disturbances due to trap-dikes and faults. The dip of the coal-seams is in general S. E. 25–30°.

Several new analyses of the coal of this area are presented, some of them being of average samples from large quantities. The coal is 'bituminous,' as is shown by the following average of a large number of analyses: volatile matter, 30; fixed carbon, 54; ash, 12; sulphur, 3.6 per cent. At times the coal has been altered to a semi-anthracite, and even to a natural coke, by the heat of trap-dikes.

The expense of working the coal in seams 2 feet thick is estimated at $1.50, and in seams 3 feet thick at $1.20, per ton. In the mines of Tennessee and West Virginia, with which the North Carolina coal comes in competition, mining is carried on at the rate of about 65 cents per ton. Combining these figures with the cost of transportation, it is shown that there would remain a sufficient margin in favor of Deep River coal to command the market in eastern North Carolina. This is favorable to the development of the Deep River deposits: still the fact that these mines have not been worked for many years is significant.

The Richmond coal-field, which is of the same age and of the same general character as the Deep River deposit, but in which coal occurs in much thicker seams, and in general is of better quality, has also been a failure, when the mining operations of the whole field are considered. It is evident, therefore, that there must be some sufficient reason why mining in these fields, which are in close proximity to good markets, has not succeeded. Dr. Chance enumerates some of the more obvious difficulties that present themselves in the Deep River area: there are variations in the thickness and quality of the seams, faults, trap-dikes, presence of explosive gas, water, spontaneous combustion, and absence of coal from certain areas. Nearly all of these obstacles are probably much more difficult to surmount in these mines than in the great coal-fields to the west, with which the North Carolina coal comes in competition. To the present writer, who has recently examined all of the triassic areas south of the Potomac, it appears that the difficulty in the way of economical mining in the various triassic coal-fields arises mainly from the structure of the deposits. All of these areas are extensively faulted, and are traversed by an extended system of trap-dikes. Along the faults the coal has been so completely crushed that it is usually of little commercial value. At the same time, the continuity of the beds has been broken, and their dip disturbed and rendered irregular.

This wide-spread disturbance renders the expense of working the coal extremely uncertain, mainly on account of the difficulty of following faulted beds. The numerous trap-dikes that intersect the triassic areas north of the Potomac have caused disturbances which are even more injurious to the coal-deposits than the effects of faulting. The dikes are frequently accompanied by a displacement of the beds on either side, and also by an alteration of the adjacent coal. At times the coal in proximity to the dikes has been ruined by the heat; but in some instances, however, a natural coke has been produced which is more valuable than the unaltered coal. Trap-dikes more than a few feet thick are so expensive to penetrate that they are practically insurmountable obstacles when met with in coal-mines. This was the case in certain mines formerly worked at Gulf. Again, the trap sometimes penetrates the coal-bearing strata in intrusive sheets, approximately parallel with the planes of bedding, and in these even more troublesome to the coal-miner than when it forms vertical dikes.

A study of the numerous mining operations that have been carried on, commonly with failure, in the Richmond coal-field, would illustrate the peculiar difficulties to be expected in the Deep River basin. The lack of success in so many mining ventures in the triassic areas south of the Potomac, owing to the disturbances that have affected the coal, proves conclusively that mining should not be undertaken in the triassic coal-fields of the south without a careful preliminary examination with a diamond drill of the entire property that it is proposed to work. The quantity, quality, and position of the coal should be accurately determined before expensive mining operations are begun. With these precautions, it is probable that portions of the Deep River coal-field can be developed with profit, but it is safe to predict financial failure for those who begin mining with the expectation of working continuous coal-seams in the manner followed in West Virginia and Pennsylvania.

The coal-deposits on Deep River were also examined by Dr. Chance, who pronounces them to be valueless for commercial purposes.

This report will be of value to those interested in the coal-deposits of North Carolina, but it contains little that can be considered as a contribution to geology. I. C. RUSSELL.

THE AMERICAN FERRET.

ALTHOUGH the philosophical biologist measures the importance of a species by the light it throws upon the problem of the science which he cultivates, there are certain animals and plants which, while not intrinsically of unusual importance, enjoy a special prominence on account of their

brilliant coloring, the grotesqueness of their form, or their rarity. A rare species has the same interest for a collector of natural objects as a rare book for a bibliomaniac. Be its importance real or nominal, its rarity recommends it, because men tire of that with which they are familiar.

The American ferret (Putorius nigripes, Audubon and Bachman), of which we offer a representation, is one of the least known of North American mammals, and is but rarely met with in collections. It was described by Audubon and Bachman in 1851 from a single specimen, and a quarter of a century passed before our knowledge of the species was in any wise augmented. In 1874, Dr. Coues advertised his desire for specimens in certain sporting papers, and was gratified to receive for the Smithsonian institution several examples from different localities.

Since that time quite a number of specimens have accumulated in the national museum and some other establishments.

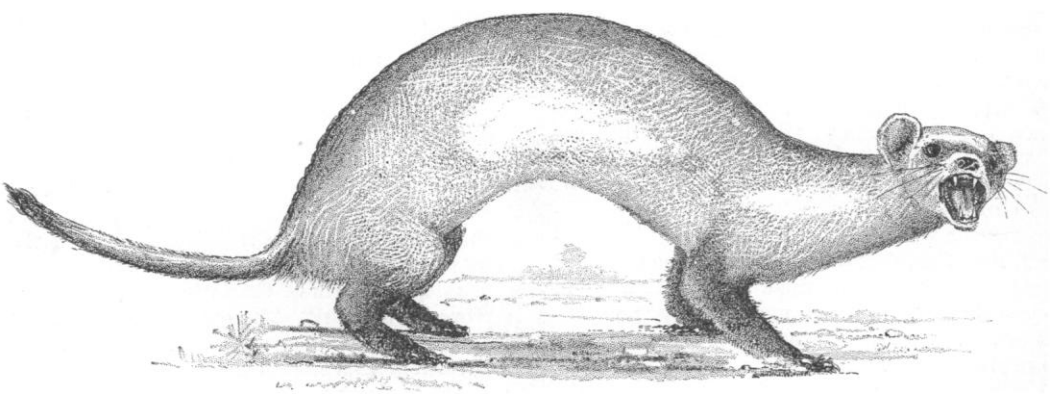
Of the habits and distribution of the black-footed ferret, we still know very little. The specimens thus far recorded are from Texas, Kansas, Nebraska, Colorado, Montana, and Wyoming. The species probably ranges over the greater part of that section of the United States lying between the Mississippi River and the Rocky Mountains.

The specimens of which the history is known were taken from prairie-dog holes; and Dr. Coues states that about Fort Wallace, Kansas, the species is said to be known as the 'prairie-dog hunter.' Dr. Hayden found the remains of a prairie-dog in the stomach of a ferret which he sent to the Smithsonian institution.

In his work upon the weasels, Dr. Coues established a special sub-genus, Cynomyonax, for the black-footed ferret, and in 1881 Hensel made the species synonymous with the Putorius Eversmanni of Siberia. It seems very improbable, however, that Hensel's view is correct.

The specimen figured was obtained for the Smithsonian institution by Capt. James Gillis, at Cheyenne, Wyoming. The head and body measure 19 inches (following the curves); the tail, including the terminal pencil, 5½ inches. F. W. TRUE.

A CLERGYMAN has just been committed to prison in England for seven days as a penalty for striking a constable. The assailant was coming out of his house, when the policeman, who happened to be waiting to serve a summons, laid the document on his arm. His reverence exclaimed, "You brute, how you did frighten me!" and struck the constable a violent blow in the face with a candlestick. In commenting on this case, the *Lancet* says that it should not be forgotten that in many instances the immediate effect of a 'fright' is to make the person startled strike out with any thing at hand. Some persons are paralyzed by panic: others are instantly roused to action in a way that does not involve volition. The blow is as much the result of the excitation as the knee-jerk produced by striking the patellar tendon, albeit the train of actions is more complex, and involves the exercise of that co-ordinative faculty which has been called the sub-consciousness. In stumbling we make certain movements with the feet, and clutch at any thing that may be within reach in a manner designed to prevent or minimize the effect of a fall. A good horseman will, 'instinctively,' as we say, take such precautions as will prevent his being hurt by a fall. The will is not *intentionally* active in these processes. The recognition of the danger, and the adoption of suitable measures, seem to occupy too short a time for thought.



THE AMERICAN FERRET.