equivalent to the *jingo* of the period: the dialectal form of "doughtier" appears in two words, as *thogh tyer*. Some bits of narrative are treated as speeches, and speeches as narrative, &c. But, notwithstanding all these shortcomings, we thank Professor Hippeau for his English text, and are deeply grateful to him for his French one of this romance, as well as his editions of "Messire Gauvain," "La Vie de St. Thomas le Martyr," and "Le Bestiaire d'Amour de maître Richard de Fournival." F. J. F.

EXPLORATIONS IN EASTERN AFRICA.

THE caprice of fashion is able to influence a class of men whom we are accustomed to regard as the most independent of any, for we find travellers in search of adventure to follow the same general objects with an unanimity that could hardly have been anticipated. The current of roving Englishmen does not disperse itself equally over the unknown regions of the world, but is mostly directed to limited fields of enterprise, whence it is liable to be diverted, at any moment, by new objects of geographical curiosity. Several distinct regions of Africa have in their turns been the object of adventurers' enthusiasm. Many years ago the rage was for Egypt, at another time for the countries about the Niger. Richardson and Barth renewed the interest in Haussa and Bornu, established by Denham and Clapperton; and several excellent sportsmen brought the Karroos and the Kaliharri into popular favour. The Congo well deserves similar attention, and will richly reward future travellers. But now the tide of British enterprise is strongly set upon Eastern Africa. No less than six important exploring parties are at this moment distributed over the 1500 miles which separate the mouth of the Zambesi River from the higher waters of the White Nile; they are those of Livingstone, Speke, Van der Decken, Petherick, and Baker, besides an expedition of Indian naval officers, up a river to the north of Mombas. We might have added to this list the University and other missions, as well as the names of a few sportsmen and others who are scattered about the same regions.

The energy of these explorers is the more remarkable as it can hardly be ascribed to stronger motives than geographical zeal encouraged by a general philanthropy towards the blacks. There appears no very definite goal in the way of commercial influence, or of pleasant travel, which these travellers can justly rely on obtaining. Their probability of success in the hard *cui bono* sense is undoubtedly small, while their self-imposed labours are peculiarly severe. Eastern Africa can be of little commercial value to the English, for it is separated from us by a long sea voyage, which is made far more tedious and roundabout than appears from the map, by the nature of the winds and currents. The soil of Eastern Africa is apparently less productive, as a whole, than other tropical lands; the inhabitants are more turbulent, more indolent, and less ingenious, than other tropical races; its harbours and navigable rivers are peculiarly rare; the unhealthiness of its coast decidedly great. As a scene of pleasant adventure, its attractions are naught; the natives are uncompanionable; game exists only in occasional localities, and must be pursued on foot, for horses do not live in the country: indeed, the unhappy traveller is usually compelled to walk every step of his journey, under an equatorial sun. On the other hand, when we consider the enormous and unexpected social advantages that, throughout the history of modern civilization, have followed the steps of isolated pioneers in geographical discovery, it is not for us who remain at home to discourage the researches of others. On the contrary, we should heartily applaud efforts which cost little in English money, or in English life, and are the more heroic as they are the more laborious and painful.

The romance of South African travel is almost a thing of the past. We have no more extra-tropical plateaux to explore, where the land is pastoral, the air pure and bracing; where game roams in countless herds, and where man is so sparsely present that the traveller moves like a chieftain with his retinue at his back, free to go where he likes, and conscious that none dare dispute his will. The land of Burchell, of Harris, of Gordon Cumming, and of the earlier days of Livingstone and Moffatt, was a royal scene for adventure, but is now wholly altered. The disenchanting hand of Anglo-Saxon civilization has passed over it; its limits are known, its game is exterminated, its charm of novelty and adventure has fled. The explorer of new scenes must now leave the lands of health and freedom behind him, and enter the malarious climates of the inner tropics, among negroes, tillers of the soil, who crowd the land and fetter his movements. Baldwin's recent work of adventure between the Cape and the Zambesi shows that some parts yet remain where a mounted sportsman with great perseverance and extraordinary physical power may yet hunt with large success; but its area is rapidly diminishing, and the characteristic herds of former days seem wholly to have disappeared.

Livingstone's journey to the Niassa Lake is a sufficient feat to have earned a reputation for any ordinary traveller. If it was not made in absolutely new country, it was certainly made in a region where we had only the statements of natives to guide us, of so vague a character as to leave the simplest geographical facts open to wide uncertainty. Livingstone has now successfully shown us that a great river, the Shiré, falls into the lower course of the Zambesi, and that on pursuing its channel to the northwards we pass fifty miles of rapids, and finally discover it to be the outlet of the Niassa Lake, a deep and stormy sea, of a shape and size roughly resembling the English Channel from Dover to Devonshire, save in its position, which extends from South to North instead of from East to West. He travelled along its western shore for 200 miles and failed in discovering its head. Its breadth at the point where he turned back, had gradually increased to sixty miles. In short, Livingstone has ascertained that the rumoured freshwater sea is a lake of considerable magnitude, that it is certainly two thirds the length of the largest North American lake, and may possibly far exceed it, and that it is drained by an important river which debouches into the lower course of the Zambesi.

There is a remarkable disproportion between the waters that have as yet been found to run into the lake, and the enormous volume of the Shiré, which runs out of it. Livingstone himself is much struck by the comparison. In the 200 miles that he travelled, he only crossed five small streams. Neither did the disposition of the country make larger affluents probable. A range of mountains press close upon the western shore of the lake, affording but a small area of drainage; the waters that fall on their further slopes doubtless feeding a distant branch of the upper Zambesi. The eastern shore was not visited, but it also is mountainous, and we know from the narrowness of the strip that separates it from the sea, there can be little room for a lakeward drainage. In fact the Niassa appears to occupy an abrupt fissure, parallel to the eastern coast. As an additional proof of the smallness of the area that supplies it with water, we find that during the season of heavy tropical rains the volume of the Shiré is not notably altered, while the level of the lake itself does not rise more than three feet. Where then can we find the cause of its uniform and abundant discharge of waters?

If we travel to the N.W., beyond the undiscovered head of the Niassa, we shall reach the unexplored foot of another great lake, the Tanganika, discovered by Burton and Speke, which shares all the peculiar features of the Niassa save one, and that it absolutely contradicts. The Tanganika is of a slightly superior level to the Niassa; it runs north and south; it is deep and occupies a fissure (which, however, receives the drainage of a large area), and would appear to be due to the same geological causes that have created the Niassa. The difference is this, that whereas the Niassa, receiving trifling affluents, gives birth to a very important river, the Tanganika receiving manyfold the quantity of water, is stated, on *native* authority, be it marked, to have no outlet whatever. To make the peculiarity still more incomprehensible, Burton and Speke assure us, from their own observation at the parts of the lake to which they confined their exploration, that its level is absolutely unchanged after the enormous rains of the wet season of the year. The Tanganika obviously occupies a trough blocked on the north by mountains and rising land. It is at its southern end alone where we could expect to find an outlet, but here the hearsay report is to the effect that a river runs *in*. We must not take a statement like this with too unquestioning faith. A geographer learns to distrust native reports generally, and in particular those which refer to the direction of the current of a river. It would be easy to gather an array of instances in the history of geographical discovery, from the time when the Nile was said to run both ways from Syene, where native travellers have proved themselves incapable witnesses of that simple description of fact. If the southern river drains Tanganika instead of feeding it, the hydrography of the lake would become intelligible. Now for the next step. A crowd of independent rumours and statements, spreading over many years, assign a great northerly extension to the Niassa. We hear of the way in which it narrows, so that people can ferry across it, and then broadens out again. We also hear reports of lakelets both from Burton and Livingstone in the line that would connect the two lakes, but all beyond this is dark.

The hypothesis is in no way impossible, as regards the facts now before us, that the Tanganika is drained by a southern river which ultimately feeds the Niassa, and find its exit by the Shiré, into the Zambesi.

F. G.

(*To be continued.*)

SCIENCE—THE PAST YEAR.

BEFORE commencing, with the opening year, the pleasant task of chronicling in these columns the doings of the scientific world, I take it that we cannot do better than make a hasty survey of the progress that has been made during the past one, as not only shall we thus the better appreciate the vantage-ground from which we set out; but—as "coming events cast their shadows before"—we shall be able to anticipate in a measure the inquiries which will most probably demand our attention.

To begin our *resumé* with astronomy, first-born of the Sciences, we may congratulate ourselves upon the important results which have been accomplished by the application of modern methods of research, and the diligence of our observers combined with the exquisite truth and enormous power of the instruments now used under the best atmospheric conditions, *teste* Mr. Lassell at Malta. M. Foucault, about to proceed to some elevation in the South of France; the Russian Observatory on Mount Ararat; and the planetary observations, which Captain Jacob—now, alas! no more—was about to make on the hills near Poonah, with a large refractor, by Cooke, of York, supplied by our own Government, further evidence that the brilliant success of the Scottish Astronomer Royal's experiment on Teneriffe is fully appreciated.

Not to be passed over among the events of the year, is the discovery of the variability of some of the Nebulæ, a fact which marks an epoch in the science, while the completion of the Bonn Star-atlas of the Northern Heavens is one of the wonders of the age. It is satisfactory to learn that the parallax measures of the planet Mars made this year, promise