

# SCIENTIFIC AMERICAN

## SUPPLEMENT. No 1059

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Scientific American Supplement, Vol. XLI. No. 1059.  
Scientific American, established 1845.

NEW YORK, APRIL 18, 1896.

Scientific American Supplement, \$5 a year.  
Scientific American and Supplement, \$7 a year.

### A HIPPOPOTAMUS HUNT IN EAST AFRICA.

WE publish herewith an engraving (for which we are indebted to our worthy contemporary Ueber Land und Meer) illustrating the return of a hunting expedition in East Africa. All of a herd of hippopotami had been killed but one, which continued to devastate the rice and millet fields; so a party, consisting of two boat loads, started off early one morning in search of the offender. The oars were used very little, for it was necessary to move as quietly as possible, but the boats drifted quite rapidly, and in about an hour reached the place that had been the favorite haunt of the herd. Nothing was to be seen of their sole representative. Presently, however, those in the first boat

hours before the body rose to the surface again and could be secured and towed back to Mitini, where the party received a very warm welcome, the joyful "Jambo, Jambo!" of the negro women sounding loudly as the boats grated on the sandy beach.

### SERPENTS' FANGS.

By HAROLD S. FERGUSON, F.L.S., in Science-Gossip.

THE general practice of dividing snakes into two divisions of poisonous and non-poisonous has been declared in the light of modern knowledge to be unscientific. It is well known that all poisonous snakes have poison fangs which are grooved, and that down this groove is poured the poison into the wound made

sive look, and with their flat heads and grooved teeth might easily be mistaken for the deadly poisonous snakes. I have, however, never seen them exhibit any signs of having injected poison into their prey. The common green tree snake of India is another possessing grooved teeth, but it is a very gentle snake, and the only one that the natives appear not to be in dread of, for they will handle it freely, though they take good care to tie up its head with a rag first. No other kind of snake will they on any account touch. The grooved teeth in this instance are quite at the back of the jaw. It is certain that the grooves must have been developed for some purpose, and it is therefore reasonable to conclude that they serve as poison ducts; but as far as one can judge from seeing these snakes feed in captivity, they simply seize their prey and



A HIPPOPOTAMUS HUNT IN EAST AFRICA.—ORIGINAL DRAWING BY HERMANN HIRSCH.

heard a noise, and when they turned they found the canoe behind them had been upset and all that was to be seen of the crew was the woolly black heads. The hippopotamus had remained quietly under the water until the first boat had passed and then attacked the second, but the natives soon recovered from their fright and swam to the shore with their boat, which was righted and baled out. Those in the other boat decided to land, for their boat was of slight build and ill prepared to withstand an attack by their enemy, whose head was uncomfortably near them. They concealed themselves among the bushes, and after watching patiently for some time with their guns turned toward the spot where the creature had been seen, the great snout reappeared, then the eyes were seen looking all about, and finally the whole head was above the water, making an excellent mark for the men to aim at. Five shots were fired almost simultaneously, the head disappeared, but remained under water only about half a minute, and then the gigantic body was seen to turn over several times, causing a noise and commotion like that made by a water wheel, then everything was quiet and only a few air bubbles indicated the spot where the colossus lay. It was two

by the fangs; but it has been found that certain so-called harmless snakes are also possessed of grooved fangs. These fangs, unlike those of the very poisonous snakes, are situated further back in the jaw; hence the family of the Colubridæ, to which they, equally with the poisonous sea snakes, and the cobras, and bungari of the Elapinae belong, has been divided into three divisions: the Aglypha—that is, those not having grooved teeth—from two Greek words meaning "not" and "hollow;" the Opisthoglypha—those having grooved teeth situated in the back of the jaw; and the Proteroglypha, or those with grooved teeth in the front of the jaw. To the second division belong many of the tree snakes, and Mr. Boulenger writes: "Experiments recently made on Cælopeltis, a genus allied to Psammophis and Dryophis, have shown that these snakes are poisonous and that they paralyze their small prey before deglutition. It is probable that all snakes with grooved teeth will prove to be poisonous to a greater or less degree, as it is clear a priori that these grooved fangs are not without a function."

Another genus of tree snakes, Dipsas, lends itself to this view, for the species comprising it have a repul-

swallow it once without letting it go. There is no appearance of the prey, usually a frog, being paralyzed by poison, and the whole act is performed so rapidly that there does not seem to be time for anything of the sort to occur; however, there are the teeth.

There are then several degrees of perfection as regards poison fangs represented in the teeth of snakes. First we have the grooved, fanglike teeth of the tree snakes, whose salivary gland gives a secretion the properties of which can hardly be said to be poisonous at all, or, at least, only in a very slight degree, the fanglike teeth being situated behind on a lengthened maxillary bone. Then there are the deadly Elapinae, whose poison fangs are situated in front and the poison glands of which secrete an active poison; here the fangs are more deeply grooved or folded over to form a channel; they are placed on the front of the maxillary, which has a slight power of movement; and, lastly, we have the highly developed poison apparatus of the vipers, where the grooving has been carried on so far that the two sides of the groove have coalesced and formed a complete channel, giving the appearance of a perforated tooth. In these snakes the maxillaries have a considerable power of move-



ment, so that the fangs can be erected or depressed at the will of the snake.

To render these stages clear it is necessary to enter a little more into detail about the bones of the head of a snake. If the head of an ordinary harmless snake be examined, a bone will be found running from the point of the jaw as far back as the eye socket, of which it forms the base; this bone is called the maxillary. In it are fixed a considerable number of teeth. It is joined to another series of bones, also studded with teeth, forming an interior row; the bone joining it is called the transpalatine, or transverse bone, and the bones holding this interior row of teeth are called the palatine and the pterygoid respectively. The latter extends backward and meets a small bone called the quadrate, which unites it to the skull. This is the ordinary arrangement of the bones in the head of the common harmless snakes. Now compare the jaws of a cobra. Here the same three bones may be seen, the maxillary, the transverse and the pterygoid, but their relative proportions are considerably altered. The maxillary is much shortened and bears the grooved poison fang, with only two or three solid teeth behind it; the transverse bone is lengthened, and as the maxilla and quadrate bones are movable on the skull, there is a power of movement of the fang through an angle of about forty-five degrees, so that in these snakes the fang is partially erectile. The perfection of mechanism, however, is reached in the vipers, especially in the Russell's viper of India. Here the maxillary is shortened excessively and heightened so that it is higher than it is long. The transverse bone is proportionately enlarged and the maxillary is like the head of a hammer at the end of it. It bears the fang above, there being no solid teeth behind it. The effect of the snake opening its mouth is to guide forward the quadrate, which acts on the maxillary by means of the intermediate bar so that the lower side containing the fang is pushed forward and the latter can then be erected at the snake's pleasure by means of certain muscles. This movement gives the power of altering the position of the fang ninety degrees. When at rest, with the mouth closed, the fang is resting with its point turned backward along the jaw toward the angle of the mouth, but when the mouth is open the fang can be erected at right angles to its former position.

In the sea snakes, the maxillary is comparatively long, and there are two fangs with solid teeth behind. There is, in consequence, hardly any power of movement of the fangs at all.

A word as to the effect of the poison and the treatment. Generally speaking, we may say that the poison acts upon the nerves, and that the patient dies of nervous exhaustion. Hundreds of antidotes have been tried, most of which have proved of no use whatever. Indeed, so little effect have they in India, and so eager were people there to proclaim, without sufficient trial, that they had discovered an infallible remedy, that the late Dr. Shortt, of Madras, who experimented for years on snake poison, had, at last, to require a deposit of fifty rupees before he would undertake to try the so-called remedy. This had the effect of checking the supply of pretended antidotes. The only remedy at present found to be at all efficacious is strychnine. This has proved successful in Australia, where the snakes are nearly all poisonous, and nearly all belong to the subfamily of the Elapinae, that to which the cobra belongs, but their poison varies in its intensity, and none of them appear to possess a poison as fatal to man as is the cobra's. There are few cases on record of men recovering, into whose veins the poison of this snake has been injected. All the cases of so-called recovery are probably due to the fact that the snake has bitten without injecting poison.

As to the remedial action to be taken, it must be remembered that rapidity of application is essential. In man the circulation of the blood is completed in from twenty to thirty seconds. It is, of course, slower in the capillaries, and proportionately more rapid in the larger veins and arteries. If, then, a man be bitten and the poison injected into one of the larger vessels, death will come rapidly. If, however, the poison has only reached the capillaries, the action will not be so rapid. Sir J. Fayrer recommends heroic treatment in cases of snake bite, such as deep cutting of the wound, burning, and so on. All this will probably be found useless. The best chance for the sufferer is to suck the wound, if he can possibly get at it, and, as far as possible, to stop the circulation at the part by tying a ligature as tightly as possible near it. Medical aid should then be sought as soon as possible. The natives of India pin their faith on the efficacy of "munthrums" or charms. One once informed me that his uncle had been cured in this way. On inquiry, it appeared that his uncle had been bitten, but that he had not seen the snake that bit him. He was first taken to a woman charmer, who said she could do nothing for him. He was then made to walk twenty miles to another snake doctor. Arrived there he became unconscious, but soon recovered. Now, this is a case which clearly shows that, if the man was bitten by a poisonous snake, no poison was injected. For had it been, he certainly could not have walked twenty miles. The symptoms were due simply to imagination, which, it is well known, will cause such to appear. The man would have recovered without treatment of any sort, but his faith in the snake doctor did away with all the harmful symptoms produced by his imagination. As to the snake doctors themselves, they have a firm belief in their own powers, and are not actuated by mercenary motives in professing to cure their patients. For, as a rule, they do not receive any pay for their treatment.

#### ITALY AND ABYSSINIA.

FOLLOWING upon the stirring events which led up to, and culminated in, the battle of Adowa, there has come a lull in the campaign. The Italians have spent the time in gathering themselves together, and taking the count of the survivors of the later terrible disaster, and the Emperor Menelek has been content to rest upon the laurels which had been gained in a brilliant victory over trained European troops.

It is certain that the overthrow of the Italian army will have a widespread effect upon the native African races at large. It has been pointed out by African

travelers, who have an intimate knowledge of the country, that the tidings of Adowa would be quickly carried from end to end of the Dark Continent, and that its effect would be to shake the belief of the natives in the invincibility of the trained armies of the Circassian invader. It is quite possible that the increasing restlessness of the wild dervishes of the North and the recent outbreak of the Matabeles in the South have been stimulated by this crushing defeat.

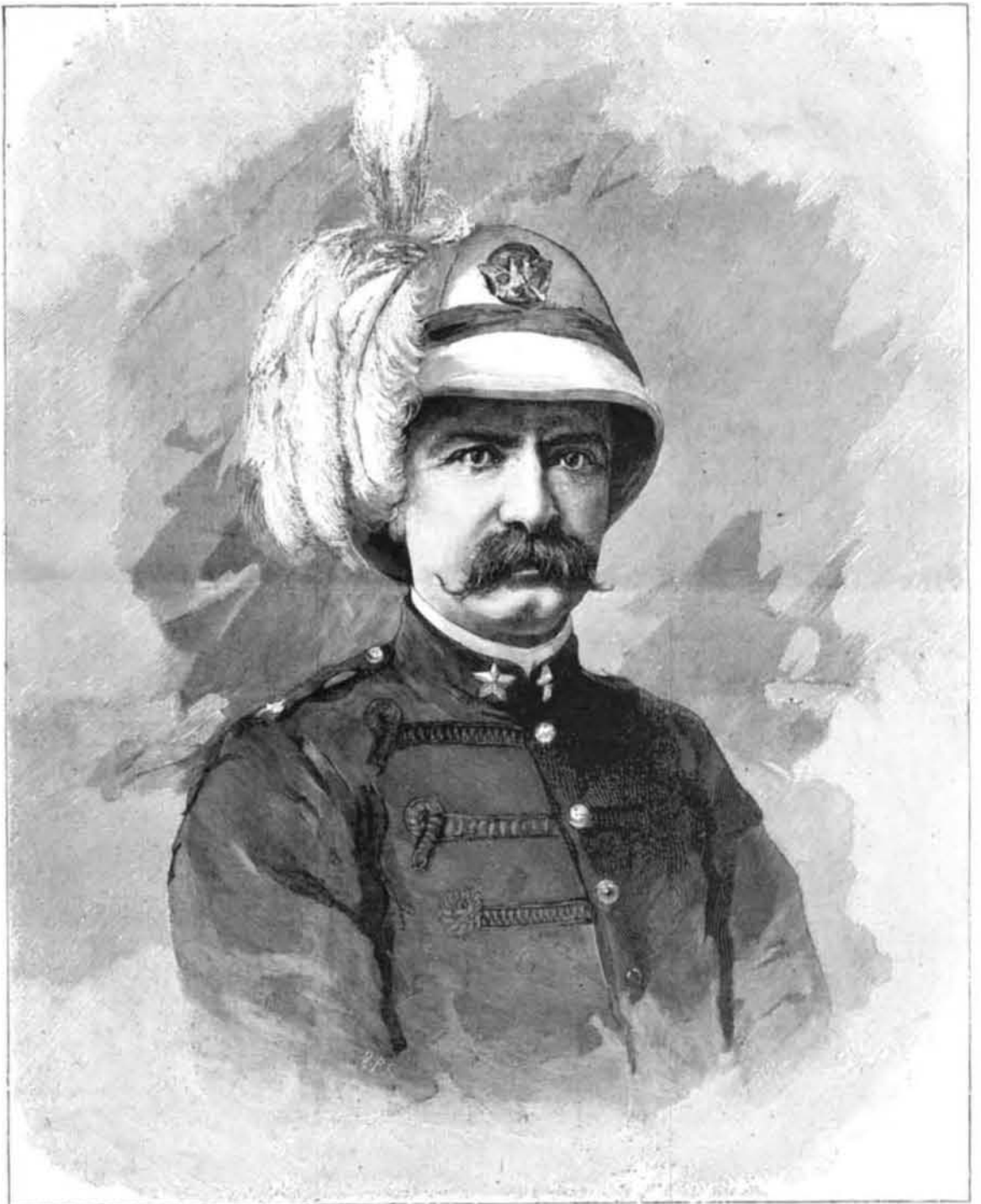
Military experts are generally agreed that Gen. Baratieri showed great incapacity or recklessness in handling the Italian troops. The enemy appears to have fallen upon the van of his army suddenly and in overwhelming force, and this at a time when it was too far ahead of the main body of troops for the latter to render efficient support.

The van fell back in confusion and so crowded the main body that it was unable to take up any regular formation. It is urged that if a proper force of scouts had been thrown out ahead such a sudden attack by the Abyssinians in mass would have been impossible. The appointment of Gen. Baldissera was obviously the right thing to do. The policy which has lately governed the administration of Eritrea, and ended so disastrously, was bitterly opposed by him from the first. It was his aim to avoid any alliances with the native chiefs, and he managed to play them so adroitly

ropean powers, and there is noticeable a tendency on the part of England to break away from her reserve, and identify herself more closely with the Triple Alliance. The sympathy of the latter power for Italy seems natural, when we remember that it was at the invitation of England that Massowa was occupied by Italian troops. The continued occupation of Massowa and the ascendancy of Italian influence and power in this part of northeastern Africa is earnestly desired by the British government, as a check upon the turbulent tribes that inhabit the upper Nile country. When England undertook the task of rescuing Egypt from the chaos into which it had fallen, she had to perform the double task of reforming the internal affairs of the country and driving back the threatening hordes from the south. It is unquestionable that the Italian reverses have stirred up the military spirit in the warlike Mahdists, and the weakening of the grasp of Italy on the country to the east of them has emboldened the dervishes to commence an advance "en masse."

The intimate relation between Italian and British interests in northeastern Africa was clearly implied in a statement of Mr. Curzon, in the House of Commons, justifying the dispatch of an expedition up the Nile against the dervishes, in which he said:

"The Italians are not only engaged in battle with



GEN. ANTONIO BALDISSERA, NEW CIVIL AND MILITARY GOVERNOR OF ERITREA.

one against the other as to thereby strengthen the position of the colony and extend its influence. He was opposed to the treaty with Menelek; and it was his distrust of the policy which has now resulted so disastrously which led to his return and the appointment of Gen. Baratieri. The career of Baldissera has been a checkered one. His childhood days were passed amid humble surroundings in Italy. Then we find him an officer in the Austrian army, where he gained considerable distinction. Later he returned to accept service in his native country, where he showed the same capability that had won him distinction abroad. One would judge from his portrait, which is reproduced from *L'Illustrazione Italiana*, that he is a man of great force of character, and he has shown that he possesses an uncommon share of civil as well as military administrative ability.

Immediately after the defeat of the Italians at Adowa public interest was transferred from Africa to Europe; and it began to be asked what effect the reverse would have upon European politics. Russia lost no time in showing her sympathy with Abyssinia by decorating the Emperor Menelek with the highest military decoration she bestows, and this was followed by expressions of sympathy from Germany and England for the Italian government. Its effect has been, if anything, to accentuate the "status quo" of the Eu-

ropean powers, and there is noticeable a tendency on the part of England to break away from her reserve, and identify herself more closely with the Triple Alliance. The sympathy of the latter power for Italy seems natural, when we remember that it was at the invitation of England that Massowa was occupied by Italian troops. The continued occupation of Massowa and the ascendancy of Italian influence and power in this part of northeastern Africa is earnestly desired by the British government, as a check upon the turbulent tribes that inhabit the upper Nile country. When England undertook the task of rescuing Egypt from the chaos into which it had fallen, she had to perform the double task of reforming the internal affairs of the country and driving back the threatening hordes from the south. It is unquestionable that the Italian reverses have stirred up the military spirit in the warlike Mahdists, and the weakening of the grasp of Italy on the country to the east of them has emboldened the dervishes to commence an advance "en masse."

This was on March 16, and on the following day the new Italian Premier, Marquis di Rudini, announced that on March 8 Gen. Baldissera had been instructed to treat for peace on the best terms obtainable. This was followed by the following significant statement:

"But the government is now convinced that in lieu of a treaty of peace, hurriedly made, it would be far preferable first to establish a state of things agreeing