As commonly known, steel is a combination of carbon and iron, made by heating flat bars of pure iron, in combination with charcoal. The carbon is first converted into oxide of carbon, and then unites with the iron as carburet. The result of this process is known as blistered steel, from the bubbles generated by gases upon its surface. Shear steel consists of parallel plates of pure iron and steel, welded by folding and uniting the bars of blistered steel. Cast steel is fused in pots of the most refractory material, and differs from cast iron which likewise contains carbon, in this respect, that cast iron is a mixture of coarsely aggregated matters, graphite and iron, whilst cast steel is a chemical combination of carbon and iron.

From the researches of Berthier, it is known that manganese will form an alloy with iron. When iron is mingled with a considerable portion of manganese, a brittle compound results; but when combined with a very small proportion of manganese, a steel of very fine quality is obtained, which has this advantage over carbon steel: carbon steel becomes coarse when tempered in thick masses, from segregation of the particles of carbon; but no such trouble arises with magnesian steel. Parties in England have lately introduced excellent wire for piano-forte strings, made of this kind of steel, as well as for cutting instruments, and other purposes. In the wire, Dr. Jackson has found 1.12 per cent. of manganese, and has established the fact that it resists, to a very remarkable degree, the action of hydrochloric acid. Sixteen years since, Franklinite iron was manufactured by Mr Osborn into very hard and fine steel. This steel required tempering at a lower heat than carbon steel. Many of our manganesian irons might be manufactured into steel, by the simple process of fusion, and a steel of uniform character might be made without previous cementation with carbon.

Dr. Jackson explained the reduction of iron in blast and reverberatory furnaces. Manganesian iron ore is reduced to pure iron, or "comes to nature," in the language of the workmen, with much greater rapidity than carbon iron; hence the two metals are often mixed to "come to nature" at a good time, requiring less care and watchfulness on the part of the workman. Manganesian iron makes the best bar iron.

PHYSIOLOGY AND NATURAL HISTORY.

FREAKS OF NATURE.

The following singular illustration of the tendency of wild animals, when domesticated, to change their uniform natural color, is exhibited in a way both curious and unusual. A writer in the "Scottish Press" says:—Mr. Souter, of Boxgrove, has a game fowl which, four years since, was perfectly black, the second year it was brown, the third white, and at the present time it is speckled black and white.

Though more in accordance with ordinary operations of nature, the following example of animals changing their color with the season of the year, is interesting as occurring in our own vicinity. The Rev. Thomas Schreiber remarks in a note to the Editor:—Is the following circumstance a freak of nature, or is it a happy dispensation of Providence, mindful for every contingency to provide for the safety of the animal creation? Last summer several rabbits, black and grey in color, were turned out on the grounds about the Homewood, Toronto; during the autumn their progeny were of the same color: since the snow has covered the ground two litters have shewn themselves, one litter of seven *completely snow white*, the