

formations in New York ; but toward the south they become gradually more calcareous, and the Utica also becomes thinner, and fails to reach the Ohio River ; the Hudson River series overlapping it, and reposing directly upon the Trenton. The lower Helderberg series, which has been heretofore assigned a total thickness of one hundred feet, is proved to measure five hundred, possibly six hundred feet, and to include all the beds in Ohio formerly referred to the Salina and Oriskany groups. The Cincinnati uplift, formerly supposed to have a north-easterly trend, is shown to run almost due north in northern Ohio, and to send off an important branch through north-eastern Indiana ; and it is along this branch that the important discoveries of oil and gas in Indiana have been made. The best gas-wells of north-western Ohio are now yielding from five million to fifteen million cubic feet each daily, and the oil-production for the entire field exceeds fourteen thousand barrels daily at the present time. The extent and rapidity of the development of the new districts are well shown in the statement that the Lima field alone now contains four hundred and twenty-four producing oil-wells, an average of more than one new well per day since the first discovery.

THE SUGGESTION of Captain Bartlett, chief of the U. S. hydrographic office, that an international convention be called for the purpose of assigning different portions of the ocean to each maritime nation, will probably be favorably considered by congress. It is believed that this would prevent casualties at sea by ships running into floating derelicts. Captain Bartlett says in his report, "Each nation would patrol its own portion of the ocean for the purpose of towing in or destroying all obstacles. Frequent reports are received of ships running into these derelicts, and the number lost from this cause may be considerable. If shipmasters felt that every attempt was being made by civilized governments to clear the ocean of these dangers, their anxieties, which are sufficiently great from purely natural causes, would be materially relieved."

THE POSITION OF EMIN PASHA.

It was in July, 1881, that Mohammed Achmed of Dongola, a carpenter, who had lived for some time as a hermit on the Island of Aba in the White Nile, declared he was the 'Mahdi,' the prophet whose arrival is expected by the Mohammedans

about this time. The number of his adherents increased rapidly, and belief in him was strengthened by the failure of several Egyptian expeditions to capture him. In an encounter with the Egyptian troops he braved their guns, and so the belief in his invulnerableness was established. The Egyptian government failed to understand the seriousness of this movement, though it was frequently warned by Emin Bey, the governor of the equatorial province. The Arabs and Dongolans, who had been masters of these countries before they were conquered by the Egyptians, joined the fanatic adherents of the Mahdi, and soon the movement had spread over the whole country. The government, which had only by the greatest efforts succeeded in subduing the revolt of Soliman Pasha in 1878-80, was powerless against the Mahdi. He retreated before an expedition sent from Khartum, to the southern parts of Kordofan, and in December, 1881, vanquished the mudir of Fashode. At this time the serious disturbances caused by Arabi-Pasha threatened to overthrow the Egyptian government, and delayed further action against the Mahdi. Thus the number of his adherents increased rapidly, and within a short time he commanded a large army. It is not necessary to dwell upon such events as the destruction of the Egyptian army, Gordon's defence of the Sudan, the final fall of Khartum, and Gordon's death.

In 1878 Emin Pasha was appointed governor of the equatorial province by General Gordon. When he entered upon his duties, the country was in a general state of war. Only the banks of the Nile beyond Lado, the district of the Mvutan Nsige, and the country inhabited by the Shuli, were quiet. Nubian slavers invaded the country and captured slaves without meeting resistance. Emin succeeded in driving them out of the country and gathering the scattered natives into their villages. Under his peaceful government many roads were built, and the cattle, the most valuable possessions of the district, increased in number. He introduced new manufactures and the culture of new plants, and thus improved the province, which in 1882 yielded an income of \$40,000, derived from taxes, while formerly it had an annual deficit of from \$100,000 to \$200,000.

At a time when the Egyptian government did not understand the seriousness of the disturbances caused by the Mahdi, Emin called attention to the imminent danger, but his warnings were disregarded. In April, 1882, during his visit to Khartum, he offered to treat personally with the Mahdi, and to use his personal influence and his acquaintance with the persons to bring about a *modus vivendi* between the parties. His offers

were rejected, however, and he received instructions to return to his province and develop its resources. He did so, but since that time the Mahdi has cut off his connection with Egypt, and the accession of King Mwanga in Uganda has cut off that with the south. A. M. Mackay the missionary, who is kept as a kind of hostage by the king, writes on June 26, 1886, in reference to this despot, "Again and again he has expressed his determination not to let us leave, being guilty in his conscience, and constantly alarmed by rumors from the east, partly arising from Dr. Fischer's journey that way, and partly from reports of the presence of what we think must be the main body of Bishop Hannington's caravan. . . . He has ordered our boats to be watched lest we should escape, and he is reported to have said that when he hears of an army reaching the Ripon Falls he will murder us at once, and then let the white men come and catch him. . . . Every time a fit of malice comes on, it is on suspicion that we mean to 'eat the country.' . . . Being alarmed, he is dangerous, while his insufferable conceit makes him obstinate" (*Scottish geogr. mag.*, Dec. 1886). It will be remembered that Junker found great difficulty in getting leave to return south.

The state of Emin's province in the summer of 1886 may best be seen from a letter written by him to Robert Felkin on July 7, 1886, which has been published in the *Scottish geographical magazine*. He says, "I am glad to be able to tell you that the province is in complete safety and order. It is true that the Bari gave us some little trouble, but I was soon able to restore order in their district. Since I last wrote you, all the stations are busily employed in agricultural work, and, at each one, considerable cotton plantations are doing well. This is all the more important for us, as it enables us, to a certain extent, to cover our nakedness. I have also introduced the shoemaker's art, and you would be surprised to see the progress we have made. We now make our own soap, and we have at last enough meat and grain, so that we have sufficient to keep life going; such luxuries, however, as sugar, etc., of course we have not seen for many a long day. I forgot to say that we are growing the most splendid tobacco. . . . Our relations with Kabraga have still continued friendly. He has also had the goodness to send my letters to Mr. Mackay in Uganda, and has permitted me to buy several necessary articles from the Zanzibar Arabs who live in his country. Captain Casati has, on this account, acceded to my wishes, and taken up his residence with Kabraga in the mean time, in order to look after our interests. Dr. Junker is at present in Uganda, and hopes soon to start on his

homeward journey. I am only too glad that he at least has been enabled to escape from here."

It will be remembered that the Mahdi, after the conquest of the province of Bar-el-Gasal, tried to attack Emin Pasha. His expedition, however, proved a failure. In the equatorial province communication was not interrupted at any time, and we hear of frequent journeys between Lado and the upper end of Lake Mvutan.

Since that time Emin's position has not become worse, as Junker succeeded in sending him from Uganda two thousand dollars' worth of cotton goods, and later news refer to goods bought by Emin's agents in Uganda. The latest letter of Emin Pasha is dated Dec. 18, 1886. He writes to Dr. Junker that King Mwanga allowed him to buy goods from Zanzibari merchants, and that he obtained permission to have ammunition and provisions sent from Zanzibar.

From these facts we conclude that Emin's position in his province is difficult on account of his isolation from Europe, but that there is no imminent danger. Therefore Stanley's expedition is not so much a relief expedition as one intended to provide him with such troops, guns, and ammunition as will enable him to hold his own in his province, and to continue the work he has so successfully begun. Evidently he is unwilling to leave his soldiers and officers, and to abandon a province in which, under the most adverse circumstances, he has restored peace, and saved the natives from the oppressions of corrupt officers and slave-hunters.

Stanley's expedition could not take the nearest and best-known route through Uganda, on account of the hostility of Mwanga. Neither was it advisable to avoid Uganda by passing north-east of the Victoria Nyanza; for the Waganda frequently make war upon the tribes of that district, while they do not visit the region west of Unyoro. Though Stanley experiences considerable difficulty in reaching Stanley Pool, his expedition has been so far very lucky, and there has been hardly any unexpected delay. Once on the upper Kongo, he will not find any difficulty in reaching the rapids of the Mburu, from which point his route will be easterly through an unknown country. It is not probable that his large caravan will meet any serious obstacle, and we may hope that he will succeed in accomplishing his object, thus enabling Emin Pasha either to return, or to continue his work in safety.

That our readers may be able to follow the doings in Central Africa, we publish with this number a map of the region, which is corrected to date.