

every day, nay, every hour; that certain kinds of coal-dust were perhaps less inflammable than others, and so on.

Comparatively few have had the advantage of carefully studying the coal-dust flame as well as the opportunity of investigating the minutest details of a series of great colliery explosions in the mines, immediately after their occurrence. The foregoing arguments are therefore perhaps to some extent excusable; but they are none the less the outcome of the imagination of their authors. They are being pressed more and more feebly as time goes on, and they are likely, we think, before many years have passed, to vanish as absolutely as the so-called "outburst of gas" theory which for more than a generation was invariably quoted as the only possible means of accounting for the kind of explosions to which we have been drawing attention.

The late Home Secretary, Mr. Matthews, was so much impressed by the occurrence of great explosions one after the other in dry and dusty mines, that he appointed a Royal Commission on Coal-Dust in 1890. That Commission has not yet issued its report, but the volume of evidence taken before it, which has been lately published, shows to what small proportions the opposition has shrunk since the theory was first started. It is also satisfactory to observe that the number of lives lost in great explosions during the last ten years is only about one half of the number lost during the previous ten years.

W. G.

#### REVERIES OF A NATURALIST.

*Idle Days in Patagonia.* By W. H. Hudson, C.M.Z.S., Author of "The Naturalist in La Plata." (London: Chapman and Hall, 1893.)

THE title of this book well describes its contents; but Mr. Hudson has established so high a standard by his previous work that the present volume has something of the character of an anti-climax. In literary style, in picturesque description, and in suggestive ideas and reflections there is no falling off; but we miss the wealth of original observation and ingenious speculation which made "The Naturalist in La Plata" a masterpiece.

Mr. Hudson was wrecked on the shores of Patagonia, and had a weary tramp over the desert, of some thirty miles, to reach the settlement on the Rio Negro. There, and at some farms higher up the valley, he appears to have spent a year or more, doing nothing but wandering about on foot or on horseback, observing the habits and peculiarities of the scanty fauna and flora, noting the varied aspects of nature, and apparently thoroughly enjoying day after day of dreamy idleness. He spent some months at a house about seventy miles up the valley, which was here about five miles wide; and every morning he rode away to the terrace or plateau, covered with grey thorny scrub, and there found himself as completely alone as if he were five hundred instead of only five miles from civilisation. He says:—

"Not once, nor twice, nor thrice, but day after day I returned to this solitude, going to it in the morning as if to attend a festival, and leaving it only when hunger and thirst and the westering sun compelled me. And yet I had no object in going—no motive which could be put

into words; for although I carried a gun, there was nothing to shoot—the shooting was all left behind in the valley. Sometimes a dolichotis, starting up at my approach, flashed for one moment on my sight, to vanish the next moment in the continuous thicket; or a covey of tinamous sprang rocket-like into the air, and fled away with long wailing notes and loud whirr of wings; or, on some distant hillside a bright patch of yellow, of a deer that was watching me, appeared and remained motionless for two or three minutes. But the animals were few, and sometimes I would pass an entire day without seeing one mammal, and perhaps not more than a dozen birds of any size."

There was nothing beautiful or even pleasing to be seen in this dreary monotonous solitude, yet he felt a great delight and satisfaction in it, which he imputes to the ancestral savage nature that still exists in all of us, though repressed and overlaid by civilisation and society.

"It was elation of this kind, the feeling experienced on going back to a mental condition we have outgrown, which I had in the Patagonian solitude; for I had undoubtedly gone back; and that state of intense watchfulness, or alertness rather, with suspension of the higher intellectual faculties, represented the mental state of the pure savage."

In the second chapter—"How I became an Idler" we are told of a still more disagreeable adventure than the shipwreck. Mr. Hudson was going with a friend to a farm eighty miles up the valley. On the way they stayed a night at a deserted hut, and here he had the misfortune accidentally to discharge a revolver bullet into his knee, rendering it necessary for him to return to the settlement to be cured, perhaps to save his life. His friend tied up the wound as well as he could, and left him to get a cart from the nearest house a good distance off. He was absent a whole day, Mr. Hudson lying on his back on the ground all the time. When his companion at length returned with the cart, and lifted him up to put him into it, a large and very poisonous snake moved from under his cloak, where it had been lying close to his feet for many hours. It glided away into a hole under the wall, and Mr. Hudson rejoiced "that the secret deadly creature, after lying all night with me, warming its chilly blood with my warmth, went back unbruised to its den."

This accident kept the author for some months in bed, and for other months a convalescent unable to walk far; and thus the finest summer weather was wasted, and he acquired those habits of the country and the people that made him an idler, and prevented him from learning as much of the animal and vegetable life of the country as, under more favourable circumstances, he might have done. Yet he gives us many interesting facts and discussions, and the chapter on "The War with Nature" is one of these. This war begins when man introduces domestic cattle, cultivates the soil, and destroys the larger wild animals for food or sport. In doing this he provides food of an attractive kind for many wild creatures, and the war begins. Pumas devour his cattle; locusts destroy his grass or crops; coots, ducks, geese, or pigeons devour the grain as soon as sown, or feed upon the young shoots, or upon the ripe wheat ready for the harvest; and thus the farmer is kept in a constant state of activity and watchfulness, which really gives him a beneficial excitement in what would otherwise be a most

monotonous and unattractive existence. In one of his glowing passages Mr. Hudson thus describes and personifies the war between nature and man.

"He scatters the seed, and when he looks for the green heads to appear, the earth opens, and lo! an army of long-faced yellow grasshoppers come forth! She too, walking invisible at his side, had scattered her miraculous seed along with his. He will not be beaten by her, he slays her striped and spotted creatures; he dries up her marshes; he consumes her forests and prairies with fire, and her wild things perish in myriads; he covers her plains with herds of cattle, and waving fields of corn, and orchards of fruit-bearing trees. She hides her bitter wrath in her heart, secretly she goes out at dawn of day and blows her trumpet on the hills summoning her innumerable children to her aid. Nor are they slow to hear. From north and south, from east and west, they come in armies of creeping things, and in clouds that darken the air. Mice and crickets swarm in the fields; a thousand insolent birds pull his scarecrows to pieces, and carry off the straw stuffing to build their nests; every green thing is devoured; the trees, stripped of their bark stand like great white skeletons in the bare desolate fields, cracked and scorched by the pitiless sun. When he is in despair deliverance comes; famine falls on the mighty host of his enemies; they devour each other and perish utterly. Still he lives to lament his loss; to strive still unsubdued and resolute. And she, too, is unsubdued; she has found a new weapon it will take him long to wrest from her hands. Out of the many little humble plants she fashions the mighty noxious weeds; they spring up in his footsteps, following him everywhere, and possess his fields like parasites, sucking up their moisture and killing their fertility. Everywhere as if by a miracle, is spread the mantle of rich, green, noisome leaves, and the corn is smothered in beautiful flowers that yield only bitter seed and poison fruit. With her beloved weeds she will wear out his spirit and break his heart; she will sit still at a distance while he grows weary of the hopeless struggle; and at last, when he is ready to faint, she will go forth once more, and blow her trumpet on the hills and call her innumerable children to fall on him and destroy him utterly."

This, the author tells us, is no fancy picture, but one painted from nature in true colours. If so it is not encouraging for emigrants; but then, the climate is superb, and it is a proverb that "once in a hundred years a man dies in Patagonia." Then, again, the bird music is unsurpassed; there are numerous exquisite songsters; and of one of them—the mocking bird, he declares that the song is so varied and beautiful that all the music of our song-thrush might be taken out of it and not be much missed. Azara declared that there were as many and as good songsters in Paraguay and La Plata as in Europe, and Mr. Hudson agrees with him. The reason why Darwin and other travellers thought otherwise is, because most of the South American songsters are shy wood-birds which rarely approach man's dwellings, and are therefore only heard by those who seek them; whereas in Europe they are mostly species which haunt gardens and orchards, and cultivated fields, and are thus more or less familiar to every one.

In a chapter on "Sight in Savages" it is maintained that they have no superiority in this respect to civilised man; and that what often seems like better sight is merely trained observation of objects which it is essential for them to know. There is an amusing story of a middle-aged Gaucho, who laughed and jeered at an Englishman for wearing spectacles, and would not believe that bits of

glass over his eyes could possibly make him see better. The gentleman persuaded the man to try them, and they happened exactly to suit his sight, which had gradually grown imperfect without his knowing it. He stared round, utterly amazed, and then shouted:—"Angels of heaven, what is this I see! What makes the trees so green—they were never so green before! I can count their leaves! And the cart over there—why it is red as blood." And he went up to it to be sure it had not been fresh painted. There is also a chapter—"Concerning Eyes"—dealing with their characteristic colours, their scintillation under excitement, and the uses of these peculiarities, a subject to which Mr. Hudson has given much attention. Many old Indian burial places and village sites were found, with abundance of arrow-heads, flint knives, scrapers, mortars and pestles, stone anvils, pottery, and other objects. There were two kinds of arrow-heads, some large and very rude, others smaller and exquisitely finished, the former found mostly on the plateau, the latter in the valley. One of the village sites, where the greatest number of objects was found, had been buried seven or eight feet, and was exposed by heavy rains, which had washed away great masses of gravel and sand. Many of the smaller arrow-heads were of crystal, agate, green, yellow, or horn-coloured flint, and were perfect gems of colour and workmanship, and these were all found at one spot. Unfortunately, most of the finest specimens, which had been packed separately for security, were lost on his homeward journey—"a severe blow," Mr. Hudson says, "which hurt me more than the wound I had received on the knee."

Although this volume cannot have the same absorbing interest for the naturalist as the author's previous work, it is yet full of suggestive observations and reflections, and gives us a vivid picture of both animate and inanimate nature in one of the least known portions of the southern hemisphere. The volume is nicely got up, and is illustrated with a number of landscapes and figures of men and animals in the same style as in the author's former work.

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#### OUR BOOK SHELF.

*Ueber das Verhalten des Pollens und die Befruchtungsvorgänge bei den Gymnospermen.* Von Eduard Strasburger. (Jena: Gustav Fischer, 1892.)

THIS forms the fourth part of Prof. Strasburger's "Histologische Beiträge," and it is largely taken up with an examination of segmentation in pollen-grains of the gymnosperms, and the contents of, and processes in, the pollen-tubes. Recent discoveries had led Strasburger to doubt the correctness of his former interpretation of the contents of the pollen-tubes, and his further researches have "confirmed in a surprising manner" the results obtained by Belajeff in his paper on *Taxus baccata*, entitled "Zur Lehre von den Pollenschläuchen der Gymnospermen." Strasburger is also essentially in accord with Belajeff's generalisations therefrom. Two double plates illustrate division in the pollen-grain, the development of the pollen-tube, and the further processes of fertilisation in various gymnosperms, including *Taxus*, *Pinus*, *Ginkgo*, and *Welwitschia*. An unusual condition is shown of cell-division in a pollen-grain of *Ginkgo*. Usually two or three "prothallium cells" are formed, and in part disappear before the protrusion of the pollen-tube