stayed the greater part of the day to watch it; and when at last I left, the almost inconceivable flood of winged creatures was still rolling on over the steppe from west to east in undiminished numbers. The Russian powder which I bought at Tiflis had turned out so badly that at this time I had almost given up using it for any thing larger than Teal, and even then it was necessary to be at very close quarters to bring the bird to bag, so miserably weak was it. Thanks, however, to the dense masses in which the Bustards stood and flew, I was enabled to secure sufficient to supply my man and myself with a welcome change of diet by the expenditure of only two of my treasures, 'express' cartridges. Judging by what I killed, I should say the birds were only just starting from their summer haunts in the Crimea and the Caucasus for their winter-quarters in the east. Had it not been so, they would hardly have been so deliciously plump as we found them"*.

---

*Expeditions accomplished and in progress.*—Mr. Blanford, we are glad to say, has recovered from the attack of fever which prostrated him on the Punjab frontier (see above, p. 348) and is safe in England. Mr. Elwes, accompanied by Mr. Dixon, has just made a very successful excursion of a month's duration to the Aures mountains of Algeria, and has discovered a new Chat (*Saxicola*). We hope to be able to give some account of this expedition in our next number. Lord Lilford has passed the winter months in his yacht in the Mediterranean, and has secured a fine series of *Larus audouini*. Of Dr. Finsch we have heard nothing more since he went from Thursday Island in December last. He is, no doubt, in New Guinea.

---

*Obituary.*—Charles Robert Darwin,
Died 19th April, 1882.

In common with all our brethren, editors of scientific

* [Sport in the Crimea and Caucasus, by Clive Phillipps-Wolley, F.R.G.S. (8vo: London, 1881), p. 295.]

journals, we must say a few words on the event which has deprived the world of its greatest naturalist. The varied qualifications of Charles Darwin have been recounted by many an able pen; but it behoves us in this place to dwell especially on the value of his labours to the particular branch of biology which it is the object of these pages to promote. We venture to believe that we shall be only echoing the voice of all our readers when we assert that there is not one of them but has felt that the dignity of the study which he pursues was raised every time that Mr. Darwin drew from it evidence in support of that theory with which his name will be in all time associated. We venture further to declare that Mr. Darwin's ingenious investigations, his irresistible interpretation of particular facts the significance of which had never before been understood, but, above all, his marvellous method of combining and correlating the results of observation, must be recognized by all thinking ornithologists as breathing into their science a living soul the existence of which was previously unsuspected, and as endowing it with an interest and a beauty beyond any thing that it had been supposed to possess.

When we remember the way in which the Theory of Evolution was, at its birth, scouted in so many quarters, it is with no small satisfaction that we can turn to the earliest volume of this periodical and point out how quickly the truth of the Darwinian "hypothesis," as it used to be called in those days of its dawn, was recognized by one of the oldest and most valued of our contributors—one also by no means apt to be driven about by vain blasts of doctrine. As the volume is very scarce, and the passages may never have come under the eye of many of our present readers, we think we may be pardoned, long as they are, for reproducing these words here. It is the testimony of an ornithologist given purely on ornithological grounds, without bias in any other direction, and written and published, as we must particularly point out, before the now celebrated 'Origin of Species' appeared.

"Writing with a series of about 100 Larks of various species from the Sahara before me, I cannot help feeling

convinced of the truth of the views set forth by Messrs. Darwin and Wallace in their communications to the Linnean Society, to which my friend Mr. A. Newton last year directed my attention, 'On the Tendency of Species to form Varieties, and on the Perpetuation of Varieties and Species by natural means of selection'*. It is hardly possible, I should think, to illustrate this theory better than by the Larks and Chats of North Africa.

"In all these, in the congeners of the Wheatear, of the Rock Chat, of the Crested Lark, we trace gradual modifications of coloration and of anatomical structure, deflecting by very gentle gradations from the ordinary type; but when we take the extremes, presenting the most marked differences. Are these extremes, it may be asked, further removed from each other than the Guinea Negro or the Papuan is from the typical Caucasian? and are these species aboriginal and indigenous, or are they developed by climatic and other local causes? I think the latter alternative almost demonstrable in the case of these birds. These differences of structure (I am using the word here in its widest sense, to include colour, form, and size) doubtless have a very direct bearing on the ease or difficulty with which the animal contrives to maintain its existence. In the Desert, where neither trees, brushwood, nor even undulation of surface afford the slightest protection from its foes, a modification of colour, which shall be assimilated to that of the surrounding country, is absolutely necessary. Hence, without exception, the upper plumage of every bird, whether Lark, Chat, Sylvian, or Sand-Grouse, and also the fur of all the small mammals, and the skin of all the Snakes and Lizards, is of one uniform isabelline or sand colour. It is very possible that some further purpose may be served by the prevailing colours, but this appears of itself a sufficient explanation. There are individual varieties of depth of hue among all creatures. In the struggle for life which we know to be going on among all species, a very slight change for the better, such as improved means of escaping from its natural enemies (which would be the effect

"* Journ. Proc. Linn. Soc., Zool. iii. p. 45."

of an alteration from a conspicuous colour to one resembling the hue of the surrounding objects), would give the variety that possessed it a decided advantage over the typical or other forms of the species. Now in all creatures, from Man downwards, we find a tendency to transmit individual varieties or peculiarities to the descendants. A peculiarity either of colour or form soon becomes hereditary when there are no counteracting causes, either from change of climate or admixture of other blood. Suppose this transmitted peculiarity to continue for some generations, especially when manifest advantages arise from its possession, and the variety becomes not only a race, with its variations still more strongly imprinted upon it, but it becomes the typical form of that country. If it be objected that we see many varieties which do not become hereditary, we may reply, that these varieties, having experienced changes not advantageous to their means of existence, may from that very cause become extinct. Still there are many which continue, as the Pied Raven of the Faroe Islands and the Tailless Manx Cat.

"To apply the theory to the case of the Sahara. If the Algerian Desert were colonized by a few pairs of Crested Larks,—putting aside the ascertained fact of the tendency of an arid hot climate to bleach all dark colours,—we know that the probability is, that one or two pairs would be likely to be of a darker complexion than the others. These, and such of their offspring as most resembled them, would become more liable to capture by their natural enemies, Hawks and carnivorous beasts. The lighter-coloured ones would enjoy more or less immunity from such attacks. Let this state of things continue for a few hundred years, and the dark-coloured individuals would be exterminated, the light-coloured remain and inhabit the land. This process, aided by the above-mentioned tendency of the climate to blanch the coloration still more, would in a few centuries produce the *Galerida abyssinica* as the typical form. And it must be noted, that between it and the European *G. cristata* there is no distinction but that of colour.

"But when we turn to *Galerida isabellina*, *G. arenicola*,

and *G. macrorhyncha*, we have differences not only of colour, but of structure. These differences are most marked in the form of the bill. Now to take the two former first, *G. arenicola* has a very long bill, *G. isabellina* a very short one; the former resorts exclusively to the deep loose sandy tracts, the latter haunts the hard and rocky districts. It is manifest that a bird whose food has to be sought for in deep sand derives a great advantage from any elongation, however slight, of its bill. The other, who feeds among stones and rocks, requires strength rather than length. We know that even in the type species, the size of the bill varies in individuals, in the Lark as well as in the Snipe. Now, in the Desert, the shorter-billed varieties would undergo comparative difficulty in finding food where it was not abundant, and consequently would not be in such vigorous condition as their longer-billed relatives. In the breeding-season, therefore, they would have fewer eggs and a weaker progeny. Often, as we know, a weakly bird will abstain from matrimony altogether. The natural result of these causes would be that in course of time the longer-billed variety would steadily predominate over the shorter, and in a few centuries they would be the sole existing race, their shorter-billed fellows dying out until that race was extinct. The converse will hold good of the stout-billed and weaker-billed varieties in a rocky district.

"Here are only two causes enumerated which might serve to *create* as it were a new species from an old one, yet they are perfectly natural causes, and such as, I think, must have occurred, and are possibly occurring still. We know so very little of the causes which in the majority of cases make species rare or common, that there may be hundreds of others at work, some even more powerful than these, which go to perpetuate and eliminate certain forms 'according to natural means of selection.' But even these superficial causes appear sufficient to explain the marked features of the Desert races which frequently approach so very closely the typical form, and yet possess such invariably distinctive characteristics, that naturalists seem agreed to elevate them to the rank of species. The differences in size may be yet more simply

explained by the facility or difficulty of sustaining existence in varying localities. On similar principles we may account for the existence of such a bird as *Galerida macrorhyncha* in the warm, genial climate of the Oases, where, winter being unknown, and food always abundant and close at hand, every stimulus is afforded to a vigorous development, while its prey being generally hidden in the soft open mould of the gardens and barley patches, any tendency to elongation of the bill is fostered and encouraged, until we find a race two inches longer than *Galerida isabellina*, and with a bill exactly double in length (1 inch instead of ·5).

"A process precisely similar may be supposed to have developed the various species of Desert Chats, until we find in the desert of Souf that all distinctive trace of colour has been scorched out, and instead of the brightly clad *Saxicola stapazina*, we have no more cheerful representative of the genus than *S. homochroa*. Widely as these two extremes appear to be separated, yet a well-chosen series of the numerous African species of the class will exhibit a range of transitions so imperceptible, that it will be found very difficult, without careful comparison, to draw a line between one species and the next."—'*The Ibis*,' October 1859, pp. 429–432.

The above are the words of Canon Tristram; and a more perfect or practical application of the theory of Natural Selection it would be hard to find, even in these days of its fullest acceptance—days when those who formerly strove to overwhelm its author with ridicule and contumely have not scrupled to declare themselves its firmest upholders.

Yet it is scarcely possible to speak of Darwin's death as a loss. He had done the work there was for him to do. Respected by his opponents, honoured by the world of science, loved by his intimates, and venerated by his disciples, his remains lie among those of the greatest Englishmen; and even though, as some may still think, his theory may one day be set aside, as has happened with other well-established theories in times past, the principles on which it is founded will endure for ever.

CENTRAL PARK,
NEW YORK.
OF NATURAL HISTORY.