of the Nile not only to Lake Chad, but to the Upper Niger, and is found within the Niger bend. But in all that vast region of the western Sudan no form of wild horse is met with.

There are persistent stories from Arabs to the effect that there is a wild ass like that of Ethiopia in the western Sahara, and Mungo Park mentions seeing wild asses in northern Senegambia, but so far no proof has come to hand in the shape of skulls and skins. Amongst the fossils of Algeria are equine skulls very like that of the zebra. It is possible, therefore, that in late Pliocene or early Pleistocene times there was a zebra type existing in Northern Africa, but why the striped horses have since restricted their range to the easternmost and southern portion of Africa, and do not, like so many of the antelopes and the rhinoceros, extend their range westward of the Nile, is an unsolved problem.

H. H. JOHNSTON.

NEW AUTOMATIC TELEPHONE EXCHANGE.

A VERY interesting experiment has just been started in the new telephone exchange at Epsom. This exchange is the first in the United Kingdom to be installed on the automatic plan. In this system the subscriber, by means of an attachment to his telephone, himself selects and calls up the desired number, instead of communicating his wants to the exchange operator and being "put through" by her. The exchange operator is thus dispensed with.

The mechanism at the subscriber's telephone simply consists of a means by which a set of contacts are closed or separated a certain number of times—determined by the actual figures of the number required. These operations result in a series of impulses (or of breaks in an otherwise permanent current) over the telephone line and through the mechanism of the exchange. The movement of this mechanism puts the two lines into electrical connection. If the required subscriber be already engaged, the caller's apparatus returns to zero and gives him the well-known signal. Under the system the meter does not record a charge against the person telephoning until the required subscriber has answered. The whole system was described in detail in our issue of October 12 last year.

The system is complete as regards its own exchange, but when a subscriber on another exchange is required, a little more complication is introduced. At present such calls are dealt with by an operator. A slight extension of the principle is to allot a certain number of lines to the main exchanges and to number these with the subscribers. A caller then simply gets through to the required exchange automatically, and then asks for the number required in the usual way.

The working and development of the exchange will be watched with great interest by all telephone users.

MAJOR-GENERAL E. R. FESTING, C.B., F.R.S.

A LARGE circle of friends, both amongst his late colleagues and followers of science and and art, will be grieved to hear of the death of Major-General E. R. Festing (late R.E.) on Thursday last, May 16, from heart failure. Festing was born in 1839, and was educated at Carshalton during the headmastership of Prichett. He was transferred to the Royal Military Academy at Woolwich, and from there was gazetted as a lieutenant in the Royal Engineers when he was only fifteen years of age. His teachers often held up Festing as a worthy example to follow. He learnt thoroughly all he had to learn whilst under tuition, and he had the reputation of being "a calculating boy" from his early youth. The present writer has often had opportunities of knowing that in Festing's later years this power of mental arithmetic had not deserted him. In 1857 the young lieutenant of seventeen was sent to India as one of the officers of a company of sappers and miners, in which capacity he served under Sir Hugh Rose until 1859. On his return from India he was selected by Sir Henry Cole as deputy general superintendent at South Kensington. On the reorganisation of the museum he was appointed assistant director of the Science Museum, with charge of the Works Department under Sir Philip Owen. On this officer's retirement he was appointed director of the Science Museum, which office he held until his own retirement in 1904. For his services to the Department he was created a C.B. in 1900.

Festing was one who was universally beloved by his colleagues and by the subordinates who served under him. He was strict, but absolutely just, and was no self-seeker. He was always ready to further the welfare of his men, or to assist in aiding the science teaching or research with which he daily came in contact at the Royal College of Science. He himself was a man of science, and carried out many investigations, the gist of which is to be found in the pages of the Transactions and Proceedings of the Royal Society, of which he was elected a Fellow in 1886. Electrical science was perhaps what he loved best, though other departments of physics generally attracted him.

Brought into contact, by his position, with inventors, men of science, and artists, when they had gauged Festing's worth they soon became his friends instead of mere acquaintances, and many such will miss him. He was a general favourite of those brother officers with whom he had served in India or elsewhere, as he was with those younger ones of his corps who, when in London or its neighbourhood, found a warm welcome at his home.

Festing leaves a widow, two sons, and a daughter. The elder son is in the Ceylon Civil Service, and the other in the Artillery, whilst the daughter is well known as an author.