

A RESCUE TRAINING SCHOOL AND EXPERIMENTAL GALLERY FOR MINERS.

BY THE ENGLISH CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

A unique institution has recently been inaugurated at Howe Bridge near Atherton, the center of the Lancaster coal-mining district of Great Britain. This is the Rescue Training School, where miners are instructed in the use of various rescue apparatus for succoring their comrades after a colliery disaster. The organization owes its foundation to the necessity of some such means of instructing miners in this class of work.

The English undertaking has been established and partly maintained by the Lancashire and Cheshire Coal Association. Several members of the association have not actively entered into the scheme, while, on the other hand, certain other colliery companies who have no connection therewith are giving it their support. The scope of the enterprise is the provision of a training school and gallery in which is reproduced the underground working of a colliery, presided over by a permanent and skilled instructor, who will teach classes of men sent from the respective collieries the use of the apparatus and the methods of working underground after a calamity. The classes will be composed of men selected by the particular colliery equipped with the apparatus. All expense for instruction will be defrayed by the colliery, the class simply going to the school periodically for training. Should a colliery be unable to cope with an accident, it could easily telephone for assistance to one of the surrounding colliery companies, and in this manner a large and efficient force could be easily and quickly collected.

The gallery resembles a long corridor forming three sides of a rectangle, each 50 feet in length, built of masonry. Within this a gallery is reproduced even to the rock roof supported by timbers, leaving workings about 3 feet or 4 feet in height, with the floor undulating, rough, and rugged, as it is in the coal mine. There are two of these galleries, placed one above the other, and where the level of one rises, the other dips, and *vice versa*. The outer wall of the gallery is glazed, so that the men within are continually under outside observation. Should an accident occur to any man within, such as the failure of his apparatus, or any other mishap, he can at once be secured and brought into the outer air through one of the windows. Because the two galleries are ar-

ranged in the switchback manner, with opposite rising and dipping of the floor, both are within view of the observer at once. The interior of these galleries is filled with an absolutely irrespirable atmosphere, derived from the combustion of sulphur and other asphyxiating smoke. Along the center of each gallery extends the narrow tramroad, such as is laid in mines

mine which is the most satisfactory and efficient for all-round working, and its general adoption by the colliery companies participating in the maintenance of the institution. That which is finally selected as conforming with these conditions will be determined as the standard apparatus. The instructor will then be dispatched to the makers of the standard apparatus adopted, for a complete course of instruction in its use, and will thus be in a position to impart the necessary instruction to the various teams.

Six different types of apparatus have been entered in competition. These comprise the "Weg," already in use by the Normanton collieries in Yorkshire; the "Aerolith," in which liquid air is employed; the "Fleuss," "Draeger," and the "Clarke Stevenson" and "Valor" appliances, these two last named being recent inventions.

The tests imposed are exacting, and similar to the work that would have to be carried out underground after an explosion. In the vitiated atmosphere the complete length of the gallery, aggregating 150 feet, has to be traversed, props set, ventilation walls built, brattice cloth fixed, and a "dummy" miner weighing 170 pounds carried through the workings on a stretcher.

The team comprises four men, and before donning the apparatus each man is thoroughly examined by a committee of physicians to decide his physical suitability for the arduous work. Several other physicians are retained to stand by in case one of the men has to be summarily withdrawn from the gallery through one of the windows because of the failure of his appliance. Upon entering the gallery the team has to travel twice over the whole road, the total length of the course both over and under. Twelve props then have to be taken from X and set at A and H, six props at each point. The team must then travel by the upper road to F, load 250 bricks in a tub, and take them to F and J, while a brattice cloth has

to be fetched from F and set at D. Traveling back to X along the lower road, a stretcher is secured and taken by the upper road to F, where the recumbent dummy is found, which must be placed on the ambulance and brought back to X by the upper road. From X progress has to be made to D, the brattice cloth taken down, rolled up, and deposited at F. The bricks are then removed from F to J and replaced as originally found, while the twelve pit props are withdrawn from A and H and replaced at X. The test, as experience has already shown, has proved sufficiently exact-



The dummy which must be carried on a stretcher.



The cycle ambulance ready for use.

for the transport of the coal from the working face to the main shaft; and furthermore, the gallery is blocked with various obstacles, such as result when an explosion occurs. The interior of the gallery, when charged with the noisome gases, is freely lighted with electric incandescent lamps, which throw a slight glimmer of sufficient intensity for the observer to follow the movements of the men within.

When the institution was opened, a series of practical tests with the various rescuing appliances introduced to the market was arranged, in order to deter-



The Draeger apparatus, which was recently used in a mining disaster.



Simonis ambulance bicycle, which can be converted into an ambulance in three minutes.



Two miners equipped with the Fleuss apparatus.



Front view of the Weg apparatus.



The "Aerolith" apparatus.

ing, the whole cycle of operations occupying two hours, during which time the gallery must not be left. The rough nature of the road, the cramped headway, the murkiness of the atmosphere and its poisonous condition, combined with the almost total darkness, impose a severe strain upon the men's nervous system. Upon issuing from the gallery, each man is again medically examined. In this manner conclusive data concerning the effect of the respective apparatus upon each man and his physical capabilities for such work are secured.

The team equipped with life-saving apparatus passed through their ordeal with complete success, and emerged from the gallery showing but slight traces of exhaustion. This no doubt was due not only to the efficiency of the appliance, but to the fact that they had already passed through the ordeal of a real catastrophe, since they accomplished heroic work at the Hamstead colliery, and had no doubt become accustomed to the peculiar surroundings and working within a confined breathable atmosphere as represented by the mouth-piece.

NEW FOSSIL WONDERS FROM THE FAYUM OF EGYPT.
BY WALTER L. BEASLEY.

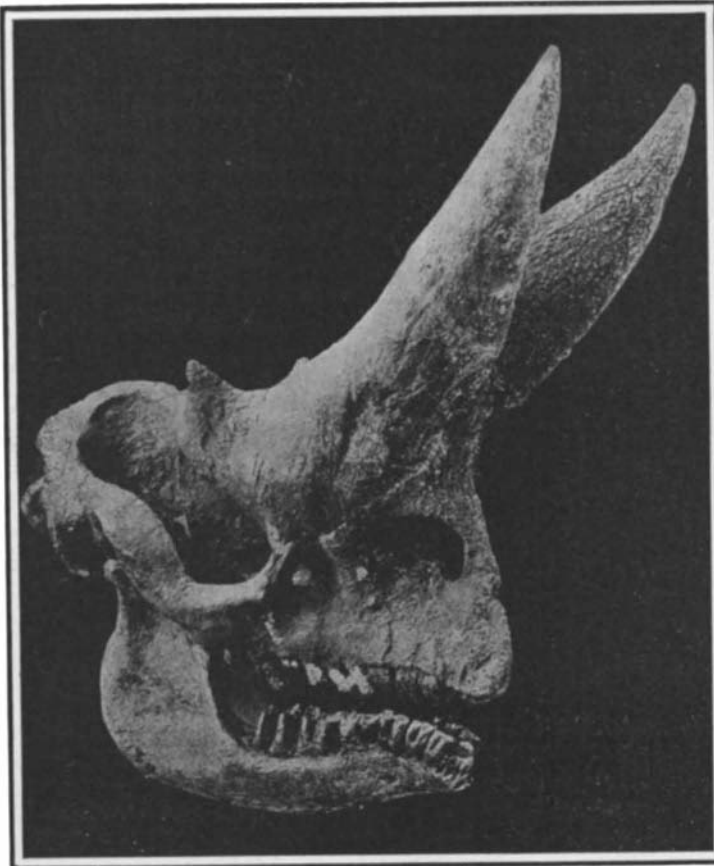
Prof. Henry F. Osborn, who planned and directed the expedition of the American Museum of Natural History to the Fayum Desert of Egypt, made possible through the generosity of the late Morris K. Jesup, is just now placing on exhibition some of the remark-

able and interesting fossil remains there discovered—remains which illustrate the peculiar and little-known ancient land animals of Africa. These brilliant researches and successful explorations of Prof. Osborn have not only added much to earlier discoveries, but

After awaiting the appearance of the monograph compiled by Dr. C. H. Andrews of the British Museum, setting forth the prior field work and discoveries of the Egyptian Survey, which released in a sense the region to other investigators, Prof. Osborn seized the exceptional opportunity of forming an expedition in order to unearth possibly unknown types of the former mammalian life of Africa. Through energetic and systematic excavating and quarrying, the expedition recovered some 550 specimens, including the more or less complete remains of nearly all the fossil forms so far known to be characteristic of this famous region, together with several new members of animal types and families, hitherto not encountered by previous collectors. These include several species of primitive carnivores and two genera of rodents.

The Museum expedition left New York in January, 1907. Mr. Walter Granger, an able fossil explorer of fourteen years' experience of work in the Bad Lands of western America, and Mr. George Olsen, a Dane,

highly trained in the technique of the getting out and preservation of fragile and delicate remains, were selected to conduct the field work and prepare the specimens for transportation. On February 5, 1907, just a month after leaving New York, the American caravan of twenty-one camels and eight tents and a complete camp outfit for life in the desert, together with twenty-five Arab, Bedouin, and Egyptian workmen, reached the Fayum, the goal of the expedition. Vertebrate fossils were first discovered in this region in 1879 by



Figs. 2 and 3.—Front and side views of the *Arsinoitherium* skull now in the Cairo Museum, found by the Egyptian Geological Survey.

have thrown new light on the little-known animal world of ancient Africa. The "Dark Continent," hitherto supposed of little paleontological interest, proves surprisingly rich in early fossils, including types hitherto unknown. Through the courtesy of Prof. Osborn, the writer was afforded facilities for presenting in the pages of the *SCIENTIFIC AMERICAN* a general narrative, covering the main features and scientific results of this the first American paleontological expedition into Egypt's famous fossil country.



Fig. 4.—The finding of the great skull of the *Arsinoitherium* in the Fayum Desert, Egypt.



Fig. 5.—The American Museum Expedition entering the Fayum Desert, Egypt.



Fig. 6.—Egyptian and Arab helpers at work in the fossil quarries. Specimens were found six and eight feet below the top of the sandy surface.



Fig. 7.—Mr. Olsen and Egyptian workman preparing the fragile desert fossils for transportation to New York.