

RAISING OSTRICHES IN THE UNITED STATES.

BY DAY ALLEN WILLEY.

The Dark Continent has always had a monopoly of the ostrich business, but the United States threatens to become a rival in this industry, and may take away the laurels from Cape Colony, which has been one of the great centers for breeding these birds. The story of their introduction into this country by Mr. Edwin Cawston, of California, is familiar to the readers of the SCIENTIFIC AMERICAN.

The success of Mr. Cawston's work has resulted in two other ostrich farms being established—one near Jacksonville, Fla., and another in Arizona. In connection with the Florida farm is a racetrack, where several ostriches have been broken to harness and have paced a mile in 2:30. Mr. H. J. Campbell, the superintendent, has from 200 to 250 adult birds under his care. As each weighs from 200 to 450 pounds, and their heads are from six to eight feet above the ground when the neck is fully stretched, an idea of the size of the flock can be gained. They average much larger than the birds shown with menageries, as they have plenty of space to run about in and stretch their legs, so to speak. Their bill of fare is not expensive. When but two or three days old, the chicks display their appetite for such delicacies as gravel and bits of bone, which is really the first "nourishment" they take. Two or three days later they will eat bran, grass, cabbage leaves, etc., upon which they grow rapidly. In fact, a healthy ostrich will increase its size at the rate of a foot a month for the first few months, and be large enough to kick a man over by the time it is a year old. Many accounts have been written of the fierceness of the African ostrich, but most of the statements are exaggerated. During the laying season the males become quite ferocious, and one must be very careful in approaching a nest, as he may get a kick which will not only knock him senseless, but possibly wound him badly, as each bird has upon its feet claws which will cut like a knife. A curious fact is that if a person stoops over when attacked by one of the large birds, he may save himself from the kick, as it cannot exert any force below a height of three feet, owing to the peculiar manner in which the legs are jointed. The keepers at the Jacksonville farm take with them small dogs, which will drive the largest ostriches anywhere about the pen. The birds realize that they cannot harm the dogs with their feet, and fear them more than a man.

Ostriches are very much like other birds in hatching and rearing their young. Shortly after pairing off, the two birds will begin to build a nest, or rather to dig one out of the ground. The male bird rests his breastbone on the ground, and kicks the sand out behind him. When one side is sufficiently deep, he turns around and operates in a like manner, until a

sitting on the eggs from about four o'clock in the afternoon until nine o'clock the following morning. It may be understood with what skill this is performed when it is remembered that 250 to 400 pounds of ostrich are bearing down upon fourteen eggs. At about nine o'clock in the morning the hen takes his place. The male ostrich, however, with remarkable intelligence, relieves the female for an hour in the middle of the day, while she goes in search of necessary nourishment. A pair will follow this schedule with regularity for forty days, when the chicks can be heard in the shells.

A fair-sized egg weighs about four pounds, or as



Holding a Brooding Ostrich from the Nest with a Forked Stick While the Eggs are Being Examined.

much as two dozen hen's eggs. The size of the chick as it emerges from the shell is wonderful. It does not seem as if it could be half as large as it really is. This is due to the fact that the down and feathers, which cover it before it sees daylight, spread out when it leaves the shell, and nearly double it in size.

When a year old, the plumage of the ostrich is usually large enough and fine enough to begin plucking, which is one of the most difficult and dangerous operations of ostriculture. A few of them are driven into a small corral, when one by one they are pushed into a small angular inclosure, and a long, narrow bag is placed over the head, with a hole in the end to breathe through. Then one man holds the bird, while the operator skillfully clips and pulls at the feathers that are ripe. Blinded the bird becomes very tame, but care is exercised by the men to avoid the kicks that necessarily are included by the creature in this per-

formance. Before coming into the hands of the milliner and dressmaker, however, the glossy covering of the bird must be subjected to several processes. The plumes are tied on strings about four feet long, singly or in bunches of two or three, according to their size. Then they are scoured, cleaned in soapsuds, and rinsed frequently, when they are ready for the dyer. After dyeing comes more rinsing in clean water containing starch. Then the feathers are beaten on a smooth board until they are free from all particles of starch. After this they go to the workroom, where skilled operators "finish" them, and here again they are graded. This grading is even more important than the first, and years of practice and observation are required to render the operator thoroughly competent. They then go to the sewing department. Each "feather" used in the trade consists of several sewn skillfully together, three, four, or five feathers, end to end, according to the value and thickness desired. After being sewn, the feathers are steamed, in order to allow the fibers to assume their natural position, and are sent to the curler, who gives them that graceful shape, both in fibers and stem, so much desired. From the curler they pass to the buncher, who combs them and gives them whatever style is demanded at the time for sale in the open market.

Comparison of Costs for Steam and Electric Traction.

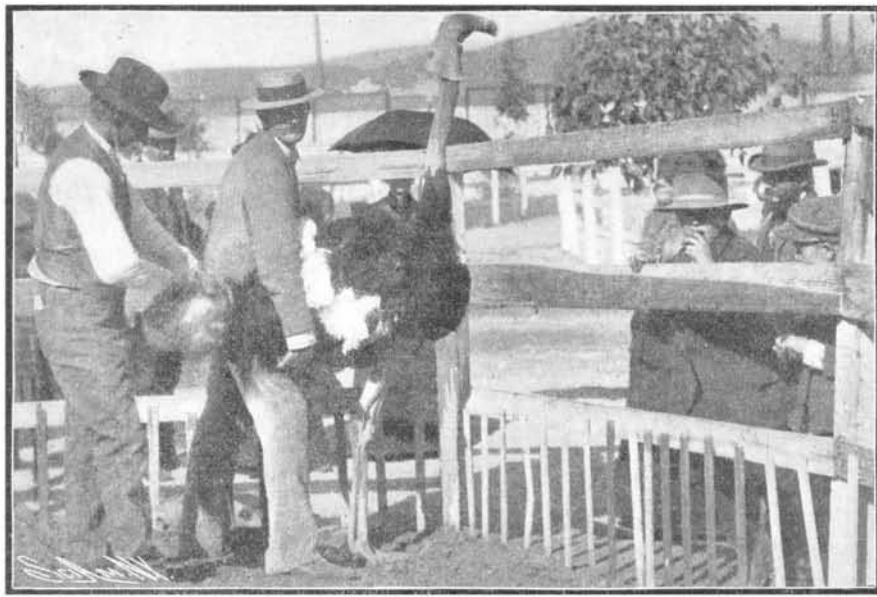
Dr. Reichel, whose very graphic account of the famous run from Berlin to Zossen of 130.4 miles per hour the readers of this journal will doubtless remember, has given some rather interesting cost comparisons between steam and electricity from the German standpoint.

A steam train consisting of a locomotive and five cars weighs 330,000 kilogrammes, contains 168 seats and uses 1,400 horsepower at full speed; the electric train consisting of one motor car and four trailers weighs 260,000 kilogrammes, has 180 seats and uses 1,000 horsepower. The initial cost of both trains is practically the same, being about 400,000 marks (\$100,000). The operating cost for simply moving the train is 51 pfennigs (12½ cents) for 100 seat-kilometers, operating with steam, and 49½ pfennigs (11½ cents) using electricity. Applying a calculation to the 150-kilometer, or 94-mile line, between Berlin and Leipzig, we get the following conclusions: On this line an 18-hour service is furnished and 36 trains a day run every hour in both directions, so that if 40 per cent of the seats are occupied (the trailers are put on when necessary) about 2,500 passengers are accommodated. Figuring the fare per kilometer as 6 pfennigs (1½ cents), which is the present second-class fare, this would give a daily income of 22,500 marks (\$5,650). The operating expenses, considering transportation only, are about 5,000



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Ostrich Chicks.



Plucking Ostrich Feathers.

OSTRICULTURE IN THE UNITED STATES.

round hole about four feet in diameter and one foot deep is the result of his exertions. Occasionally he intimates to the female that help is required, and they take turns. The hen forthwith begins to lay an egg every other day, until twelve or fifteen are located side by side in this hole in the ground; then they scatter a little sand over the tops of the eggs, to protect them from the fierce rays of the sun. This habit has doubtless led to the supposition given as a fact in many natural histories, that the eggs of the ostrich are hatched by the sun, unaided by the bird.

As soon as the full number of eggs are laid, the couple share the labor of hatching, the male bird

performing. When a feather root is hurt, injury is done that can never be remedied, for when a "socket" is pulled out, a feather can never grow again. The short feathers are pulled out without any apparent pain to the creature, as they are ripe and would fall off in the course of nature if not extricated by the skilled operator. The heavy wing feathers are cut off with heavy scissors, the stumps being left in the skin. These stumps are ripe for extraction about three months after a plucking takes place.

Strange to say, the feathers secured from the California and Florida birds are of a better quality than those imported from South Africa, and actually com-

marks daily (\$1,250). Adding to this the other operating expenses, particularly for employes, maintenance of way, stations, management, etc., 7,600 marks daily, this would make the daily operating expense 12,600 marks. This leaves 9,900 marks for interest on the original capital, which in one year would be 3,600,000 marks, which would give 4 per cent interest on 90,000,000 marks. The cost per kilometer would, in this case, be about 600,000 marks.

What is said to be the largest loom in the world has been built in Germany for weaving artists' painting cloth. It is capable of weaving feltings 48 feet wide.