

the manufacturers to colour the stone artificially by chemical treatment. Thus a fine blue colour can be developed by soaking the stone first in a solution of potassium ferrocyanide and then in a solution of a ferric salt. Now as exposure to the action of alkalies, or in some cases to direct sunlight, suffices to destroy the blue colouring matter, it would seem probable that it is in this direction that an explanation of the change observed by Mr. Whitton is to be sought.

In conclusion, I may add that a very instructive series of specimens illustrative of the artificial colouring of agate is on exhibition in the mineral gallery of the British Museum (Natural History).  
A. HUTCHINSON.

The Mineralogical Laboratory, Cambridge, November 21.

**Eocene Whales.**

IN NATURE for September 29 (p. 543) "R. L." reviews Dr. Fraas's paper on the Egyptian zeuglodonts, dissenting from the conclusions that the zeuglodonts are not whales, and that the ancestors of the whales are at present unknown. I trust "R. L." will pardon me for in turn dissenting from these assertions, and for agreeing entirely with Dr. Fraas. So long ago as 1900, in discussing the pelvic girdle of *Basilosaurus*, I pointed out that the vestigial femur suggested that of a creodont, while later, in *Science* for March 11, I recorded my utter disbelief in any relationship between *Basilosaurus* and existing whales. Consequently, while greatly pleased at the results of Dr. Fraas's study of the small zeuglodonts, I was not at all surprised. It seems to me that our knowledge of Eocene mammals is really very small, and that it will be many years before we will be able to trace the line of descent of many existing forms with any degree of certainty. This is most emphatically true of the whales, the ancestry of which is still obscure. At the same time I have pointed out (*Science*, March 11) that the Eocene deposits of the southern United States contain remains of a large cetacean that is at present known to us by a few caudals alone. This form is undescribed, because it seemed to me best to await the discovery of better material than caudals. So while the ancestors of whales are still unknown, we have a hint that they may be discovered any day.  
F. A. LUCAS.

Brooklyn Institute Museum, November 4.

**The Discovery of Argon.**

IN reference to the slip indicated in the last issue of NATURE by Prof. G. H. Darwin, permit me to mention that the slip was mine—not Mendeléeff's. In Mendeléeff's text it stands: "As to argon and its congeners—helium, neon, krypton and xenon—these simple gases discovered mainly (*preimuschestvenno*) by Ramsay. . . ." I am sorry to see that I had omitted the word "mainly."

In reality, my manuscript (which I enclose) contained, as you see, the words "discovered chiefly by Ramsay," but as "chiefly" was not the proper word it was struck out, probably by myself, in the proof.  
THE TRANSLATOR.

**The Leonids, 1904.**

WATCHING was begun on November 14, when between 18h. 10m. and 18h. 40m., in a sky rapidly brightening with approaching sunrise, one certain Leonid, of magnitude exceeding that of Sirius, shot from Cancer into Gemini.

November 15.—Watch from 12h. 5m. to 12h. 40m., and 14h. 5m. to 15h. 45m. The heavens were very clear at the start. I had just commenced looking out when a beautiful tailed Leonid, of mag. 3, shot from  $85\frac{1}{2}^{\circ} + 2\frac{1}{2}^{\circ}$  to  $74^{\circ} - 2^{\circ}$ . At 12h. 17m. thin, broken clouds began to pass over, the sky becoming completely covered at 12h. 40m. At 12h. 38m. a huge-headed Leonid, outrivalling Venus in brilliancy, was seen travelling behind small, broken clouds from  $129^{\circ} + 35\frac{1}{2}^{\circ}$  to  $107^{\circ} + 43^{\circ}$  in three-quarters of a second. The path here given is probably a little too long. About 13h. 30m. the sky began to clear again, and was pretty good by the time of the commencement of the second watch. There were many thin clouds, but the interspaces were large and very clear. At 15h. 25m. the heavens became quite unclouded. In this last look-out Leonids were more numerous, six being

between 14h. 45m. and 15h. 38m. The increase in frequency of meteors of the dominant shower at this period was not due to improvement of seeing conditions.

In the latter watch three shooting stars coming from  $160^{\circ} + 48\frac{1}{2}^{\circ}$  were mapped. The radiant point of the Leonids of November 15, as determined from eight tracks, was at  $151^{\circ} + 20^{\circ}$ . The meteors were swift, and mostly left streaks. There was a decided tendency towards green in their colouring.

Below are particulars of some of the most interesting Leonids, other than those mentioned above:—

November 15.

G.M.T.	From	To	Mag.	Duration	Length	Remarks
h. m.				secs.		
14 46	$181\frac{1}{2} + 28$	$186 + 28\frac{1}{2}$	> 1	4	0	Swift. Greenish-yellow. Directed from $1^{\circ}$ N. $\gamma$ Lertnis.
15 6	$71 - 9\frac{1}{2}$	$64 - 11$	> 1	1	$7\frac{1}{2}$	Very swift. White, tinged blue.
15 26	$101 + 16\frac{1}{2}$	$88 + 12\frac{1}{2}$	< 5	1	14	Green-yellow.
15 38	$172 + 34\frac{1}{2}$	$179\frac{1}{2} + 37\frac{1}{2}$	S- $\gamma$	7	7	White, tinged green. Streak.

Sheffield, November 24.

ALPHONSO KING.

**Intelligence in Animals.**

HAVING recently seen in NATURE some accounts of the sagacity of cats, I trust that the following facts, for which I can personally vouch, may also be interesting to your readers.

We have a cat, an ordinary tabby, which, when out and anxious to gain admittance into the house, not only lifts the weather-board of either our front or back hall-doors three or four times in succession, thereby causing a loud knock each time, but has also instructed her young kitten to perform the same feat.

Both mother and daughter now regularly knock in this manner in order to be let in.  
J. E. A. T.

My room opens by a door to a hall; when our fox-terrier wants to come into my room from the hall he scratches at my door. When he finds himself in the hall and wants to go out by another door to the garden or back-hall, he whines for me, and, going out, I find him by the door he wants opened. This—my leisure regrets—is of daily occurrence.  
F. C. CONSTABLE.

Wick Court, near Bristol, November 27.

**PATAGONIA.<sup>1</sup>**

THE dispute between the Argentine Republic and Chile with regard to the boundary line of their Patagonian possessions threatened at one time to result in a prolonged and sanguinary struggle. Happily this misfortune was averted by the decision, honourable to both nations, to refer the differences that had arisen to the arbitration of our Sovereign. A British Commission was accordingly appointed to examine the geographical features of the country and judge how far they could be reconciled with the terms of the treaties the interpretation of which was in question. As the head of this commission was chosen Sir Thomas Holdich, who had served his country as boundary commissioner in the wild inaccessible lands that lie to the north and west of our Indian possessions, and this selection was abundantly justified by the tact and skill with which a frontier more than 800 miles in length was traced in such a manner as to accomplish the almost unprecedented feat of satisfying both parties.

In the present volume Sir Thomas Holdich has given us his impressions of the progressive republics of Chile and the Argentine, and of the scene of his

<sup>1</sup> "The Countries of the King's Award." By Sir Thomas Holdich K.C.M.G. Pp. xv+420. (London: Hurst and Blackett, Ltd., 1904. Price 16s. net.

labours in Patagonia—impressions all the more valuable because they are those of a distinguished soldier and man of science who has spent the greater part of his life in the East, and whose principal achievements have been amongst the great mountain masses and plateaux of Central Asia, which find their only parallel in the Andes. Again and again he dwells on the likeness and on the contrasts between the new lands that he was visiting and those with which he had long been familiar.

We have only space to quote one passage (p. 149):—“One could not see the stiff rows of poplars streaking the stony slopes of the eastern Andes near Mendoza without being forcibly reminded of the Indian frontiers; and the plains of Chile round about Santiago might be the plains of Afghanistan round about Kabul. Standing on the slopes of the hills near Kabul, where Baber's tomb overlooks the Chardeh valley and the

It is, however, the pages that describe the author's experiences in Patagonia that will appeal most strongly to the scientific reader. The international differences have borne at least some good fruit. In the hope of finding evidence to support one view or the other the interior of Patagonia has been so energetically explored that there are few countries of which there has been so rapid an increase of our geographical knowledge in recent years. Comparatively little of the tract examined by Sir Thomas Holdich had been trodden by the foot of civilised man a dozen years before his visit.

We follow with absorbing interest the author in his rapid journey through the varied scenery of the central depression between the Andes on the one hand and the pampas on the other—a fertile land of hill and valley, with here and there great lakes that occupy the deeper hollows and overflow, some to the Atlantic



FIG. 1.—Corcovado Valley. From "The Countries of the King's Award."

flat range of the Hindu Kush fills up the western horizon, where interlacing lines of poplars chequering the purple and yellow fields mark the course of the irrigation channels, an impression once drifted in upon my mind of a land of promise set in the midst of barren hills, specially designed to illustrate man's ingenuity in making green things to grow where no green thing had been before. It was the wealth of the poplars and the willows which produced the impression, contrasted with the sterility of the mountains which formed their background and which were only faintly visible through the summer haze, with just the glint of snowpatch here and there. The impression was reproduced with the first view of the plains stretching from the foot hills of the Andes outwards to the Pacific. For twenty-five years Time might have stood still, and Chardeh, Maidan, and the road to Ghazni were all back again before me."

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and others through deep breaks in the mountains to the Pacific. Everywhere there are evidences of important changes in the still recent past—the shrinkage or complete disappearance of lakes, the diversion of the drainage from the Atlantic to the Pacific, and the retrocession of the glaciers.

Elsewhere we read of cruises amid the channels and inlets of the Pacific coast, which form the submerged continuations of the central valley of Chile, and of the glens of the rivers that traverse the Andean chain. Further inland these latter are filled with alluvium overgrown with impenetrable jungle. On this side, too, of the Andes there is evidence of recent changes, for—as Darwin was the first to point out—high above the sea-level are raised beaches and deposits containing shells of forms that still live in the neighbouring ocean.

But although the axis of the Cordillera and the outer

chain of islands appear to be rising from a position of depression, the line of the great Chilian valley is probably still sinking, for near the head of the Gulf of Penas, and south of the isthmus of Ofqui, that connects the peninsula of Taitao with the mainland, are found forests so recently submerged as to render it necessary to be cautious in steering amongst the tree tops. Future generations of mankind, the author thinks, may see the isthmus submerged beneath the ocean, above which it is even now but slightly raised.

Part of this isthmus is occupied by Lake San Rafael, which is remarkable as the "terminus of an enormous glacier that scatters huge icebergs about its waters." "Is there any other glacier," the author asks, "descending to sea level in latitude 47° either N. or S.?" We know of none; but however that may be there are several that reach the sea between this point and the Straits of Magellan; and yet southern Patagonia is a land of luxuriant vegetation, at least on its western coasts. "Forest was everywhere about us, dense, shadowy, dark and generally dripping. The long lines of the higher sierra were thick with it up to the point where the granite cliffs polished and smoothed by ice-cap and glacier gave foothold to vegetation only on their flat ledges. The little islets that seemed to chase one another through the streaky grey sea were rounded and packed with it." In the Ultima Esperanza district in latitude 52° there are grazing grounds where the sheep fatten quickly on the tufted grass of the country, and are left to find their own shelter, while in the neighbouring woods the puma waits his opportunity as he does in the tropical forests of Brazil. And over the whole country, mountains, valleys, and pampas alike, blow untiringly the strenuous western winds, for the most part in blustering gales that succeed one another in quick succession. "In no country in the world," remarks our author, "must 'weather' and climate be so differentiated as in Patagonia. The weather is bad as bad can be—wild and boisterous, bursting into fury, breaking into sunshine, freezing the blood in one's veins with a biting blizzard, or suffocating the system with the still steady glare of a noontday sun, and it may do all this and more in the course of a few hours' interval; but whether storming or shining, tearing one's tent to rags or bathing the landscape in sunshine, who can describe the life-giving, purifying, sweetening, strengthening effects of the climate."

Such is Patagonia, a land that seems destined to nourish a hardy race woven of many strands, among which the sturdy Welsh colonists of the 16th of October Valley, of whom the author has much to tell us, will not be least important. To the man of science it is a land of striking illustrations of long established principles and of problems that will require many years of research to solve, for of the story of its making scarcely the first chapter—a chapter of which Darwin wrote the opening pages—is yet complete.

J. W. E.

#### LORD KELVIN AND GLASGOW UNIVERSITY.

THE installation of Lord Kelvin as Chancellor of Glasgow University, which took place in the Bute Hall on Tuesday, is an event which has few, if, indeed, it has any, precedents in the recent annals of our universities. The Chancellor is the head of the whole university, but in practice he is rarely present except on ceremonial occasions, and a great part of the work which he has had to do officially is done for him in Scotland, as it is at Oxford, Cambridge, London, or in the newer English universities, by the

Vice-Chancellor. Many occasions arise, however, when it is of importance to the universities concerned that statesmen, such as the Prime Minister, who is Chancellor of Edinburgh, Mr. Chamberlain, who is Chancellor of Birmingham, Lord Rosebery, who is Chancellor of London, and Lord Spencer, who is Chancellor of Manchester, should represent their universities in Parliament or elsewhere, and such men have usually been elected not so much on account of their own connection with the universities they preside over as of the eminent place they have taken in the State, and the weight which must on all occasions be attached to their considered opinions. Lord Kelvin has been connected with the University of Glasgow since his early boyhood, he has spent his life within her walls, and he built up his enduring fame during the fifty-three years when he was professor of natural philosophy in the university.

Lord Kelvin's father was a north of Ireland man, preparing for the ministry of the Presbyterian Church. In his day, and until the foundation of the Queen's Colleges in Ireland, Glasgow was the university to which many north of Ireland men resorted, and Lord Kelvin's father was a distinguished student in Glasgow, gaining prizes in many classes more than ninety years since. About eighty years ago he gave up his studies for the ministry and became professor of mathematics in the Belfast Academical Institution. Eight years later—in 1832—he was elected to the chair of mathematics in Glasgow, which he filled for sixteen years with eminent success. There were no better text-books anywhere than those which he published on the subjects of his chair, and the small number of his students who remember him can testify that they never met a clearer or better teacher of mathematics. Prof. James Thomson had a genius for teaching other things besides mathematics, and both Lord Kelvin and his elder brother, who was professor of engineering first in Belfast and afterwards in Glasgow, owed the best of their education to their father. Lord Kelvin was only twenty-two years old when the university had the courage to elect him to the chair of natural philosophy, on the strength of his quite exceptional brilliancy as a student first in Glasgow and afterwards in Cambridge. How he has discharged the duties of his chair and how wide and fruitful have been his conception of its duties is known to the whole world of science.

On Tuesday, after Lord Kelvin had been formally installed as Chancellor of the University, he proceeded to confer the following honorary degrees of LL.D. on the recommendation of the Senate.

Princess Louise (Duchess of Argyll), who was president of Queen Margaret College until the college was incorporated with the university in 1893. The Marquess of Ailsa, who has taken a great interest in naval architecture, and in its practical application to the building of yachts and other vessels. Dr. J. T. Bottomley, F.R.S.; Dr. James Donaldson, principal of the University of St. Andrews; Admiral Sir John Charles Dalrymple Hay, G.C.B., F.R.S.; Dr. J. M. Lang, principal of the University of Aberdeen; Mr. G. Marconi; Mr. Andrew Graham Murray, M.P., Secretary for Scotland; the Hon. C. A. Parsons, F.R.S.; and the Lord Provost of Glasgow, Sir John Ure Primrose, Bart.

After conferring these degrees Lord Kelvin delivered an address, in the course of which he spoke as follows:—

To be Chancellor of one of the universities of our country is indeed a distinguished honour. For me to be Chancellor of this my beloved University of Glasgow is more than an honour. I am a child of the University of Glasgow. I lived in it sixty-seven years (1832 to 1899). But my veneration for the ancient Scottish university, then practically