting off the hind legs of such as were fat at the small of the back, we slung them on the axle of the cart and drove on. After proceeding for a couple of hours and shooting another buck or two from the road, we outspanned at a farm called Weel Pan and had an early lunch. The "pan" was dry and the house forsaken, except for a Hottentot servant. The farm was twelve thousand morgen (about twenty-five thousand acres) in extent, but had been so eaten off and tramped out

by the bucks that the owner had had to remove all his stock. This was the case with many farms in the path of the bucks; the veld had been destroyed, cultivated lands eaten bare, and camp fences broken down by the resistless mass of antelopes. Wright mentioned that he had forty thousand morgen of land on the Kaaie Bult, which the bucks had so destroyed that he was removing all his stock from it. Before I left Karree Kloof, on my way home, the cattle from the Kaaie Bult arrived there, having been driven twenty-six hours (156 miles) to be pastured where the devastating bucks had not been.

After lunch we changed our direction and drove on, hoping to see a denser part of the trek, shooting an occasional buck from the road. The Dutch farmers were out by the hundred; all day shots could be heard and occasionally a horseman could be seen scurrying along a rand to head a lot of bucks, and we witnessed an exciting chase after a wounded ram, which, when the horseman dismounted, charged him—a very rare thing for a springbuck to do. The whole veld was damaged; it was hardly possible to put one's foot down in that vast extent of country without treading on spoor of the springbuck, and the Karoo bushes were torn and broken by their sharp feet. We passed several "outspans" where the hunters had encamped for days with their wagons and carts and horses—deserted camps which were marked by ash-heaps and charred bones and the straw

of bundles of forage ; while offal and heads and lower portions of the legs of the bucks lay about to such an extent as to be quite disagreeable. We constantly saw dead bucks and there were specially large numbers of kids which had perished from starvation, their mothers having been shot. The Dutch farmers made on an average about two shillings and sixpence per buck—sixpence for the skin, two shillings for the "biltong." They enjoyed the sport, made a few sovereigns and did the country a service. Every farm-house we came to was simply festooned with drying biltong, the ground around being covered with pegged-out skins. Many bucks were being conveyed by wagon to the railway and sent to the large centres : Johannesburg, Cape Town, Kimberley, Port Elizabeth and other towns. On our return journey we passed a wagon laden with two hundred and thirty bucks going to Kran Kuil Station and after our arrival at Karree Kloof another passed with eighty more. This was going on over a large extent of country ; we saw but the edges of the trek. Venison of the finest quality in the world was plentiful.

In the afternoon we gradually left the noise of the hunters behind and drove to quieter quarters, until at length our wish to see large numbers of the bucks was gratified. On driving over a low nek of land a vast, undisturbed, glittering plain lay before us. Our glance at one sweep took in the great expanse of brown country, bounded in the distance by low



Photo]

[J. W. Dugmore.

THE TREKBOKKE OF 1896. PARTY OF BOERS: THE OUTSPAN.

Two of the well-known "buck-wagons" of South Africa will be noticed. The tree is covered by the great nest of a small bird the sociable cross-beak), which lives in colonies; the under-side of the nest is almost level; it contains a great many nests, each entered by a small circular hole in the under-side.



koppies, bathed in the wonderful glowing tints of the Karoo; and throughout its whole extent the exquisite antelopes grazed peacefully in the warm afternoon winter sunshine. It was as beautiful as it was wondrous. Undisturbed by the hunters, they were not huddled together in separate lots or running in close array, but were distributed in one unbroken mass over the whole expanse—"not herds," as Gordon Cumming said, "but one unbroken mass of springbucks"—giving quite a whitish tint to the veld, almost as though there had been a very light fall of snow.

We alighted from the cart, put our rifles aside and sat down to watch the bucks and take in a sight we most certainly should never see again. We were three farmers, accustomed to estimate numbers of small stock, and we had an excellent pair of field-glasses. I suggested to my friends that we should endeavour accurately to estimate how many bucks were before us. With the aid of the field-glasses we deliberately formed a careful estimate, taking them in sections and checking one another's calculations. We eventually computed the number to be not less than five hundred thousand—half a million springbucks in sight at one moment. I have no hesitation in saying that that estimate is not excessive. We were thoroughly accustomed to the vast South Africa veld and the sights it affords, but we sat in silence and feasted our eyes on this wonderful spectacle. Now, to obtain some rough

idea of the prodigious number of bucks in the whole trek, it must be remembered it was computed that they extended twenty-three hours in one direction and from two to three in the other—that is, the whole trek occupied a space of country one hundred and thirty-eight by fifteen miles. Of course they were not equally dense throughout the area ; but, when one says they were in millions, it is the literal truth.

Having watched the scene long enough, we started on our homeward journey, leaving the bucks undisturbed. We slept that night at Schilder Pan, the farm of Mr. Jackson, who made us most welcome. Chatting about the bucks, Jackson said we had not seen the densest part of the trek and told us two incidents which indicated how thick the crowd had been on a portion of his farm. His son on one occasion got ahead of the bucks in a narrow run between some koppies, down which he knew they were coming. They did come and he escaped being trampled to death only by taking shelter behind a large stone, past which they rushed like a torrent. He actually shot one within a yard or two of the stone, before taking refuge behind it. The other incident—it occurred on two occasions—was more remarkable. When springbucks are shot at, they all usually begin to run in one direction, up the wind as a rule ; and, if they are in large numbers and hard pressed, they pass in two streams on each side of the object they wish to avoid. (When they once take their direction, they will keep it. Hunters know this well.

Shooting near Colesberg in 1880, we used to start the bucks running and then ride to head them off. I have thus ridden right through a flying herd of only a few hundred.) When the object is very close, they pass in front of it in a kind of crescent form, giving a little in the centre and then closing back to the original line of their course. As the Karoo veld is very bare and sandy, they often raise and run enveloped in a cloud of dust. Jackson was out in his four-in-hand cape-cart, shooting trekbokke. As he drove along, the dense masses began to cut across in front of him enveloped in a cloud of dust, which, as the numbers thickened and the pace increased, grew denser; as it grew denser and obscured their sight, the rushing mass came closer and closer to the cart, until at last, in a thick storm of blinding dust, some of the bucks actually ran against the cart-wheels and under the horses' bellies. A man on foot would probably have been knocked down and trampled to death.

No careful study has, to my knowledge, been made of the habits of the trekbokke. It is known that they migrate in search of better veld, urged thereto by drought.¹ They do not travel fast when doing

¹ F. R. N. Findlay, in *Big Game Shooting and Travel in South-East Africa*, after discussing briefly the various theories put forward to account for the springbok migrations, says :

“If I may be allowed to express my own opinion on this interesting subject, I think there is no doubt whatever that Mr. Cronwright-Schreiner's explanation is the correct one, and that the ‘treks’ are due to drought.”

this, but feed along. In some out-of-the-way parts they kid, and, when the kids are strong enough, return to their own veld, if the rain has fallen. If it continues dry they do not return at once but stay on till later in the season, or perhaps over another kidding. How they know when it has rained where they come from, when perhaps it is dry where they are, one cannot say; but it is generally held that, through a subtle sense of smell, they do know. Whether the trekbokke of forty or fifty years ago or earlier all came from some particular part of the country and again returned to it, I do not know, but I do not think that this was the case; it seems more likely that, when the bucks were in such countless numbers all over the country, they simply all moved off together during droughts in search of food. Trekbokke then might have come from any part of the country suffering severely from drought, returning in time, no doubt, each to its particular haunts. I do not think that there is any difference between the "trekbokke" and the "houbokke," except in the matter of weight, the "trekbokke" averaging about ten pounds to fifteen pounds lighter. This difference in weight, however, is probably accounted for by the quieter life of the "houbokke," for the veld will permanently support a few bucks in good condition where a large number would starve. I do not know whether there were "houbokke" in the earlier days. To-day the veld is probably never so eaten off and destroyed in parts

as when the bucks and other game were in such enormous numbers ; so there is no need for the few bucks now left to migrate. But, in the north-west of the Colony and in Great Namaqualand, they are evidently still to be found in large numbers, and these, when a severe drought comes, trek into the Karoo of the Colony in search of food. As I have said, these bucks, when trekking down, do not travel fast ; but the old Dutch farmers, who should know their habits well, say that when they return they travel at a great pace, even as fast as one hundred miles a day. How true this is I cannot say ; it cannot seem impossible to such as know the fleetness and staying power of these antelopes. However considered, the trekbokke are one of the most wonderful occurrences in a wonderful country. Yet it is probable that the days of the very large treks are passed, and that such a sight as we saw in 1896 will never be seen again.

CHAPTER II

THE TREKBOKKE (MIGRATORY SPRINGBUCKS)

ACCOUNTS AND COMMENTS BY T. B. DAVIE, SIR
JOHN G. FRASER, THOMAS PRINGLE, DAVID
LIVINGSTONE, AND W. C. SCULLY

(a) BY T. B. DAVIE

WITH AN INTRODUCTORY NOTE BY S. C. CRON-
WRIGHT-SCHREINER

(Reprinted from "*The Cornhill Magazine*," 1921)

Introductory Note.—T. B. Davie, the writer of the following article, is a hale old gentleman nearly eighty years of age (in 1917), living now at Prieska, a small town in the Karoo of the Cape of Good Hope, on the Orange River, between De Aar Junction and Upington. In his youth he served under the famous leader of the Mounted Police, Sir Walter Currie, who was Prince Alfred's hunting guide when the Prince visited South Africa about the middle of last century. Davie has lived many years in the Karoo; he was up in the parts he now lives in many years before the advent of the railway, and, as his article shows, has had a wide experience of the trekbokke.

Davie and I were once discussing the trekbokke, when, seeing how large his experience had been and wishing to get on record certain facts from an eyewitness, I begged him to write an account of some of his experiences, which I would try to get published. And so the following article came to be written. There is no reason whatever to doubt Davie's statements are made *bona fide*. The article is offered not as a hunting yarn, but as a valuable contribution to the all too scanty literature on a most remarkable phenomenon.

I fear the days of the great "treks" are over.

S. C. C.-S.

T. B. DAVIE'S ARTICLE

"Writing in the year of grace 1916, with a daily train service to Upington, it seems hardly credible to the stranger, who happens to have business in that recently remote region, when he is told that twenty years ago, or even less, the arid, sun-parched, desert-looking country through which the line is carried was at once both fertile and the home of countless millions of springbok, besides a fair quantity of the smaller game usually found in South Africa. This was the land of the great 'treks,' as the migrations of the springbok were euphoniously named by the Voortrekker (Pioneer) Boers, who at that time formed the majority of the inhabitants there. They were a peculiar people, perfect specimens of the genus 'Nomad,' and, like the Arabs of the Arabian

Desert, hospitable to a degree. The country was but sparsely settled, and these 'Trek Boers' enjoyed what was then called 'vrij gebruik' (free use) of the immense upland downs, now forming a great part of the Kenhardt and Prieska districts commonly known as 'The Kaaïen Bult.'

"This stretch of country, comprising about 8,000 or 10,000 square miles, was the home of myriads of springbok, and during certain years and at all sorts of uncertain seasons these antelopes began to assemble in immense herds; these herds, seemingly impelled by some guiding instinct, gathered together in mobs, wandering aimlessly about, first here and then there, having no apparent destination and yet feeling restless and uneasy. At this time the slightest sight or sound would set troops of 10,000 to 20,000 scampering off in as many directions as there are points to the compass, and the slightest thing would turn them back in any given direction. This peculiarity was well known to the Boers, who, immediately they heard that the 'boks' were gathering, began doing the same. The oxen were got together, the wagon cleaned up and well greased, and the sails and tents looked over and patched where required. A trip was made to the nearest store for a supply of coffee, sugar, salt and tobacco, and, most important of all, powder and lead or cartridges for the use of the hunters.

"Up to within the last twenty years, many of the Boers were still armed with good muzzle-loading

rifles, but, shortly before the Boer War of 1900-2 broke out, they were all, to a man and boy, armed with Martini-Henrys or Mausers. All being ready a start was made ; often ten to twenty families would make up a party and they would trek away to some pan or well-known reliable water hole, of which in those days there were numbers scattered all over the country, pitch their camp in due ' laager ' ¹ style, generally horse-shoe shape, and make preparations for the hunt. In some cases the ' boks ' would be within sight, other times at a distance of a few miles, but, upon the signal being given by the leader of the party, it was up-saddle and off. Nearly every man had a led horse and a few native boys. After enjoying a day's good sport, for at first they only

¹ "Laager," used now of an encampment of wagons or carts. In the old Voortrekker (Pioneer) days it was a war formation. The wagons travelled together in considerable numbers for protection against attacks by natives (Bushmen, Hottentots and Kaffirs). At night, or when danger was imminent, the Boers drew up the wagons to form a circle, inside of which they encamped. In real danger they lashed the wagons together by the wheels, so that they could not be pulled apart, and drew heavy thorny mimosa (acacia) branches underneath, so that the attackers could not get through into the camp. A famous formation. For instance, at Fechtkop, Blood River, in the Orange Free State, this was the formation by which Dingaan's Zulu hordes were defeated. I had the story personally from "Oom Paul" (the late President Kruger) who, as a lad, took part in that decisive battle. He told me that the Zulus pulled at the wagons and the thorn bushes, but could not get in. The Boers shot from inside, while their women folk made the bullets. After the fight some fifteen hundred assegais (spears) were found to have been hurled into the "laager."

shot picked animals, they would return with an average of ten or more 'boks' each, and then the women folk had their share of the fun, skinning and cutting up the game, to make biltong (dried strips of meat). This would go on for days, and then the 'boks' would get frightened and begin to move off in some given direction, generally towards the Orange River, but several times they went southwards as far as Graaff Reinet and Cradock.

"From the year 1887 up to 1896 there were four really great treks over the Prieska District, three with a northern course, and one to the south and west. When the trek was in full move nothing but springbok were to be seen for miles upon miles at a stretch. The whole country seemed to move, not in any hurry or rush, as is generally associated in people's minds with a springbok, but a steady plodding walk march, just like 'voetganger' (hopper) locusts; no other animal or insect life can afford so apt an illustration. The writer has seen them in one continuous stream, on the road and on both sides of the road, to the sky-line, from the town of Prieska to Draghoender, a distance of 47 miles, plodding on, just moving aside far enough to avoid the wheels of the cart.

"On this occasion the owners of the farm Witvlei were all sitting in a ring round the top of the well, which at that time was uncovered, the father, son and son-in-law armed with rifles, firing a shot now and then, and the women folk with sticks and stones

trying to keep the 'boks' away. This was the family's only water supply left, as the 'boks' had already filled up the dam, thousands being trampled to death in the mud as they pressed on over one another to get to the water. At last the 'boks' beat the farmers and got to the well and in a few minutes it was full of dead and dying 'boks.' However, the trek passed before evening with the exception of a few stragglers and the Witvlei people soon had their well cleaned out and rendered serviceable. On this occasion they came right through the town of Prieska, and a worthy magistrate of those days sat down on the steps in front of the Court-house and shot a few nice ones as they strolled past, for the sake of their skins and horns. The 'boks' trekked on to the banks of the Orange River, and were drowned by thousands, those behind pushing the front ones into the water. Some few got across, but most were drowned. In the course of a few days the trek seems to melt away. They disappear, nobody knows where they have gone to. They seem to get to some given point, stop, and vanish. I've never heard anybody speak of their returning. What the aim of these migrations is, is also a mystery. Sometimes they are really in search of water and are poor and miserable, hardly fit to make biltong with. At other times, on two occasions in the writer's knowledge, they were sleek and fat. On another occasion they were stiff and sore with 'brandziekte' (scab); lots that I shot and saw shot could hardly

walk, their shoulders and flanks being a hard cake of scab. Finally the last trek in 1896-7 nearly all died of the rinderpest, at least it was put down to that. There has not been anything like a trek since then.

“As to the numbers of such a trek, it is a matter of impossibility to make even a guess. The late Dr. Gibbons, who was a born naturalist and lover of animals, and myself were travelling on one occasion, in 1888, from Prieska to Bitter Puts, about 70 miles. At Nels Poortje we were informed by the late Diederick Danth, the owner, that the trek boks were coming on; he had tidings of them that day, and was making ready for a shoot, as they were certain, so he said, to come past his house—they always did. Dr. Gibbons immediately suggested trying to count them. Of course Mr. Danth laughed at the very idea; but the Doctor said, ‘Now, you can count sheep while they run, so you can certainly count these animals as they walk past.’ We slept at Nels Poortje that night and during the night we heard the ‘boks’ passing; they make a very peculiar noise, a sort of half whistle and snort, something like a wheezy horse blowing his nose, and when some thousands of them are all making this noise together it sounds very weird and uncanny, especially at night.

“In the morning as soon as it was daylight we were out, and there we were sure enough in a veritable sea of antelopes. The Doctor saw at once, upon

being rallied as to counting them, that it was impossible, but he made a guess after this fashion. Seeing a kraal (a fold for stock) a good large one, he asked how many sheep could stand in it, and Mr. Danth replied 1,500. 'Well,' said the Doctor, 'if 1,500 can stand there, then about 10,000 can stand on an acre, and I can see in front of me 10,000 acres covered with "boks"; that means at least 100,000,000; then what about the miles upon miles around on all sides as far as the eye can reach covered with them?' He gave it up. We left Nels Poortje after breakfast and rode for $4\frac{1}{2}$ hours right straight through them, they never giving more road than was required for us to pass. We got through the trek a few miles from Bitter Puts. That trek passed Prieska about 10 or 12 miles north-west and crossed the (Orange) river and made a great and grand harvest for the Griqualanders. But now, alas, these are things of the past! The farmer who has a small troop of 50 or 100 boks now is as jealous of them as if they were thoroughbred cattle. They are a really valuable asset, besides the pleasure of having a little shooting during the season.

"The venison of the springbok is the most delicious of all South African wild game, and a nice carcase easily fetches 20s. Besides, as they are now scarce, the skins and heads and horns are not thrown away, as they used to be, but are kept and preserved or dried for sale to curio hunters, of whom there are plenty. The question as to whether the country

is drying up or not is easily answered in the affirmative as far as these north-western districts are concerned. Up to 1896, there were hundreds of 'pans' (circular depressions) in the Kaaie Bult that had hardly ever been known to be dry, scores of 'Korahs' or Bushman water holes in the limestone formation, never known to give out, and 'kuilen' (water holes) that usually had water 6 or 9 months of the year. From 1896 onwards these pans, water holes and kuilen have gradually ceased to exist, and at the present time there is not a single pan in the Kaaie Bult that any sane farmer would hire for a certain 3 months. The water holes are all dry and have been for years. It is to be hoped, for the sake of the country, that such is not the case, but certainly a great part of this one-time fertile land is becoming uninhabitable."

(b) BY SIR JOHN G. FRASER

Beaufort West and the Trekboeke of 1849

Sir John Fraser is a South African who was prominent in the old Orange Free State. When he was a boy, his father was a Minister of the Dutch Reformed Church, stationed at Beaufort West in the Karoo of the Cape Colony. The "invasion" of Beaufort West, town and district, by the trekboeke, of which the following is his graphic description, occurred when he was "about eight or nine years old," probably in 1849. (*Note by S. C. C.-S.*)

*Extract from " Episodes of My Life " (pp. 13, 14, 15),
Published in 1922*

" There had been reports of a great drought having visited the far-back country, but its effects could not be realised by us, as we had had our usual rains and our country was looking green and well. However, we got the terrible effects of the drought brought home to us in another and most disastrous manner. One day a travelling smous¹ came to Beaufort, and brought tidings that thousands of trekbokken were coming in from the north, devouring everything before them, and that there was no means of stopping them. He hastened on with his stock² as rapidly as possible, to try to get clear of them, on his way to the Western Province. Still the residents did not seem to realise the nature of the visitation. Some of the very old pioneers had some recollections of having seen one like it, but that was very long before. We were, however, soon to know. About a week after the smous had left Beaufort we were awakened one morning by a sound as of a strong wind before a thunderstorm, followed by the trampling of thousands of all kinds of game—wildebeest, blesboks, springboks, quaggas, elands, antelopes of all sorts and kinds, which filled the streets and gardens, and as far as one could see covered the whole country,

¹ "*Smous*," an Afrikaans word, a hawker. The word is pronounced almost to rhyme with "close," but in English it is made to rhyme with "house."

² Livestock which he had obtained in exchange for goods.

grazing off everything eatable before them, drinking up the waters in the [street] furrows, fountains and dams, wherever they could get at them, and as the poor creatures were all in a more or less impoverished condition, the people killed them in numbers in their gardens. It took about three days before the whole of the trekbokken had passed, and it left our country looking as if a fire had passed over it. It was indeed a wonderful sight."

(c) By THOMAS PRINGLE¹

Extract (a note) from "Ephemerides, or Occasional Poems," and Stockenstroom's Letter

¹ *Pringle's Note to Stockenstroom's Letter*

"The springbok (*Antelope pygorga*) has been frequently mentioned with admiration by travellers and naturalists; but the immense migratory swarms of these animals, that occasionally pour themselves like a deluge from the Bushman territory upon the northern frontiers of the Colony, have never been so vividly described as by my friend Captain Stockenstroom, the able and intelligent landdrost² of Graaff Reinet. In a letter addressed to me, 1824, and which was then published in *The South African Journal*, and afterwards appended as a note to Mr. Thompson's *Travels*, Capt. S. (himself a native of the country) thus describes scenes which he had often personally witnessed":—

¹ T. Pringle was one of the 1820 British settlers in the Colony of the Cape of Good Hope, South Africa, and is best known by his beautiful lyric, "Afar in the Desert."

² "Landdrost," a magistrate. Graaff Reinet is one of the oldest towns in the mid-Karoo, Cape of Good Hope.

Stockenstroom's Letter

“It is scarcely possible for a person passing over some of the extensive tracts of the interior, and admiring that elegant antelope, the springbok, thinly scattered over the plains, and bounding in playful innocence, to figure to himself that these ornaments of the desert can often become as destructive as the locusts themselves. The incredible numbers which sometimes pour in from the north, during protracted droughts,¹ distress the farmer inconceivably. Any attempt at numerical computation would be vain; and, by trying to come near the truth, the writer would subject himself, in the eyes of those who have no knowledge of the country, to a suspicion that he was availing himself of a traveller's assumed privilege. Yet it is well known in the interior that on the approach of the trekbokken (as these migratory swarms are called), the grazier makes up his mind to look for pasture for his flock elsewhere, and considers himself entirely dispossessed of his lands until heavy rains fall. Every attempt to save the cultivated fields, if they be not enclosed by high and thick hedges, proves abortive. Heaps of dry manure (the fuel of the Sneeuwbergen and other parts) are placed close to each other round the fields and set on fire in the evening, so as to cause a dense smoke, by which it is hoped the antelopes will be deterred from their inroads; but the dawn of day

¹ See note later on Migration.

exposes the inefficacy of the precaution by showing the lands, which appeared proud of their promising verdure the evening before, covered with thousands, and reaped level with the ground. Instances have been known of some of those prodigious droves passing through flocks of sheep, and numbers of the latter, carried along with the torrent, being lost to their owners, and becoming a prey to the wild beasts. As long as these droughts last, their inroads and depredations continue; and the havoc committed upon them is, of course, great, as they constitute the food of all classes; but no sooner do the rains fall than they disappear, and in a few days become as scarce on the northern borders as in the more protected districts of Brintjes-Hoogte and Camdeboo.

“The African colonists themselves can form no conception of the cause of the extraordinary appearance of these animals; and, from their not being able to account for it, those who have not been eye-witnesses of such scenes consider their accounts as exaggerated; but a little more minute inspection of the country south of the Orange River solves the difficulty at once. The immense desert tracts between that river and our Colony, westward of the Zeekoe River, though destitute of permanent springs, and therefore uninhabitable by human beings for any length of time, are, notwithstanding, interspersed with stagnant pools and vleys, or natural reservoirs of brackish water, which, however bad,

satisfy the game. In these extensive endless plains the springboks multiply, undisturbed by the hunter (except when occasionally the Bosjesman destroys a few with his poisoned arrows), until the country literally swarms with them, when, perhaps one year out of four or five, a lasting drought leaves the pools exhausted and parches up the soil, naturally inclined to sterility. Want, then, principally of water,¹ drives those myriads of animals either to the Orange River or to the Colony, when they intrude in the manner above described. But when the bountiful thunder-clouds pour their torrents upon our burnt-up country, reanimating vegetation, and restoring plenty to all graminivorous animals—then, when we could, perhaps, afford to harbour those unwelcome visitors, their own instinct and our persecutions propel them again to their more sterile but peaceful and secluded plains, to recruit the numbers lost during their migration and to resume their attacks upon us when their wants shall again compel them."

(d) By DAVID LIVINGSTONE

Extract from "First Expedition to South Africa"

"Before we reached the Orange River, we saw the last portion of a migration of Springbucks (*Gazella euchore*, or tesepe). They come from the Great Kalahari Desert, and, when first they cross

¹ See note later on Migration.

the Colonial boundary, are said to exceed forty thousand in number. I cannot venture upon an estimate, for they spread over a vast extent of country, and make a quivering motion as they graze and toss their graceful horns. They live chiefly on grass ; and, as they come from the north about the time when grass most abounds, it cannot be want of food that prompts the movement. Nor is it want of water, for this antelope is one of the most abstemious in this respect. The cause of the migration¹ would seem to be their preference for places where they can watch the approach of a foe. When oxen are taken into a country of high grass, their sense of danger is increased by the power of concealment which the cover affords, and they will often start off in terror at the ill-defined outlines of each other. The springbuck possesses this feeling in an intense degree, and, being eminently gregarious, gets uneasy as the grass in the Kalahari grows tall. The vegetation being scanty in the more arid south, the herds turn in that direction. As they advance and increase in numbers, the pasturage gets so scarce, that in order to subsist they are at last obliged to cross the Orange River, and become the pest of the sheep farmer in a country which contains little of their favourite food. If they light on a field of wheat in this way, an army of locusts could not make a cleaner sweep of the whole. They have never been seen returning. Many perish from want, and the

¹ See note later on Migration.

rest become scattered over the Colony. Notwithstanding their constant destruction by firearms, they will probably continue long and hold their place. The Bakalahari take advantage of the love of the springbuck for an uninterrupted view and burn off large patches of grass, both to attract the game with fresh herbage which springs up and to form bare spots for them to range over.”

(e) By W. C. SCULLY

(1) *Extracts from Scully's "Between Sun and Sand"*

“ This region ” (the Jacht Bult, Bushmanland) “ is the home of the ‘ springbuck,’ that still survives in countless myriads. After a large ‘ trek,’ as the annual migration of these animals across the desert is called, has taken place, the wake of the host looks like an irregularly ploughed field—every vestige of vegetation is beaten out by the small, sharp, strong hoofs. It seems at such times as if all the springbucks in the desert were suddenly smitten by a bad desire to collect and dash towards a certain point.

“ The springbucks as a rule live without drinking. Sometimes, however—perhaps once in ten years—they develop a raging thirst, and rush madly forward until they find water. It is not many years ago since millions of them crossed the mountain range and made for the sea.¹ They dashed into the waves,

¹ A very remarkable and significant fact. See note later on Migration.

drank the salt water, and died. Their bodies lay in one continuous pile along the shore for over thirty miles, and the stench drove the Trek-Boers who were camped near the coast far inland."

"As the wagons cleared the circle of low kopjes it could be seen that the trek was an unusually large one. As far as the eye could range from north-east to south-west the horizon was obscured by rising clouds of dust. Here and there in the immense vista, a particularly dense cloud could be seen ascending slowly. This indicated a locality where a mob of more than average compactness was pressing westward, impelled by the strange trek instinct."

"The springbuck is pure white on the belly and flanks, and has a mane of long white hair extending from the root of the tail to the shoulders. This mane is usually concealed to a great extent by the fawn-coloured ridges of hair between which it lies. It can, however, be erected at will to about five inches in height, and extended to about six inches in breadth. The sides of the animal are a light fawn colour, upon which lies a horizontal stripe of dark brown about two and a half inches in width and extending from the shoulder to the flank. The horns, shaped like the classic lyre, are about eight inches in length, and are ringed to within a couple of inches of the top. The animal stands about two

feet nine inches in height at the shoulder, and weighs about ninety pounds when full grown.

" Seen at a distance, or when the sun is shining against them, the springbucks appear to be white all over. It is in the early morning or when running away from or in circles around a bewildered dog—deceived into the idea that it is about to succeed in catching the lissom quarry—that the springbucks are seen at their best, and in their most characteristic attitudes and movements. Then the spine becomes arched until the nose almost touches the ground, the mane of long, stiff white hair expands laterally, while every fibre stands erect and apart. As the animal careers along with the appearance of a bounding disc, its feet are drawn together and it sways, like a skater, first to one side, then to the other—sometimes to an angle of thirty degrees from the vertical.

" There is something inexpressibly sad about the fate of these hapless creatures. Beautiful as anything that breathes, destructive as locusts, they are preyed upon by man and brute in the illimitable wilderness—even as the great shoals of fish are preyed upon by their enemies in the illimitable ocean. The unbounded desert spaces, apparently meant for their inheritance, hold for them no sanctuary; the hyena and the jackal hang and batten on the skirts of their helpless host; the vultures wheel above its rear and tear out the eyes of the less vigorous which lag behind—sportsman and pot-hunter,

Boer, Half-breed and Bushman, beast of the burrow and bird of the air, slaughter their myriads ; but still the mighty mass assembles every year and surges across the desert like a tempest in travail of torture."

"The 'trek' is due to the instinct which impels the does to drop their young somewhere upon the western fringe of the desert, which extends north and south, for several hundred miles. This fringe is the limit of the western rains. These fall between April and September, when the desert is at its driest, and bring out the green herbage necessary for the newborn fawns.

"As the area over which the bucks range becomes more and more circumscribed, the 'trek,' although the number of bucks is rapidly diminishing, becomes more and more destructive, owing to its greater concentration. The fawning season over, the herd melts slowly and flows gradually westward, until some night distant flashes of lightning on the cloudless horizon indicates where—perhaps hundreds of miles away—the first thunderstorm of the season is labouring down from where its bolts were forged in the far, tropical north. Next morning not a single buck will be visible—all will have vanished like ghosts, making for the distant track of the rain."

"At night-fall the herd suddenly began to move on once more, in obedience to some mysteriously communicated impulse. All night long the

muffled thunder of their hoofs could be heard, whilst clouds of dust hung motionless in the dew-damp air."

"At Namies the Boer women and children were busy cutting up the carcasses and converting the meat into 'biltong.' From each haunch the bone was removed, whilst the meat which lay thick along the back where the ribs join the spine was cut out in long strips. All the meat was then slightly sprinkled with salt and left to lie in heaps for twenty-four hours. After this it was hung for a few days upon lines slung between the ribs of the mat-house and the laths of the wagon-tents. Then if the sun did not shine too fiercely, it would be hung out in the open. After a few weeks of such treatment the 'biltong' is fit for use, and if stored in a dry place may be kept for an indefinite time. This substance forms the staple animal food of the Trek-Boer for the greater part of the year. The skins were pegged out on the ground to dry; then they were stowed away in heaps, afterwards to be 'brayed' soft, sewn into mats, and bartered to the Jew hawkers."

(2) *Extract from Scully's "Further Reminiscences of a South African Pioneer"*

"It was my fortune in 1892 to witness the last great 'trek,' as the annual migration from east to west¹ across the desert is termed. The number

¹ See note later on Migration.

of bucks involved in such a phenomenon varies according to circumstances. The amount of rain that may have fallen in the central plains is one of the determining factors in this respect. There can never again be a 'trek' on a really large scale. Fencing, the increase of population, and the general distribution of arms among people have almost exterminated that helpless, at one time innumerable, host, for whose use, if there be any such thing as design in creation, the great Bechuanaland Desert must have been made.

"The idea underlying the 'trek' seems to have puzzled hunters and naturalists from time immemorial. To me the explanation ¹ is simple and obvious. In summer a certain amount of rain falls in Bushmanland, but in winter that tract is absolutely rainless. It is bounded on the west by a range of granite mountains which spring from sandy plains. Here no summer rains fall, but in early winter the southwest wind brings soaking showers, and the sandy plains lying among the mountains become clothed for a few weeks with rich, succulent vegetation. This occurs at the season when the springbuck fawns are born, and when, consequently, the does require green food. Hence the westward 'trek,' which is, I believe, of hoar-ancient origin.

"A view of the trek when at its height was an experience not to be forgotten. It would be fruitless to attempt an adequate description of it. In dealing

¹ See note later on Migration.

with myriads numbers cease to have any significance. One might as well endeavour to describe the mass of a mile-long sand dune by expressing the sum of its grains in cyphers, as to attempt to give the numbers of antelopes forming the living wave that surged across the desert in 1892 and broke like foam against the western granite range. I have stood on an eminence some twenty feet high, far out on the plains, and seen the absolutely level surface, as wide as the eye could reach, covered with resting springbucks, whilst from over the eastern horizon the rising columns of dust told of fresh hosts advancing.

“ I had to issue a hundred rifles and many thousands of cartridges from the government store to the farmers to enable them to protect their crops. The farmers used to bring back the carcasses by the wagon load to their wives, by whom the meat would be made into ‘ biltong.’ Over and over again a wagon would go out from the same farm-house, always while the ‘ trek ’ lasted, returning with a full load.

“ After the wave had receded, the western margin of Bushmanland was like a ploughed field ; all the grass roots, all the shrubs, were lying loose on the surface, beaten out by the hoofs. At many points the invading host broke through the line of defence, and overran the cultivated fields. One hapless springbuck was shot in the graveyard at Okiep, of all places in the world. The ‘ trek ’ ended more

suddenly than it began. In a single night the springbucks totally disappeared.”

Note.—Mr. Scully was magistrate at Sprinbokfontein, a town in Namaqualand. Okiep is another small town in the same territory. The Bushman Desert he refers to is just south of the Orange River towards the west coast. The territory in question is a part of the Province of the Cape of Good Hope.

(3) *Extracts from Scully's "Lodges in the Wilderness"*

“Why is it, I wonder, that during the forenoon springbuck in the desert appear to be white? ¹ For this is literally the case; these animals seemed to be as white as snow, as imponderable as thistle-down. The fawn tint of their necks and flanks, the broad, brown patches on their sides, the black lyre-formed horns—all were drowned in the milky foam of the dorsal manes. These were expanded laterally to their fullest extent; each long silvery hair stood erect and quivering.

“The creatures’ heads were depressed almost to the level of their feet. With backs deeply arched, they bounded over the face of the desert like so many alabaster discs—mingling, separating and recombining in a tracery of flying arabesques. They had adopted the attitude and movement usual to their kind in moments of sudden terror or delight. Surely their flight was the highest expression of grace revealed by animated nature in motion. It was a soundless melody; a symphony for the eye.”

¹ See Introduction.

“However, I fired [at the springbuck, in the Richterveld, along the Orange River, Namaqualand] and it fell. When we approached the struggling creature, I gazed upon it with astonishment; it was so immense. Why, it must have been nearly twice as large as the springbuck of the desert. I asked C. if this were not an extraordinary specimen. No, he said, all the bucks in the vicinity were about as large. Then I recalled having read in Francis Galton’s book that he had shot a springbuck weighing a hundred and sixty pounds near Walfish Bay.¹ These Richterveld bucks—so C. informed me—do not trek. They must belong to a distinct subspecies—the range of which is restricted to the coast desert.”

“The annual migration of springbucks across the desert is, I am positive, an institution of immemorial antiquity. The reason for it is obvious. The fawns are born in winter, and it is necessary that at the time the does should have green food to eat. But Bushmanland, excepting its extreme western fringe, is far drier in winter than in summer. In

¹ If this be so, it may be that the buck Francis Galton shot was not a springbuck, but, with so accurate a man, it would seem more likely that he shot an exceptionally heavy springbuck (probably a ram) and perhaps estimated its “live” weight (i.e. as it lay, unbled, uncleaned and unskinned). Even in such a case, the weight would seem abnormal. No springbuck ever weighed 160 lb. cleaned, even unskinned. Is it likely that Galton would have a big scale with him “near Walfish Bay,” especially in those days?

winter the feathery plumes of 'toa' (grass) crumble away to dust and the stumps of the tussocks turn jet black. Then the plains become unmitigated desert.

"Winter is the season during which rain falls among the mountains lying between Bushmanland and the coast desert. Then for a few short weeks the mountain range covers itself with verdure and flowers. Therefore the trek.¹ However, of late years, the mountain tract has been largely taken up by farmers, so the springbuck, as a rule, invade only its eastern margin. The western fringe of the plains usually gets a slight sprinkling from the mountain rains. The exception happens when the trek, instead of being distributed over a wide extent, concentrates. Then the springbuck, in their myriads, overrun hundreds of square miles of the mountain tract, and clear the face of the country of vegetation as completely as would a swarm of locusts."

"When Adries' rifle spoke a thrill ran through the multitude. Looking to the left I saw bucks beginning to stream in my direction, but the impulse had not yet been communicated to those at my end of the herd. Rhythmically the impetus of flight developed towards me. Now all were on the move. I fired and a buck rolled over. Then I descended from the dune and ran forward into the plain.

¹ See note later on Migration.

"The herd was now streaming past me from the direction in which the knell of Andries' regular bombardment sounded. The dense stream bent in its course before my advance and for a few minutes took the form of a crescent at a distance of about four hundred yards. It was as though I were firing at a wall. Once I got my range nearly every bullet thudded. Soon the last of the stream flowed past, but its course for several hundred yards was marked by prone white and fawn forms."

CHAPTER III

NOTE ON "MIGRATION"

(BY S. C. CRONWRIGHT-SCHREINER)

Is the "migration" of the springbuck a true migration? Is it regular, at fixed intervals, and uniform in direction? Is it *instinctive*, or is it a movement whose cause is ascertainable on existing facts now in operation?

Professor Lloyd Morgan, in his *Habit and Instinct*, after discussing and illustrating the subject, briefly sums up the present-day knowledge and opinions on it. Of course Darwin's treatment of instinct in his world-shaking book, *The Origin of Species* (1859), is the classic to which all students must refer; we all "talk Darwinism," often without being aware of it, just as, when reading Shakespeare, we find him "so full of quotations." But I mention Lloyd Morgan because much work has, very naturally, been done since Darwin's day and because he deals with the stage of investigation at which the study of instinct had arrived only a few years ago.

His investigation seems to point to the conclusion that the migratory sense is innate, is an instinct.

For instance, as illustration thereof, it seems probable that, in some cases, young birds, leaving their birth-land and without guidance by the old birds, migrate enormous distances to lands they have never visited or seen before. If this be so, its explanation must apparently be sought in the solution of the extremely difficult problem of instinct. What *is* instinct and how does it come to operate? Fabre, that “unsurpassed observer,” as Darwin styled him, “the insects’ Homer”—a man of real genius—has no solution to that racking question; but of course there is an explanation, if we can but find it. Is instinct an inherited and stored, now unconscious, memory? Is there traditional guidance, for instance, of young birds by older ones in migration, or is there not? If not, may “the element of traditional guidance be effectual in the migratory stream as a whole, in some way that we have hitherto been unable to observe,” as Lloyd Morgan tentatively suggests? It is argued by him that, while the migratory impulse is innate, with perhaps no instinctive tendency to start in a given direction, such direction may be given to it by the “traditional guidance” above suggested. “On this view,” he says, “the migratory host is always led by older birds who have been led by their predecessors, and so on ever since the habit originated.” It is a nice point, but apparently “up against” the fact (if so it be) that, at times, young birds, under the innate migratory instinct, migrate with instinctive

direction also and without guidance; though that they may do so seems to me to be part of and not to exceed the marvel of instinct.

The true migratory instinct would seem to compel an annual migration, as is apparently the case with migratory birds. But are *all* so-called "migrations" purely instinctive? May not some of them at least be due directly, and at the time, to the creatures concerned consciously seeking another temperature or other or more abundant food?

I make these few comments and suggestions to indicate the intricacy of the subject. Did the American bison "migrate" owing to a blind and unreasoning innate impulse which, regularly and at almost unvarying times and seasons, drove them on, whither they knew not, for what they knew not? Do the lemmings so migrate? Do the springbucks? Do the locusts?

Let us see what we can learn, from the articles which precede this note, what the various writers think about the matter, taking their articles in the order in which they appear herein.

Writing of the 1896 trek soon after seeing it, I then said it was known that the springbucks "migrated in search of better veld, urged thereto by drought," using the word "migrate" conventionally. I said also that I did not then think the trekbokke came from one particular part of the country and again returned to it, but rather that, in times of

drought, vast numbers of bucks moved off together (as might be expected of so gregarious a creature living on open plains) in search of food, and that treks came from Namaqualand and "Bushmanland" because the bucks were still so numerous there, while farther within the Cape Province there were not enough of them to mass together in any particular locality to form a big trek.

I am still inclined to think that, broadly, this is true; but on further investigation, study, and consideration, I am not sure there are not other and obscure factors at work which may render that explanation not wholly conclusive, as I shall indicate presently.

T. B. Davie says that "during certain years and at all sorts of uncertain seasons these antelopes began to assemble in immense herds; these herds, seemingly impelled by some guiding instinct, gathered together in mobs, moving aimlessly about, first here and then there, having no apparent direction and yet feeling restless and uneasy."

Davie is a man of great personal experience of "treks" and writes apparently with no clean-cut scientific theory which he wants to prove. Therefore if this assertion be in accordance with the facts, it is important. It will be noted, according to him, that the treks are not annual, and not necessarily due to insufficient food, but occur "in certain years and in all sorts of uncertain seasons." Later,

he says that from 1887 to 1896 there were four "really great treks." So that it would seem there may be intervals of years between two treks. Is this in accordance with migration in its strictly scientific sense? Does it not seem to indicate that some non-instinctive control is operating? In these long intervals between the treks, was the veld good? Were the droughts insignificant, wholly or to a great extent, or partial? Was food sufficient?¹ (There is an old saying that springbucks are "fattest in a drought;" this may, however, be but seemingly so, in contrast with the poverty of the sheep at the time.) Again, he says these migrations are a mystery, that sometimes the bucks are poor and miserable, at other times sleek and fat. These latter facts may have some bearing on the argument that treks are due to drought, without implying that they are not so due; for instance, all the treks may have started off in search of food, some, the "sleek and fat," finding it, others, the "poor and miserable," not finding it; for often the whole of the habitat is devastated by drought at the same time, while sometimes parts get rain and have plenty of food.

Two most weighty considerations remain. The first is that years can elapse between the different

¹ Temperature, as a deciding factor, may, I think, be left out of consideration; the whole springbuck territory covered by the treks is suited to them all the time if the veld be moderately good: it is all their native habitat.

treks. How does this fact affect the "traditional guidance" theory? If it operates, does it do so only when the bucks instinctively begin to assemble, first in "mobs" and then in one huge myriad mass? That does not seem likely. There is also the consideration that many of the old bucks will have died and that the bulk of the mass may be adult bucks and younger ones that may never have trekked. Then, how is the "traditional guidance" theory affected by the fact, stated by Davie, that, of the four treks between 1887 and 1896, three trekked "with a northern course" and one "to the south and west"? If so, there would seem to be apparently no uniformity of direction.

I have left the consideration of what seems to me the most interesting statement of Davie's to the last. At the beginning of a general movement, he says, the bucks "gather together in mobs, wandering aimlessly about, first here and then there, having no apparent direction, and yet feeling restless and uneasy." Is this what Lloyd Morgan writes of as the "innate" "migratory impulse" with "perhaps no instinctive tendency to start in a given direction"? If so, is the "traditional guidance" lacking and may this be due to the fact that the migrations occur at irregular intervals?

Scully's explanation is quite definite—so clear that it seems to him "obviously" correct. The west coast of "Bushmanland" is a narrow sandy desert, bounded along its eastern margin by a range

of mountains with the hot and arid flats that Scully writes about lying eastward of them. On these plains are the springbucks. At the time of kidding these flats have no herbage but are at their worst, and that is very bad indeed; but, just at this time, the rains fall in the mountains and on an adjoining fringe of the flats, and herbage in plenty springs up. So the bucks trek to the parts where there is food. The treks are thus *always* from east to west, from no food to plentiful food. He further says that the amount of rain that may have fallen on the central plains is one of the determining factors in deciding the number of bucks in a trek—a further strong argument in favour of the food theory as against the migratory *instinct*. But later Scully gives the astonishing fact, which, on his word, may be accepted without doubt, that the bucks walked into the sea.

"It is not many years ago," he says, "since millions of them crossed the mountains" (apparently a very rare occurrence) "and made for the sea. They dashed into the waves, drank the salt water and died. Their bodies lay in one continuous pile along the shore for thirty miles." Presumably they crossed the mountains (possibly because these were dry and had no food or not enough) and continued west in the direction they were accustomed, from individual experience, to find food annually. But what made them persist in going into the sea? And *did* they drink sufficient water to kill them, and

did it thus kill them ? They need not go to a greater depth than a few inches in order to obtain sufficient to drink. If they drank enough to kill them, it would not necessarily be fatal at once. Would they stay in the breakers or push on into the ocean and be drowned ? They were washed up and lay "in one continuous pile along the shore for thirty miles." What is the explanation ? The lemmings walk thus into the sea at times in their "migrations" and are drowned. Is it the true migratory *instinct* ? A poet thought so :

. . . And that one of these days that golden place
Shall be reached by the lemmings yet !

Pace the poet ! There are eminent scientific men who do not hold that the lemming "migrations" are an instance of the true migratory instinct. What shore would the springbucks be trekking for ? The shore of South America !

Fraser favours the drought and food theory, and states it as an uncontested fact.

Livingstone's theory need not occupy us. It is clear he knew little personally about the trekbokke. What do 40,000 trekbokke amount to ? It is a quite negligible quantity.

Stockenstroom says the treks gather in "Bushmanland," making this assertion when springbucks were still plentiful in "The Colony." They assemble, he says, because of "want, principally of water," and then move out, either to the north, to the Orange

River, or to the south, to the Cape Colony, and that this occurs once in "four or five" years. This is of course the drought explanation, to which is added the important statement, somewhat difficult to reconcile with the migratory instinct theory, that the treks, travelling from the same parts, go some north, some south.

On the whole, notwithstanding all these interesting statements, I do not think they afford sufficient evidence to justify any hard-and-fast conclusion as to the cause or causes of the trekbok migrations. On the evidence adduced, the treks do not seem to me to be instinctive in the sense in which instinct is seen at work in the annual migrations of certain birds, but rather to be the erratic movements, in search of food and perhaps water, of large numbers of gregarious creatures inhabiting a vast territory which is subject in varying parts to annual droughts, often partial and not of very marked severity, but sometimes of great and devastating severity, embracing practically the whole of the vast extent of territory which is the natural habitat of the springbuck; but I do not think this explanation necessarily excludes other and obscure phenomena of an instinctive kind from being to some extent operative. It seems to be agreed that the "treks" quickly vanish when rain falls "in their country," disappearing with a celerity that often strikes the observer as mysterious and uncanny—a fact that does not seem to square wholly with the true

migratory instinct. It is a fact that there are not sufficient carefully collected, intelligently considered and rigorously tested facts to enable us to come to any definite conclusion as to the whole "mentality" of these treks. Shall we now ever obtain such facts ?

CHAPTER IV

THE OSTRICH

BY S. C. CRONWRIGHT-SCHREINER

(Reprinted from "The Zoologist" for March 1897)

THE Ostrich, *Struthio camelus*, has been observed with interest from very early times ; it has frequently been the subject of remark by African travellers ; and it has been domesticated and farmed in the Cape Colony for some thirty years. Yet it is remarkable how little is known about it in scientific circles, and how many misconceptions still prevail as to its nature and habits.¹

HOW MANY SPECIES ARE THERE ?

I have not been able to ascertain whether the question as to the number of species of ostrich has

¹ This article is founded on personal observations made during nine years of uninterrupted ostrich-farming in the Karoo of the Cape Colony and during travels about the country generally. The number of ostriches which were under my care during this period ranged from about 250 to 450. Some of the birds were the progeny of wild birds, brought down as chicks from farther up-country. Every year eight special breeding pairs were camped off, each pair in a separate small camp ; but the other birds ran in large camps, the extent of the farm being 4,600 morgen (about two acres to the morgen. An acre contains 4,840 square yards. A morgen contains 10,240

yet been settled. Some writers maintain there are two species ; others that there are three. Professor Newton (article, " Ostrich," *Encyclopædia Britannica*), after briefly reviewing the evidence, says the question " has been for some years agitated without leading to a satisfactory solution."

The reasons given for classifying the ostrich into three species are :

That in the North African bird, *Struthio camelus*, the skin of the unfeathered parts is flesh-coloured ; in the South African, *Struthio australis*, bluish, except at the angle of the gape, which is flesh-coloured ; and in the bird of the Somali country, *Struthio molybdophanes*, leaden-coloured.

It is further maintained that the eggs of the northern ostrich are larger than those of the southern and have a perfectly smooth surface, while those of the southern are punctured or pitted ; also that the northern bird is the smaller and the cock not so jet-black. Mr. Bartlett adds, as another distinguishing character, that in the southern ostrich the scales of

square yards). In these large camps, some of which are a couple of miles in diameter, numbers of birds of both sexes run in what is practically a wild state, seldom interfered with in any way, except when rounded up to be plucked or to be fed in a drought. I know, from personal observation when purchasing wild chicks from the nest and from numerous inquiries, that the habits of birds thus farmed differ in no way from those of native wild birds, except perhaps that monogamy is more difficult. The whole of the Cape Colony is the native habitat of the ostrich ; there are feral ostriches in many parts and wild birds in some of the up-country districts.

the tarsi and toes, unlike the skin of the other unfeathered parts, are flesh-coloured.

If the question has not been settled, a short description of the South African ostrich may help towards its solution ; if it has been, the description may nevertheless convey some useful information to such as are interested in it.

COLOUR OF THE PLUMAGE

Chicks when first hatched and for some weeks after have the wings and upper part of the body covered with a mottled dark and white coat of small feathers, ending in solid spiked points, almost like miniature porcupine quills ; the lower part with a soft yellow down. The neck is marked longitudinally with wide dark stripes on a lighter brownish ground and the head with spots of the same colour. Some broods are much darker than others. They soon acquire a plumage varying from ash-colour to brown, the feathers retaining their spiked points for some time. At an age, generally from about twelve to eighteen months, chicks begin to moult their youthful plumage of narrow, pointed feathers, and gradually acquire those of the adult bird, possessing them in their entirety, at the latest, when about four years old. Up to the time when the change begins, the sexes are not distinguishable ; but after the moult the cocks acquire a black and the hens a drab plumage, the hen's differing from that of a big chick

not so much in colour as in the shape and quality of the features. The cocks do not change abruptly from their youthful drab to adult black, but pass through what is generally designated by the Dutch word, the *bont* (variegated) stage ; black, brown and drab feathers are indiscriminately mingled all over the body, the plumes and tails being black and white. The same stage is gone through by the hens, but is not nearly so conspicuous, the difference in the colour of the feathers being less marked. At about four years all have their adult plumage ; but both among cocks and hens there is a great diversity in colour in different individuals and in different parts of the country. In all cocks the plumes (" whites ") are white. In hens, however, these feathers (" feminas ") vary from white to drab. The " tails " correspond in colour with the " whites " and " feminas " respectively. In both sexes, variations in body colour are conspicuous. Some cocks are a glittering jet-black, while others are a rusty-brown ; a few have odd white feathers dotted about the body ; occasionally the secondary wing-feathers are white, or often fringed with white ; and I knew of one which was thickly flecked with white over the whole body. In some cocks all the feathers, " whites " excepted, are beautifully curled, almost as though artificially ; while in others they have not the slightest indication of curl. These individual variations are in some cases accentuated by differences of climate. Towards the coast the rusty-brown tint (more

pronounced than up-country) is often found, while the glittering jet-black, so characteristic of Karoo birds, is comparatively uncommon. On the authority of an ostrich farmer of great experience, who has hundreds of birds on both Karoo and coast farms, Karoo birds produce, on the whole, the best "blacks," coast birds the best "whites." The first essential of black feathers is that they shall be glittering and glossy, and this condition the dry air of the Karoo seems to favour; a white feather must, other characteristics being equal, be soft, with a limp quill, and this seems to be most frequently produced by the damp coast breezes. Hens also vary in body-colour to an equal extent, though, in their case, the differences are not very conspicuous, the colours not being so strongly contrasted. They range from a dark rich brown to light brown, grey or ash. I have had several hens with each feather ("feminas" excepted) barred across with white at about a quarter of its length from the tip, and one which had the perfect black plumage of a cock.

COLOUR OF THE UNFEATHERED PARTS

The colour of the unfeathered parts of chicks is yellow, which gradually changes to flesh-colour, and, as the adult stage is reached, either remains flesh-coloured, though of not so pronounced a tint, or changes to bluish or leaden—nearly always bluish. Variations occur not only in colour but in texture,

thickness and strength of the skin,¹ and are both great and frequent. The colour of the neck varies also in both sexes, from dark—nearly black in the case of the cock and deep brown in the hen—to almost white. Even the colour of the eye varies ; generally it is brown, but grey is not unknown.

COLOUR OF THE *TARSI* AND TOES

Chicks ² may be divided into two lots of about equal number, by the colour of the scales of the tarsi and toes. Some have light-brown scales, others dark-brown. There is no grading from one tint to the other ; the line of demarcation is clear and unmistakable. The dark-scaled are by some farmers said to be hens, the light-scaled cocks. My attention was drawn to this peculiarity shortly before retiring from ostrich farming ; I cannot, therefore, express a decided opinion, not having had an opportunity of testing whether the statement is correct.

At any rate, the scales of the hens invariably remain brown, but those of the cocks change to flesh-colour, varying from nearly white to brilliant crimson. Cocks' legs do not often lose all trace of the crimson tint, though its intensity varies with the seasons, being brightest in a fat bird in the

¹ Ostriches are branded on the leg, as cattle are.

² The term chick is often used for a bird of as much as perhaps three years old.

height of his sexual vigour in the breeding season, and faintest when the bird is in a low condition in the winter. It also varies in individual birds and with their condition, and becomes pale during the period of sitting. During the non-breeding season the colouration, more or less faded, is nearly always confined to the scales of the tarsi; but in all cocks that "come on" during the breeding season it is seldom, if ever, so confined; the tarsi themselves, the toes and the beak, to a greater or less extent, also becoming affected. Some cocks are then most brilliantly coloured; not only do the toes and the whole of the tarsi become a brilliant crimson, but the upper part of the leg (called by Cape ostrich farmers the "thigh") for half its length, nearly the whole of the head, especially the beak, ears and around the eyes, are of the same gaudy tint. A vicious cock in full plumage is then a beautiful and imposing creature; the glittering glossy black is strikingly contrasted with the spotless white of his waving plumes and the bright crimson of his head and legs; and as, with springy steps, he advances to battle, angrily lashing his wings across his raised body, with tail and neck erect and flashing eyes, he is not only a beautiful, but a grand and, to many a man, a terrifying object.

No corresponding changes take place in the hen; neither does she become vicious, except when she has chicks.

THE EGG ; THE SIZE OF OSTRICHES

As to the alleged difference in the shell of the eggs of the northern and southern ostriches, it may be sufficient to remark that the eggs of the southern bird vary frequently and greatly in respect of size, shape and shell ; some are quite a third larger than others ; some are almost spherical, others oblong ; and the shells vary from being deeply and thickly pitted to smooth and polished.

Differences in the sizes of ostriches are equally marked. There is no uniformity. Some birds are very much larger than others ; they also differ considerably in shape.

ONLY ONE SPECIES

It will thus be seen that all the differences on which the arguments for classifying the ostrich into three species are founded are commonly present among the ostriches of the Cape Colony—that is, of South Africa generally ; for a great many of the Cape ostriches are the progeny of birds brought down from “ The Interior ”—the Kalahari Desert, Damaraland and beyond. There is, I think, little doubt that all South African ostriches are of one species ; individual variations, accentuated by local differences of food and climate, are quite sufficient to account for all supposed varieties. I do not think that, on the evidence which I have been able

to gather, there is any justification for maintaining that there is more than one species of ostrich.¹

THE EGG AND FLESH OF THE OSTRICH

The ostrich hen lays every other day during the breeding season and the egg weighs about three pounds; it is a tasty and nutritious food however prepared, very rich and excellent for making pastry and cakes. It is generally computed to be equal to two dozen fowls' eggs; but this must be on account of its superior richness, for, from personal experiment, the empty shell of a fairly large one exactly held the contents of eighteen fowls' eggs. It takes about forty minutes to boil an ostrich egg hard. The period of incubation is about six weeks. The flesh of the chick, if well prepared, is excellent, but that of an old bird is tough and insipid. The ostrich is, however, never killed for food and is very rarely eaten, except by native servants.

ITS BREAST-BONE AND POWERS OF KICKING

The breast-bone of the ostrich is of great thickness and strength and of course keelless. Its lower edge has a hard pad, which must be useful to this heavy, long-legged bird when it bumps down to the

¹ It has, I believe, since been confirmed, and is now accepted, that there is only one species. The term "species" is used with the meaning attached to it (as I understand) by the authorities quoted. *Struthio camelus*, *S. australis*, and *S. molybdophanes* are, I believe, all perfectly fertile *inter se*.

recumbent position. It is obvious that the great weight and speed of the ostrich and its liability to collide against objects on the ground over which, when frightened, it takes its headlong indiscriminate way, would need that it be protected in front. Its thick convex sternum, almost devoid of flesh, is a most effective safeguard.¹ As an instance of this, I have seen an ostrich, at great speed, run against and snap a No. 6 fencing wire, striking it with its breast; in the same way I have seen a sneeze-wood pole (a very tough wood used in wire-fencing), four inches in diameter at its thinnest end, broken just where it emerged from the ground; and a chick about eighteen months old run against a loose badly built stone wall two feet in thickness and break a gap through it—all these without injury to the birds. The shape and strength of the breast-bone is also a protection to fighting cocks, for the most powerfully delivered kicks nearly always strike there, doing but little harm.

During the breeding season cocks frequently fight, but, unless they kick at each other through a wire-fence (when a broken leg frequently occurs), not often with fatal results. The kick is forward with

¹ The great muscles on each side of the keel of the breast-bone of flying birds are not on the ostrich (nor is the keel) and are not needed, as he does not fly; this absence renders him far less liable to injury when he collides with anything as he moves at his great pace with his long and rapid strides or when he is fighting with one of his own species.

a downward tendency and the long nail with which the larger toe is armed often cuts and tears severely. The force of the kick is great ; a man goes down before it like a ninepin. I have seen two cocks charge at each other, the larger of the two, at the first kick, being hurled several yards on to the broad of his back, while the kicker recoiled into a sitting posture ; and I possessed a cock which kicked a hole through a sheet of corrugated iron, behind which a man had taken refuge. They can kick as high as a man's face ; I have, on horseback, had a hole kicked through my riding-breeches above the knee and have known a boy kicked out of the saddle. Deaths from ostrich kicks are by no means unknown. A really vicious cock seems to fear nothing, unless it be a dog that will attack him. The most striking instance of their fearlessness which I have heard was told me by a railway guard. The goods train he was in charge of was one day rattling at full speed down a steep gradient. A vicious cock, seeing it coming, at once got on the line between the rails and advanced fearlessly to fight the monster. As the screeching engine approached, he rushed at it from straight in front, hissing angrily, and kicked. He was cut to pieces the next moment.

LEAPING AND SWIMMING

The old idea that an ostrich can leap over only a very low fence or across none but the narrowest

sloot (gully) is incorrect. It is true that perfectly tame birds, grazed within well-defined boundaries, may often be kept there with very insecure fences when they are thoroughly accustomed to recognise such as boundaries; but they will, when startled (never deliberately), sometimes go over a six-strand wire fence nearly five feet high, putting one foot at random on one of the middle wires, and then capsizing over. They will go over a stone wall in the same manner, if too high for them to step upon, often landing upon their feet; and I have seen a cock take a standing jump with both feet on to the top of a wall five feet high, beyond which were his chicks. When accustomed to run in cut-up veld they become very clever at leaping across sloots. They do not stride over, but, coming almost to a standstill at the edge of each sloot, jump with both feet, generally alighting on one foot and striding on at once with the other, like a good hurdle-racer.

Even as a chick the ostrich is a powerful swimmer. I have known several birds swim some distance down the Great Fish River when it was running fairly strong, and have heard, on what seems trustworthy evidence, of a cock that was carried a long way down the same river when it was running nearly level with its precipitous banks in the stormy season; he was some hours in the water before he could get out, but emerged unhurt.

WALTZING AND ROLLING

All ostriches, adults as well as chicks, have a strange habit known as "waltzing."¹ When chicks are let out from a kraal in the early morning they will often start away at a great pace. After running for a few hundred yards they will all stop, and, with raised wings, spin round rapidly for some time, often until quite giddy, when a broken leg occasionally occurs. Adult birds, when running in large camps, will often, if the veld is good, do the same, especially if startled in the fresh of the early morning. A troop of birds waltzing, in full plumage, is a remarkably pretty sight.

Vicious cocks "roll" when challenging to fight or when wooing the hen. The cock will suddenly bump down on to his "knees" (the ankle joint), open his wings, making a straight line across his breast, and then swing them alternately backward and forward (keeping the line straight) as if on a pivot, each wing as it comes forward being raised while that going backward is depressed. The neck is lowered until the head is on a level with the back, and the head and neck swing from side to side with the wings, the back of the head striking with a loud click against the ribs, first on the one side and then

¹ See Introduction for the "pronking" of the young spring-buck and the "waltzing" of the young ostrich being a preparation for the serious struggle for survival in the adult.



Photo at Krantz Plaats about 1892.]

[The Author.]

OSTRICH COCK "ROLLING."

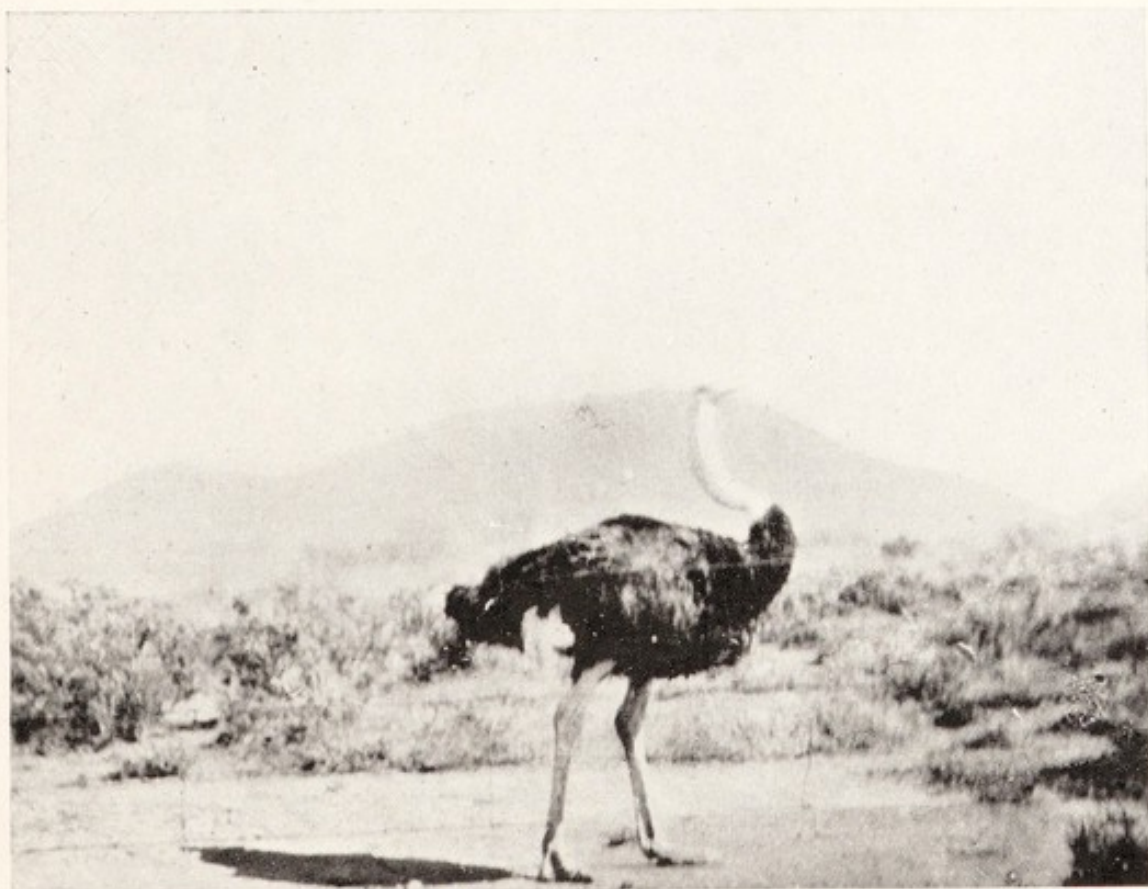


Photo at Krantz Plaatz about 1892.]

[The Author.]

OSTRICH COCK (THE SAME BIRD) "BROMMING" (BOOMING), AT END OF THIRD NOTE OF CRY.

The great inflation of the neck will be noticed.

on the other. The click is produced apparently by the skin of the neck, which then bulges loosely just under the beak and for some distance downward. While rolling, the cock does not rest his body upon the ground or even touch the ground with it, but sits straight up on his “ knees ” (ankle joints), the shin-bones being perpendicular to the ground and forming approximately right angles with the tarsi; every feather over the whole body is on end and the plumes are open, like a large white fan. At such a time the bird sees very imperfectly, if at all; in fact, he seems so preoccupied that, if pursued, one may often escape unnoticed. I have even walked up to a rolling cock and seized him by the neck, much to his surprise. Just before rolling, a cock, especially if courting the hen, will often run slowly and daintily on the points of his toes, with neck slightly inflated, upright and rigid, and tail half drooped and all his body feathers fluffed up; the wings raised and expanded, the inside edges touching the sides of the neck for nearly the whole of its length, and the plumes showing separately, like an open fan, flat to the front, on each side of his head. In no other attitude is the splendid beauty of his plumage displayed to such advantage. I have occasionally seen a hen roll, but always in an incorrect, amateurish manner, the action of the neck especially being very feeble and incorrect, while there is no bulging under the beak and no click.

THE CRY OF THE OSTRICH

The cry of the ostrich is very correctly described as a "boom." (The word in use among all ostrich farmers at the Cape is the Dutch verb "brom"; in English, an ostrich "broms," or is "bromming.") This cry is confined to the cock. It is uttered sometimes at night, but mostly by day; generally it is a challenge to another cock to fight or a note of courting to the hen. It can be perfectly uttered only while the bird is standing still. It is a peculiar, muffled, round sound, very difficult to locate exactly, and conveys the impression that, if it had free vent, it would become a loud roar. It can be heard a considerable distance. It is made by the bird calling, without allowing any air to escape. Each cry consists of three "booms," two short followed by one long, the bird just catching its breath after each note. As no air escapes, the neck becomes greatly inflated during each "boom," in the third to a remarkable extent. This cry may be repeatedly uttered. At night it sounds weird and wild. A faint yet close imitation may be produced by a person closing his lips tight and attempting to utter "boo" twice shortly with an interval of about a second after each, and then one long "boo," allowing the breath to come into the mouth but not to escape. The cheeks will become distended just as the neck of the ostrich does.¹

¹ Mr. W. P. Pycraft, F.Z.S., A.L.S., of the British Museum

There are other sounds common to both sexes—an angry hiss, a subdued guttural gurgle (uttered occasionally when much frightened) and a short, sharp note, generally an alarm signal. There is also the penetrating plaintive call of chicks of all ages. a treble, liquid, tremulous cry.

HOW IT FEEDS, AND WHAT IT WILL SWALLOW

The ostrich feeds in a peculiar manner. It tosses a considerable amount of food with frequent “pecks” into a sack in the upper part of the neck and then swallows it as one lump. I have seen a bird toss fully a quart of mielies (maize) into this sack before swallowing; and it is no uncommon thing to see two “swallows” travelling down the

(Natural History), in his excellent guide to the Natural History Museum, writing of the emus of the Australian Region, says:

“They are remarkable, among other things, for the wonderful windbag which is lodged in the neck to serve as a sound producer. This bag is formed by the inner lining of the windpipe, which is, as it were, pushed out through a long slit in the middle of that tube. With this curious musical box the bird produces a most marvellously resonant sound, which resembles the distant beating of a drum.”

The ostrich has presumably some such contrivance (not necessarily identical or even closely similar) to enable him to produce his “boom,” but what such contrivance is I do not know and have been unable to ascertain here in London, where there is practically no opportunity for dissecting an ostrich’s neck. The cry is confined to the cock; the hen does not “boom”; and it is clear that, at any rate, he closes something in his throat, for the neck becomes greatly inflated with the air he blows into it and does not allow to escape.

neck at the same time with a clear interval between them ; or to see one of them (if large and of loose food, e.g. grain) slide back into the sack after being swallowed, if the bird lowers its head to continue feeding before the food has travelled some considerable distance down the neck. The food travels slowly, and performs a complete circuit of the neck before reaching the crop. Crushed bones are greedily eaten ; if too large a piece should stick in the neck, it is a simple matter to cut it out and sew the place up again. The wound, as a rule, heals quickly, and causes but little inconvenience.

As is well known, ostriches will swallow almost anything small enough to pass down the neck. I have either known them swallow, or have heard of them swallowing, on evidence which I believe, such things as oranges, small tortoises, fowl and turkey chickens and kittens. I found a cock in my dining-room on one occasion rapidly demolishing, one after the other, the contents of a box of luscious peaches. Some friends were playing tennis with only one ball. A rather vigorous drive sent it beyond the tennis-ground, close to an ostrich hen ; she at once swallowed it with evident relish and brought the game to a sudden end. A cock swallowed several yards of fencing wire in short pieces and about half a dozen brass cartridges. These were found in his crop and had killed him. He had followed the fencers, swallowing the ends of the wires as

filed off. An ostrich's crop always contains a large quantity of smooth stones, many of them brightly coloured.

HOW THE OSTRICH RUNS

Considerable misconception prevails as to the manner in which the ostrich runs. It seems to be still generally held that, when running, it spreads out its wings, and, aided by them, skims lightly over the ground. This is not correct.

When a bird really settles itself to run it holds its head lower than usual and a little forward, with a deep loop in the neck. The neck vibrates sinuously, but the head remains steady, thus enabling the bird, even at top speed, to look around with unshaken glance in any direction. The wings lie along the sides about on a level with, or a little higher than, the back and are held loosely just free of the plunging "thigh." There is no attempt to hold them extended or to derive any assistance from them as organs of flight. Indeed, I doubt whether the conformation of the wings permits them being held out to any extent with the edge well to the front; and the front (lower) edge is thickly and heavily covered with long soft feathers (which are regularly plucked for the market). In fact, it may be said that the wings assume just that position along the sides which the wind would force them into when the ostrich is running at a great pace; their position is

exactly that which offers least resistance to the wind as it cuts past.

When ostriches are startled, as by a dog ; when they start away to run or when not very hard pressed, they will often run, and very rapidly, for some distance with their wings raised nearly upright on each side of the neck, flat to the front ; just as, under similar conditions, springbucks will run with the white fan on their backs raised, frequently "pronking."¹ When the ostrich runs thus, with its wings raised, it generally moves with a high, springy, bounding step, never with the long, raking stride of the bird that, hard pressed, is fleeing for its life. Raised wings are undoubtedly an obstacle to the greatest pace. So the springbuck, when he stretches himself out to run his fastest, shuts down his fan, as the attitude which enables him to expand it prevents him attaining his greatest pace. When an ostrich after a long run is very tired, its wings sometimes droop ; this is due to exhaustion ; they are never, by a running bird exerting itself to the utmost, held out away from the sides to lighten its weight or to increase its pace. But they appear to be of service in turning, helping the bird to double abruptly even when going at top speed.

¹ "Pronking" is the (Dutch) word used to denote the habit these antelopes have of leaping to a great height into the air, the attitude (which expands the white fan) being almost exactly that of a bucking horse. See Introduction to this book.

NIDIFICATION, SEXUAL RELATIONS AND PARENTAL
HABITS

Greater misconception seems to prevail with regard to the nidification, sexual relations and parental habits of the ostrich than upon any other really important points connected with it.

The best comment upon the various authorities will perhaps be a simple statement of what I know to be the facts.

THE NEST

As the breeding season approaches, a cock and hen will pair, and, having selected a site congenial to their inclinations, proceed to make a nest. I believe that in all cases, in the first instance, one cock and one hen, having paired, select the site and make the nest.

In a camp, no matter how large, where there are many birds and many nests, choice of position is restricted. They like to have their nests far apart ; but, in a camp, it is exceedingly difficult for a pair to select a spot which shall escape the observation of other birds. Want of space probably accounts for the fact that many sites are unwisely chosen. Generally a stony or sandy rise, however slight, is selected, often beside and partly sheltered by a small bush. The sites being selected, each cock is supreme

over all other cocks at his nest and in its immediate neighbourhood.

The nest is simply a hollow depression, more or less deep according to the nature of the soil. It is made by the pair together. The cock goes down on his breast, scraping or kicking sand out backward with his feet, cutting the earth with his long and powerful nails. The hen stands by, often fluttering and clicking her wings, and helps by picking up the sand with her beak and dropping it irregularly near the edge of the growing depression.

LAYING AND SITTING

When satisfied with their work (and they are easily satisfied, often too easily) the hen begins to lay, depositing an egg in the nest every other day. During the laying period the nest is often unattended and is not slept on at night. A nest in which only one hen is laying contains on the average about fifteen eggs; but she often begins to sit before she has laid her full complement. Sometimes she will lay four or five after beginning to sit, though not often so many; sometimes only one or two; while sometimes she will lay her full complement. The hen generally begins the sitting; she will occasionally sit for one or two days and nights before the cock takes his turn. Now and then, however, the cock will be the first to sit; but in such a case he will probably leave the nest for some hours during the day.

When sitting assumes its regular course, the hen sits from 8 or 9 a.m. to about 4 p.m. and the cock from 4 p.m. to 8 or 9 a.m. The bird whose turn it is to be on the nest usually keeps its seat till the other arrives to relieve it, when they at once change places. Soon after beginning to sit the cock loses his sexual vigour and inclinations and ceases his attentions to the hen.

It is quite incorrect to say that only the cock sits, or that during the day the eggs are left to the heat of the sun. The cock and hen sit alternately, regularly and steadily, night and day, during the whole period of incubation. Apart from incubation, it is necessary that the eggs should be covered during the day as a protection, in many parts against small carnivora and monkeys ; against the inclemencies of the weather, such as the frequent and violent hail and rain storms which sweep over the country ; and against the great heat, which in the summer is almost tropical.¹ The heat from the direct rays of

¹ I was, on one occasion, struck by the remarkable behaviour of a sitting hen on a terribly hot still day. I found her sitting, with raised body, over the nest ; that is, she had her feet and tarsi along the ground among the eggs as usual, but her body did not rest upon them ; she had raised it above them and was sitting on her " knees " (like a rolling cock), and a free current of air passed between her body and the eggs ; her wings were held a little away from the body and slightly drooped, the feathers over the whole body being on end, admitting the air to every part ; her neck and head were raised up in the normal manner of a non-sitting bird and she was panting with beak slightly open. The attitude is not uncommon among ostriches in very hot weather ; they can remain in it for a considerable time ; but I

the sun striking upon unprotected eggs, when, after incubation, development has once set in, is so great that it would kill the chicks. Sand thus exposed becomes so hot that even a hardened hand can scarcely endure it. On an average summer's day I tested the heat of the sand, keeping the thermometer in the shade, and found it to be 150° Fahr. The maximum temperature allowed to eggs in an incubator is 104° Fahr., though a few degrees more, if not maintained too long, are not greatly injurious; but if the thermometer stands at 150° Fahr. for some hours daily chicks will not incubate. However, argument is quite unnecessary; the hen sits on the eggs every day—of this there is no doubt whatever; they are not left to the heat of the sun; if they were, no chicks would ever result; they are covered by the birds during the whole period of incubation.

TIMES OF SITTING WELL APPORTIONED

There are several interesting points connected with the process of sitting. For instance, the time is

have not seen it assumed by a sitting bird on the nest on any other occasion. One result of the hen assuming this attitude was that all the eggs were completely in the shadow cast by her body and wings; but, although this was one of its effects, I should think she assumed it to cool herself because she was so intolerably hot in the scorching sun on the baking ground in the still air. The incident is remarkable (apart from the question of whether there was any deliberate intention of cooling the eggs—which I doubt) as indicating the importance she attached to the nest being covered and protected while she was responsible.

admirably arranged to allow each bird to feed. The ostrich is a peculiar feeder ; in the first place he walks rapidly on and on as he feeds, pecking a few leaves here and a few there in his stride, seldom halting unless he finds some plant particularly to his liking and then only for a minute or two. In the next place, he is not an indiscriminate feeder, but carefully selects what he likes. This, as a rule, consists of plants, which, owing to the nature of the country, are few and far between. He does not, however, go systematically in search of them, but strides straight on, eating those in his way. Thus he travels long distances while feeding and requires several consecutive hours if he is to obtain a satisfactory meal. The hen has about four or five hours to feed in the early morning before she goes on the nest ; and the cock has seven or eight consecutive hours through the day, after which the hen again has three or four hours in the evening, before she returns to sleep near the nest. Generally, the hen has a somewhat longer time to feed than the cock, but her time is broken into two portions ; she cannot wander so far in search of food as he can and thus has not the same opportunity of getting on to new ground, where food may be more abundant, from not having been visited so often ; for the ostrich is a destructive feeder, eating out the plants he likes when he has not a sufficiently large run. In compensation, the hen occupies the nest only half as long as the cock, who, however, has his feeding

time unbroken and half his time on the nest at night. It will thus be seen that, not counting the hours at night when both are sleeping (the cock on the nest), the duties of incubation are very evenly divided.

PROTECTIVE COLOURATION

The colour of each is admirably adapted to the time spent on the nest and furnishes interesting examples of protective colouration. It is scarcely possible to conceive a more effective disguise than the sober brownish grey of the hen for day sitting and the black of the cock for night. When on the nest, the ostrich lays its head,¹ neck and tail flat along the ground; its naked thighs are covered by the wings, the plumes lying close together on the earth almost hidden against the bird's body. Thus only the low, long-curved body projects above the surrounding level. The cock, at night, is, of course, almost perfectly hidden; while the hen, at daytime, closely resembles a stone, bush, ant-heap or any little inequality of the veld. One is surprised to see how close such a large bird can lie to the ground and how even an ostrich farmer may almost walk over a sitting hen in full daylight without seeing her. The cock is simply indistinguishable at night, except to a practised eye, and then only at a few yards' distance. It may be urged that the black

¹ This habit may possibly have given rise to the old and quite wrong idea that the ostrich hides his head in the sand, thinking he is hidden, while his body is exposed!

of the cock is not a protection in the morning or afternoon during daylight. This is not quite correct. In the very early morning, or in the afternoon towards sundown, it is most difficult to distinguish him ; and it is but for two or three hours altogether that he is in the broad daylight, that being the only time in the whole twenty-four hours when the nest is not protected in a singularly effective manner by the colour of the sitting bird, and there may be an adequate reason for this. Even then, however, unless one is close to the nest, his low-lying, long-curved, motionless form blends so closely with the ground and surrounding objects as to be much more difficult to discover than an inexperienced person could believe.

THE LITTLE EMBANKMENT AROUND THE NEST

As sitting continues, a little embankment is gradually raised around the nest, where the nature of the soil permits. This is not in the original plan of the nest, but is made during the incubation of the eggs. The sitting bird, while on the nest, sometimes pecks the sand up with its beak nearly as far from the nest as it can reach and drops it around the body. A little embankment is thus gradually formed, and often, just outside, a shallow irregular trench, from which the soil has been taken. The formation of both is aided by a peculiar habit of the birds. When the bird on the nest is much excited

EGGS OUTSIDE THE NEST

Often, during incubation, an egg or two will be found lying outside the nest. Most authorities maintain that the birds put them out designedly, and that such eggs are used as food for the newly hatched chicks, being broken for this purpose by the parent birds.

There is no truth in either contention. These eggs are rolled out accidentally and if replaced will not be rejected, as I know from having frequently marked and replaced them by way of experiment. They may be quite fresh, in some stage of incubation or rotten. There is no truth whatever in the statement that the newly hatched chicks are fed upon them ; but I have seen chicks a few days old greedily eating the dung of their parents, which often, after sitting, is in the form of small pellets. In the earlier days of ostrich-farming I have seen little incubator-hatched chicks supplied with soft cow-dung and beaten-up ostrich egg, but nothing of the sort is done now ; they are fed with succulent green food, which is enough for all purposes. If left to nature and allowed to run with their parents, they thrive perhaps better than under any other conditions ; only they become very wild and are liable to be killed by hawks, jackals and other animals.

THE HATCHING OF THE CHICKS

If an egg should be broken in the nest, the old birds eat it, shell and all, as they will often do when the first chick or two hatch out. This habit has no doubt given rise to the erroneous belief, expressed by one of the authorities, that the cock breaks the chicks out—cracking the shell with his breast, shaking the chick loose and then swallowing the membrane! The chicks hatch out unaided, and though no doubt the movements of the parents on the eggs do occasionally help to free a chick which has already pecked through and cracked the shell (as I have seen), there is no design in these movements, and no need for help.

If the sitting begins after the hen has laid her full complement of eggs, naturally all fertile eggs will have sufficient time to hatch. Even if she lays one or two after beginning to sit, still all may hatch, for often one bird will remain on the nest during the day (and of course at night) with such chicks as cannot yet stand or walk, while the other feeds close at hand with the stronger ones. Thus the full time for sitting may be, and often is, exceeded by some days, and all the sound eggs may hatch. But if the hen has laid, say, four or five after beginning to sit, it is probable that several will be left in the nest, containing large living chicks (which die in the shell), for the birds will not continue sitting for more than three or four days after the first chicks appear.

NEWLY HATCHED CHICKS

As the time for the eggs to hatch out draws near, the birds become much excited, probably from hearing the chicks crying in the shell or pecking at it to break themselves out (both sounds being very distinct); the excitement increases as the chicks appear.

When first hatched the chicks are perfectly helpless; the back of the head and adjoining portion of the neck are greatly swollen and out of shape, as are the legs, especially the tarsi and toes, which are puffed and jelly-like and of a transparent-looking, pinkish yellow. The eyes have a cloudy, expressionless appearance. For some hours the chicks cannot even hold up their heads; they cannot stand firmly until at least twenty-four hours old or get about at all until another day older, and then only in a very rickety manner, tumbling over every few steps; nor are they quick and steady on their legs until the swelling has quite subsided. They do not seem to have much consciousness for about the first twenty-four hours, but, when once they have found their legs, they soon become exceedingly wild unless handled, and rapidly attain to a remarkable speed. For about the first day they eat nothing; after this they may be seen, when the sunshine is warm, sitting on the edge of the nest, just free of the parent, pecking feebly and uncertainly at small objects on the ground or at anything within their

reach. The stronger ones will gradually wander away a short distance from the nest with the parent that is not sitting and eventually all will leave the nest, being tended by both cock and hen.

PARENTS AND CHICKS

When defending the nest the cock carries himself splendidly, with erect straight neck, his attitude being most imposing and defiant. But when the hen (or the cock) is advancing to protect the chicks, she comes with a rapid, shuffling stride, with lowered head, hissing violently, and with wings fluttering at right angles to the body, flat to the front, and almost touching the ground. Often both cock and hen will run away with the chicks; but, if the enemy is close, the chicks, especially when very young, will scatter in all directions and squat separately. Even when older they will squat, if hard pressed. Sometimes, to mislead the pursuer, the parents will feign injury, gradually leading him away from the little chicks. I have seen a cock fall, as if with a broken leg, several times within 200 yards.

When startled the parents emit a short sound of one note, which is a signal of alarm for the brood to scatter and hide. When the danger is past the chicks (which when squatting lie perfectly still, blending closely with the ground, and are most difficult to discover) arise and run about in all directions, calling with their penetrating bubbling cry; and

WHY SEVERAL HENS OFTEN SHARE ONE NEST

Now, how is it, if the ostrich is not polygamous, that several hens often share the same nest ?

The following considerations may not quite solve the question, but serve, I think, to help towards its solution.

In a troop of young birds the sexes are about evenly balanced, and, presumably, in the wild state this balance is not much disturbed. But there is probably a preponderance of hens even in the wild state, for in the breeding season the cocks fight among themselves, occasionally with fatal results. In domestication the preponderance of hens is no doubt greater, for cocks are killed not only by kicking at each other through wire fences, thus breaking their legs, but also not infrequently by people they attack. In domestication, neither all cocks nor all hens come into season ; but, as the cocks killed are among the most vigorous and mettlesome, the proportion of hens that come into season is greater than that of cocks.

UNATTACHED HENS

When a cock is ready to breed, he pairs with one hen and with her makes the nest. If they escape the intrusion of other hens this state of monogamy continues and chicks result ; if they do not, polygamy will probably take place, almost always with disastrous consequences to the nest.

Now, there are other hens in season ; being in excess of the cocks (which have already paired), they are unattached, having no cocks to mate with or make a nest for them.¹ They surrender to any cock and are thus fertilised. So excited and overwrought are they that tame hens will often squat on the approach of a man. Such hens generally attach themselves to the cock whose attentions they have attracted (often by intruding on his nest and remaining in the immediate neighbourhood) and lay regularly, at any rate for a time, in his nest. If they cannot lay in the nest because it is already occupied, they will not go at once to another nest but will deposit their eggs just outside the nest ; if there are many hens to one nest so much bother ensues, however, that some of them betake themselves to other nests. Others lay in any nest indiscriminately and are a great nuisance to the farmer. Some keep to one nest until they have laid about a sitting and then begin to brood ; but in such hens the brooding fit does not generally last long, as they can get on the nest only occasionally, and are much disturbed by other hens. Each nest is owned by one cock, but I do not think that generally the hens of his nest are fertilised exclusively by him ; sometimes I know they are not. Other hens in season seem to wander about in an unsettled condition, chancing to attract the attentions of any

¹ Only one case of a hen unaided making a nest has come under my observation.

about it. Thus there are no chicks ; the eggs become broken or addled and the nest is eventually abandoned. Under such conditions it not infrequently happens that the cock (and perhaps some of the hens) abandons the nest in disgust before the full period of incubation is completed. This he never does if he has only one hen and is undisturbed by other birds.

It must also be noted that chicks are attended by one cock and one hen, and that the pair will kick any birds, chicks or adults, that approach them ; also that it is a common rule among ostrich farmers to camp off special breeding birds in pairs.

Every authority that I have consulted holds that the ostrich is polygamous, but the evidence against polygamy is very strong ; a pair make the nest ; the hen lays all her eggs (a full sitting) in that nest ; the hatching of the eggs and the care of the chicks are shared equally by cock and hen ; the cock loses his sexual vigour and ceases his attentions to the hen soon after beginning to sit ; and one hen to a nest yields the best results.

EVIDENCES FOR MONOGAMY STRONGER THAN FOR POLYGAMY

I do not, however, think it can be maintained that the monogamy of the ostrich is proved absolutely, but I decidedly think that the arguments in its favour are stronger than those in support

of polygamy. That there is a thoroughly organised polygamy I do not believe. It may perhaps be said that the present state of the relation between the sexes is not quite organised ; but if monogamy is not yet firmly established, I hold, at least, that the tendency is that way and am certain that monogamy is the state most suitable to the propagation of the species, though, under certain conditions, polygamy may be resorted to.

CURIOUS AND EXCEPTIONAL RELATIONS

Finally, it must be allowed that, while all the facts at my command point strongly to the conclusion that the ostrich is not only often monogamous but that monogamy is the only condition perfectly favourable to the successful hatching and rearing of young and that all the arguments in favour of polygamy break down on examination ; yet the fact remains that there are a large number of curious and exceptional circumstances connected with the nidification, sexual relations and parental habits of ostriches that I am not yet able to account for exactly, either on the supposition of fully organised monogamy or polygamy. It is possible that when a larger number of careful observations have been made and the ostrich, both in its wild state and under domesticated conditions, has been scientifically studied, we shall find certain curious and exceptional conditions governing the nidification and sexual

relations of these birds. And it is much to be desired that those especially who have opportunities of studying the ostrich in its wild state, or of obtaining exact information from those who have had these opportunities, should carefully collect all facts, as this matter is one of much scientific interest.

CHAPTER V

THE ZAMBESI FALLS

By S. C. CRONWRIGHT-SCHREINER

I left De Aar for the Falls by the special excursion train (of which there are three run by the Government every winter) at 8.15 a.m. on Sunday, 23rd June 1912. The train was full, carrying one hundred and fifty excursionists in addition to the staff. The distance is one thousand and forty miles. There were twelve long corridor coaches, including two dining-saloons, which were in the middle of the train, five passenger coaches in front of them and five behind. A special chef is attached to these trains ; we were well catered for. Three people are put in each compartment, leaving one upper bunk for luggage. There is a small library on board. It is curious how people were divided by the two dining-saloons ; they hardly ever met, even up to the end of the journey.

Our first stoppage of any length was at Bulawayo ; but before that we ran through Bechuanaland, an open, tree-dotted country of plains. At every railway station the natives came to sell curios ; at

one, a small black baby was the centre of attraction, and the excursionists were amused to see the anxiety of the parents lest it should be carried off by the train. It was a splendid child, stark naked, of course, "an image of God in ebony." We reached Bulawayo early on Tuesday morning. Some twenty of us, in several motor-cars, started after nine o'clock for the Khami Ruins, an easy hour's run by motor. These ruins are on the tops of koppies near a river, and are of the same kind as those at Zimbabwe, though not so extensive. Some archæologists hold they are Phœnician in origin, but they are probably quite recent. They were apparently defensive; perhaps the gold was stored there. Permission was once given to some persons to sift the sand in these ruins, when a few trinkets and nuggets of gold were found; but it did not pay, and the "finds" were placed in the Bulawayo Museum. On our return, my car ran round Bulawayo and I saw what was once the site of Lobengula's "Great Kraal," now a good-sized town and the capital of Rhodesia. The driver of the car, a young Englishman recently from Hampshire, told me he was paid twenty pounds per month and the driver in front (an old hand) thirty pounds per month; he added he could live on ten pounds per month.

Next morning we were at the Falls at seven o'clock. We saw the "smoke" from afar, like that of a great grass fire. What struck me on the journey was the

dryness of the whole country from the time we entered the Bechuanaland Protectorate. It was parched all the way. The trees, nowhere dense, but scattered about, are very beautiful, as indeed is the whole country. It is covered with strong grass often ten feet high, growing between and under the trees (except where they are too thick, which is not often). Three or four years ago the train ran into and killed a big bull elephant. I saw the spot and the photographs. At times (especially a run of about ninety miles along the edge of the Kalahari Desert) the dust was intolerable. As we had no wind all the way and as much of the line is laid through sand—fine, deep, red sand—the train raised and ran for long distances in a cloud of impalpable dust; windows had to be kept shut, but the sand came in—no novelty, it is true, for one who has lived in De Aar!

At the Falls Hotel (a mile from the Falls) the undergrowth and grass have been cut out and the train comes to a stand in a beautiful natural park. The hotel¹ is of corrugated iron, wood-lined, and has a dining-room to seat two hundred and fifty people. In addition there are only a couple of "houses" and a few huts in which some white people live, one a photographer and seller of curios, another a hunter and maker and seller of curios. The hotel was crowded; I chose to sleep in the train. The catering was excellent; the cook

¹ There is a much better hotel to-day.

having gone "on the spree," our chef was commandeered.

I had formed very erroneous ideas as to the country, the climate and vegetation at the Falls. I have mentioned the scattered trees, none of which (except baobabs, about a mile away) are of any considerable size. The soil is soft sand and was as dry as it could be, as was the atmosphere too. So different from what one had imagined. The days were warm, not hot, but just pleasantly warm, and the nights were quite cool; inclined to be frosty! I had never realised that it is a country where, for about eight months in the year, no rain falls. It must be lovely after the first rains, when the grass becomes green. The insect life in summer is said to be inconceivable; there goes up one long, unbroken screech from the myriad host. It would be difficult to imagine more beautiful weather anywhere than we had at the Zambesi in June—not even in the Great Karoo in May and June, when the air sparkles and glitters and it is like breathing champagne. No wind the whole time we were there, hardly a gentle breeze even. The dry veld goes up to the water's edge. The only damp spot is the misnamed "Rain Forest," which gets the spray.

You walk by an easy path to the Falls. Crossing over on foot to the eastern cataract, my first view of the Falls was from the great bridge, whose mighty and beautifully adjusted weight, high up in the air,

spans the Gorge like a spider's web. It seems almost impious to attempt any description of the Falls ; language was not made to convey it, and adjectives merely belittle this prodigy of nature. For a first impression, stand on the bridge after sunset, just when the brief tropical light begins to wane. That level is not very much below the straight brink of the Falls. You look up the darkening Gorge and you see a vignette of a portion of the brink and the falling water, where its cascades are not so massed together, but drop in many separate strings. As it seemingly hangs there, it is an immense lace curtain of the gods. Back of it is “ behind the veil.” Then glance down perpendicularly where, at the bottom of the Gorge, the water of the mile-wide river that has just leapt the Falls writhes and crawls sinuously four hundred feet below you. Quiet and slow and innocent it looks ; but, if you think, it becomes twisting, cold, green steel—of what depth ?

I crossed on the river by canoe from the east bank to Livingstone Island. The passage is made about three hundred yards above the Falls, and the water that runs under your canoe leaps, not many seconds later, its reverberating plunge into the Chasm. At times the current—clear, greenish, delicious water—was strong, but the canoe never swerved from its straight line, did not even turn its nose down-stream or up-stream. It was paddled by four Barotsi men, two in front of me and two behind ; a fifth, right on the stern, plied his paddle first on this

side and then on that, keeping the boat perfectly straight. When not actually in the current, the canoe travels rapidly.

From Livingstone Island, with one edge on the very brink of the precipice, you get a superb view of the Main Cataract. The day I was there a scarcely perceptible breeze brought some of the spray over the island, with the dream-like result that changing and miniature rainbows danced before you to the very edge of the Falls and brought you face to face with the huge "million-coloured bow," the main current seeming to plunge through its superb arch as it rode on the mist of the Chasm. Stand on the extreme brink of the Falls. The little streamlets, with their baby rainbows, trickle, laughing and rippling, to the edge, and then, tossing their gleaming bubbles in the air, leap gaily into the abyss and join the great waters again "with willing sport to the wide ocean." The main stream passes at your very feet for its great leap—a moment it curves over the edge, green, arched, like glass; the next, a snow-white mass of foam, it drops perpendicularly, a thundering avalanche, into the boiling abyss.

From the western bank another day I was paddled to Cataract Island, also on the brink of the Falls. This journey is made even nearer the edge. The grandest view of the main cataract is from here, one side of you the "Leaping Water," the other the Main Falls. You can actually look over the edge and see, at your very feet, the abyss into which

the water plunges, but you cannot see the bottom ; it is all a weltering chaos of awful waters, smashed to powder, with an angry spray rolling up from below in dense rushing billows, like the breath of some subterranean monster. Opposite you is the other side of the chasm, eighty yards across according to Livingstone ; and, on your right, the “ Leaping Water ” ! Oh, the Leaping Water ! May I see it with my dying eyes ! You stand on its edge ; you see the green water slide over, with the great still river behind it ; it strikes a ledge as it glides down the incline before its final plunge, and the next instant it is smashed at your very feet into such a mass of froth that you are awed. Then, with a great heave and throwing a million bubbles into the glittering sunlight, it takes its mighty leap into the inferno, white as snow, hurling a spray to the opposite wall, so that streams run down its dark face ! As I stood, spellbound, thinking, if one *had* to die, how superb to take that last leap with the living waters, I saw something tiny coming up above the stream, scarcely clear of the bubbles, just skimming the boiling torrent—a water-wagtail, and then another ! They came and sat near me with feathers glistening.

On the other side of the Chasm is the “ Rain Forest ”—a narrow strip of trees, watered by the spray. Leave it ; to me it is almost negligible ; get on to the western bank of the river and walk to the edge of the Chasm, opposite the Main Falls. You

stand on a strip of rock, in some parts bare, in others grass-covered, perpetually swept by the wind created by the Falls and drenched at short intervals by the heavy showers from the "smoke." Listen to the roar! See the Falls opposite as the wind, created by them, sweeps at times the heavy spray away! See and feel the mysterious "smoke-" laden wind tearing straight up from God knows where! Feel the angry rain hurled on you! The elements are at strife; there is the beginning and the end of things, and you are *in* it; you are part of it—a vibrant atom in the titanic forces. It is elemental, cataclysmic.

Then go down to the Falls at night and see the unearthly lunar rainbow in the white moonlight, one end on the brink of the Falls, the other lost in the dark at the bottom of the Chasm. See its still arc, rigid as steel, curving over the restless waters, superb in its brilliant yet delicate colours, rising into the clearer air at the top, buttressed against the brink where the spray begins. See, as I did, the fairies and pixies and other "little people" sliding up and down the heavenly curve, dodging one another round its glittering arc! You will then know it is scarcely possible that earth can hold anything else so grand, so awe-fully beautiful, as that mile-wide river plunging into "the dark, unbottomed, infinite abyss," foaming and tearing from both ends to the Boiling Pot, mightily crushing through the narrow Gorge. I want to stand in a

great thunderstorm on the desolate rock between the Rain Forest and the edge of the dark precipice opposite the Main Cataract where the billowing “ smoke ” rushes up, to hear the “ deep and dreadful pipe ” of the thunder reverberate to the roar of the great waters, to see the “ Smoke that Sounds ” mingle with the thunderclouds and the “ Place of the Rainbow ” blaze under the electric current.¹

¹ “ The Smoke that Sounds ” and “ The Place of the Rainbow ” are the English equivalents for the native names of the Falls. *Kopjes* (*koppies*): “ little heads,” hillocks. *Veld*: wild, uncultivated country.

(The Zambesi is said to be about a mile wide at the Falls. Clean-cut, right across its whole width and practically at right angles to the stream, is “ The Chasm ”—the great split in the rock of the river-bed—about eighty yards wide at the western end and somewhat wider at the eastern, and nearly four hundred feet deep. Into this chasm the whole river, divided into several streams by small islands on the brink, falls perpendicularly from summit to base. About one-third of the way from the eastern end is “ The Gorge ”—a gap in the great wall opposite to and almost parallel with the Falls—about one hundred yards wide, with the water flowing out between two perpendicular precipices some four hundred feet high. The Gorge is the only outlet. The waters at the bottom of the Chasm rush from both ends towards the Gorge, meeting at its narrow entrance in what is well called the Boiling Pot; passing into this narrow gateway, they are in the Gorge, and continue to flow far-down between its precipitous walls. At a little distance, the railway bridge spans the Gorge, between three and four hundred feet above the water, resting an end on the level of each bank. The waters, after entering the Gorge, are not dammed up or thrown back or in any way impeded, but continue to flow below the level of the bottom of the Chasm. You cannot get to the islands on the brink of the Falls when the rains come, or for some considerable time after they cease—the volume of water in the river is then too great; you

must wait until it subsides. When I was there (towards the end of June) it had just become possible to get to the islands, so that a great volume of water was still rushing over, and the Falls were correspondingly impressive. The flow gradually decreases during the dry season, until, later in the year, before the rains, comparatively little water goes over and much of the awful grandeur is lost.—S. C. C.-S.)

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