

answer to the question. He had listened with great interest to what Dr. Gordon said, but he would remind them that that gentleman was speaking of 1847, and he of 1827, when Admiral Beaufort was at the head of the surveying service, and when they were losing boat's crew after boat's crew, right along the coast, because the naval officers persisted in bleeding. Later, they insisted on enormous doses of calomel, and until a very recent period, on enormous doses of quinine. He did not profess to be a medical man, but with Warberg's tincture, and arseniate of quinine, he could reduce any fever. It had always been successful with himself, and also amongst men he had had to treat, for, amongst the natives of Africa there were, perhaps, as bad fevers as amongst Europeans, if they changed their climate, and went from one part to another. When he first knew Zanzibar, in 1866, it was supposed to be most unhealthy, and there was a standing order that nobody should be allowed to stop on shore. His friend, Sir John Kirk, went there in 1865, married in 1866, and most of his married life was spent there. Two children had been sent home, and when he saw the family last year they were as healthy as possible. That was a place where, in 1857, in station orders, it was unsafe for a white man to sleep on shore; but now they had their polo parties and croquet parties, and everything else. They learned to live in these places, and progressed with experience. The West Coast had never been thoroughly studied yet; Dr. Horton, Dr. Gordon, and others, had studied it no doubt; but it was a combination of a large amount of experience which was wanted; as Mr. Walker said, hard work was the thing. You might over-do it, of course, but plenty of work was the best way to keep off disease.

TWENTY-FOURTH ORDINARY MEETING.

Wednesday, May 31st, 1882; Sir RUTHERFORD ALCOCK, K.C.B., in the chair.

The following Candidates were proposed for election as Members of the Society:—

- Bohn, Henry, 142, Holland-road, Kensington, W.
 Bryan, William Booth, Woodfield, Blackburn.
 Chance, Alexander M., Alkali Works, near Birmingham.
 Freakley, William, 41, Pyenest-street, Shelton, Staffordshire.
 Higgin, George, Broadway-chambers, Westminster, S.W.
 Humphrys, James, Anglo-American Brush Light Corporation, Limited, Belvedere-rd., Lambeth, S.E.
 Kinipple, Walter Robert, 2, Westminster-chambers, S.W., and Whitefarland, Greenock, N.B.
 Shore, Lieut. the Hon. Henry N., R.N., Coastguard, Greenock, N.B.

The following candidates were balloted for and duly elected members of the Society:—

- Beckingham, James Horace, 48; Percy-park, Tyne mouth.
 Bright, Thomas Smith, Glannant, Carmarthen.
 Buchanan, John, 4, Windsor-crescent, Newcastle-on-Tyne.
 Cooper, Henry, 20, Moor-street, Soho-square, W.
 Morris, William, 2, Westminster-chambers, S.W., and Greenock.
 Searchfield, Charles, Merchants' College, Claremont-park, Blackpool.
 Wells, Rev. Edward, B.A., Flamstead Vicarage, Dunstable, Bedfordshire.

The paper read was—

GOLD ON THE GOLD COAST.

BY CAPTAIN RICHARD F. BURTON.

The glory of an explorer, I need hardly say, results not so much from the extent, or even from the marvels, of his explorations, as from the consequences to which they lead. Judged by this test, both Captain Cameron and I have been not unfavoured of fortune. At Bihé, the province through which my friend and companion painfully hurried, a practical mission is now established; American missionaries bring consuls, and consuls bring commerce and civilisation. In Unyamwezi, where two purblind, fever-stricken men plodded amid the fetid swamp and fiery thorn bush, over the Zanzibar-Tanganyika track, mission houses and schools may now be numbered by the dozen. On the Gold Coast of Western Africa, whence came the good old "guinea," there has been a change which will form the subject of this evening's paper.

The following extract from "Wanderings in West Africa," a book which I published in 1863, will best explain the reasons that sent me once more to the unfortunate and ill-famed coast.

"In several countries, such as Denkira, Tueful, Wásá (Wassaw), and especially Akim, the hill-region lying north of Accra, the people are still active in digging gold. The pits, varying from two to three feet in diameter, and from twelve to fifty deep, (eighty feet is the extreme), are often so near the roads, that loss of life has been the result. 'Shoring-up' being little known, the miners are not unfrequently buried alive. The stuff is drawn up by ropes in clay pots, or calabashes, and thus a workman at the bottom widens the pit to a pyriform shape: tunnelling, however, is unknown. The excavated earth is carried down to be washed. Besides sinking these holes, the natives pan in the beds of rivers, and in places collect quartz, which is roughly pounded."

"They (the Fantis) often refuse to dig deeper than the chin, for fear of the earth 'caving in;' and, quartz-crushing and the use of quicksilver being unknown, they will not wash unless gold 'show colour' to the naked eye."

"As we advance northwards, from the Gold Coast, the yield becomes richer. . . ."

"It is becoming evident that Africa will one day equal half-a-dozen Californias. . . ."

"Will our grandsons believe in these times . . . that our Ophir, that our California, where every river is a Tmolus and a Pactolus, every hillock is a gold field, does not contain a cradle, a puddling machine, a quartz-crusher, a pound of mercury? That half the washings are wasted because quicksilver is unknown? That whilst convict labour is attainable, not a Company has been formed, not a surveyor has been sent out? I exclaim, with Dominie Sampson—'Pro-di-gious!'

"Western Africa was the first field that supplied the precious metal to Europe. The French claim to have imported it from Elmina as early as A. D. 1382. In 1442, Gonçales Baldeza returned from his second voyage to the regions about Bojador, bringing with him the first gold. Presently a company was formed for the purpose of carrying on the gold trade between Portugal and Africa. Its leading men were the mariners Lanzarote and Gilianez, and Prince Henry "the navigator" did not disdain to become a member. In 1471, Joao de Santarem and Pedro Escobar reached a place on the Gold Coast, to which, from the abundance of gold there found, they gave the name Sao Jorje da Mina, the present Elmina. After this a flood of gold poured into the lap of Europe; and at last, cupidity having mastered terror of the Papal Bull, which assigned to Portugal the exclusive right to the Eastern hemisphere, English, French, and Dutch adventurers hastened to share the spoils."

After this much of preamble, I at once plunge in *medias res*. My chief care must be, not to repeat the short but comprehensive account of our visit offered to you a few nights ago by my friend, Captain Cameron, of African fame, the best traveller, and the most genial companion of travel as yet known to me. We landed at Axim, on January 25th, 1882, instead of September 25th. The delay was at once inevitable and fatal to the feat of exploration, a visit to the quasi-mythical "Kong Mountains," which we proposed for ourselves. The Harmatan, or cool season, had closed, and an exceptionally hot and unhealthy summer was setting in, promising early and heavy rains.

Axim, the principal port of the Wása province, and the chief exportation-place of the future gold mines, lies on the western third of the Guinea Coast. Here the mighty bulge of the ham-shaped continent bends from north-south to a western-eastern direc-

tion, the lay being between four and five degrees north of the equator. Of its climate I shall have something to say presently.

Axim, as far as nature made her, appears to the stranger an exceptionally pretty place. The bay proper is bounded north and south by two green points, Bosumatto and Prépré. The tints are the true African tricolor—faint blue, vivid leek-green, and brick-dust red. The forms of the landscape are less easily described. The horizon line is a wavy wall of giant trees, often 150 feet high, and palisaded with white trunks bare of branches. The "bush" is inferior only to that of Australia. The flat ledge upon which the town, or rather village, reposes, is dotted with luxuriant growth, and the sea is gridironed with lines of weather-blackened trap or greenstone (diorite), projecting perpendicularly from the shore. Under cover of these reefs, landing is safe.

The only striking object of the settlement itself, is the Fort Saint Anthony, which was, as usual hereabouts, built by the Portuguese, taken by the Dutch, and finally annexed by the English. Its site is a wart of ironstone, thinly greened over with wild growth. The building is a large square house, mounted upon bastions, which bear old-fashioned cannon; a cavalier imperfectly commands the sea-approach, and two batteries the landing-places. Carefully whitewashed, it is a conspicuous landmark. The townlet extends in two patches, to the north and south of its protector. The long streets,avenued with shady fig trees, are well laid out; the tenements are mostly native houses, built of bamboo-fronds (*Raphia vinifera*) with thatch supplied by the leaf of the same palm. Europeans affect whitewashed abodes, with swish walls. The various mining companies here have their quarters, as the "Akankon House," the "Gold Coast," the "Effuenta," and the French factory, near a foul swamp. There are two commercial establishments, Swanzy's, and Lintott and Spink's, whose agents are lodged in a superior way.

Much is evidently to be done at Axim. Landing under cover of the two islets is easy throughout the year, except on the rare occasions when the surf is urged by stormy winds. But a landing-place is wanted, so is a hotel, a station with a tramway, and a host of other civilised requisites. They will come in time. *Festina lentè* is the motto for Africa.

We are now in the Land of Gold. After rains, the women wash and pan the black sand (titaniferous iron) of the foreshore; and

make from half-a-dollar to two dollars a-day. Dollars, therefore, are cheap, while women are dear. We have found gold specks and spangles by treating the swish of which the rude walls are built. "Colour," as they call it, appears in the red soil of the very streets. A few yards behind the town a quartz-reef runs north and south, easting rather than westing, the usual meridional lay in these lands. By crushing specimens, we obtained a yield of two ounces per ton; in fact, superficial gold everywhere abounds, and in this particular I found the coast richer than California in 1859.

At Axim, we were fortunate enough to collect sundry specimens of worked stones, the first brought from this section of the coast. The place appears to have been a great centre of lithic manufacture; huge boulders lie about the fort, and elsewhere, with grooves three feet long, in which the implements were ground.

After a week's preparation, we left Axim, to visit sundry concessions for proposed mines. There being no horses hereabout, the hammock is the universal conveyance. Originally it was used only for the beach; never for the "bush." Hence it is carried by two pair abreast, a cross-piece at right angles, and a bamboo pole resting upon the head. Nothing can be more unpleasant than its jolting, stumbling, wriggling motion, which dizzies the brain, and makes every limb ache as with rheumatism.

We first visited what I shall call the "Axim Reef." The path leads, for a quarter of an hour, off the main road, to the Ancobra River, up a little fiwmará, which flows only after rain. The people have dug in the bed and the bedside what are here called "women's washings," that is, shallow pits to extract the metal; and the men have sunk a chimney-hole to the quartz-reef, which, at a higher level, subtends the stream-bank. The site is in a deep forest, and for square miles to the north and east, the ground has been bought by English adventurers for future treatment.

A few hundred yards north of the town, at a hamlet, elegantly termed by the Anglo-African, "Stink-fish" (*i.e.* sun-dried fish) town, begins the great Apatim concession, belonging to a well-known English merchant, Mr. James Irvine, of Liverpool. Here we first noted how easy and how profitable it will be to "hydraulic," that is, to wash the whole land, after Californian fashion. We then crossed the Ancobra River, the great

"snakey" artery of this region, and inspected the "Izrah Mine," for which a company has just been formed. The site is open, healthy, and pleasant, four miles from the coast, within reach of the sea-breeze, and within hearing of the Atlantic surf. At the southern extremity, the natives have sunk shafts by the dozen, but have neglected to wash the superficial deposits. Mining prospered in the days of slavery, when a man could bring gangs of hundreds into the field. We shall substitute the machine, the cradle, the long-tom, the sluice, Norton's tubes, and the force-pump. Our trip ended with inspecting the Inyoko concession, another admirable ground for the hydraulic working of gold.

After a short delay at head-quarters, we set out in a surf-boat eastward, or down coast, to prospect the mines of Prince's, *alias* St. John's River. The landing was peculiarly unpleasant. You must choose the proper moment, and force your boat through the triple line of breakers which guards the strand; this done, you unload her, carry the cargo over the sand-strip to the safe and quiet inner waters, and warp the craft round the jaw of the river's mouth. A fearful rock-studded bar prevents your entering the latter, which at this season is not too broad for an English hunter to clear at a leap. Inside, the lower river-bed widens, as is here the general formation, into a "broad," or briny lagoon, rich in the finest oysters, growing on the rocks, as well as on the mangrove stems. Nothing can be more marked than the winding of the bed; and, after hours of paddling, you are still close to the shore. We shot for specimens when paddling upstream, and brought back sundry spoils—black swallows, and charming little kingfishers of dark robe shot with green. Canoeing down, we carried of gleanings of botany from the banks. The vegetation is marvellous, and the collector is ever haunted by the idea that he wants months to do justice to a single square mile. Nor is the task altogether pleasant. Snakes haunt the trees, making the Kru canoe-men mad with fear. The bush has spines like the fabled Arab Zakkum, the thorn-tree of the Inferno. Wild bees and wasps at times swarm; and every bright flower is tenanted by some species of ant more or less vicious and venomous.

After two days' short work, we reached the terminus of river navigation, landed, housed our goods at a country Kru (village), and walked north to the proposed mines. That adjoining the Kumasi village, near the

right bank of Prince's River, will supply a quantity of a valuable wash dirt. Its *vis-à-vis*, on the other bank, christened by us São João do Principe, is equally promising.

Returning to the river-mouth, we visited Prince Town, which the natives call Prinsi Ollandia. Yet the fort which adjoins and defends it bears in some old books the Brandenburg flag. Despite threats of deadly snakes, we visited the ruins, and found them delightfully situated upon a breezy hillock, commanding a glorious view, and the walls are so solid that a little repair will make them good as new; and here, in imagination, we placed a sanitarium and hospital, a huge store, and eventually baracoons, for Coolie immigrants. The old factors and traders on this coast certainly knew how to live in comfort, despite the climate.

Our next and my last visit was to the Ancobra River, which we ascended as far as the highest point surf-boats can reach. The marvellous vegetation is that of Prince's; the birds and monkeys are more numerous, and the meanderings of the bed are preposterous. Most of the river-frontage has already been secured by companies or individuals; and no wonder. Here and there you see women washing the dirt of the banks for gold. This, too, is nature's highway to the mines lying north and north-eastward of the river-head; and so it will remain till tramways are laid down.

We spent a day prospecting the Ingotro concession on the right bank. The soil is immensely rich, and the people have shown, by extensive washing, the proper way to work its wealth.

From Ingotro we ran up the right bank to the Akankon concession. Here the southern creek extends to a hill-side pitted with "women's washings;" and a few wooden sluices, a force-pump, and a "crinoline hose," will, for the present, prove far more useful than stamps and steam-engines. Briefly, the Akankon is the richest ground we have hitherto seen.

We remained four days at the Akankon concession, and suffered severely in the flesh, both of us at the same time. Cameron was prostrated by a bad bilious attack, I by the normal African ague and fever. He treated it with chlorodyne, I with Warburg's Drops (*Tinctura Warburgii*), an invaluable preparation which no "African" should forget. We managed to reach Tumentu, the terminus of river navigation, and the "Great Central Depôt" of the mines, a beggarly collection of bamboo huts belonging to three of the five working

companies. Here, as we could no longer make way against our evils, we resolved to take canoe and we dropped down stream without delay to Axim. The tornadoes had begun; the travelling season was ending, and three of the four mine-managers were on their way home.

A week's nursing enabled my companion to "pull himself together," and he again went up the Ancobra, in order to finish his survey of the river and the land—a map which he has carefully checked by astronomical observations. Well knowing his truly Caledonian perseverance, I made him promise that he would not fight too hard against fever. As for myself, my work was done. I came out to West Africa doubting, because others seemed to doubt, the possibility of successfully working her mines on a scale likely to pay. I return thoroughly satisfied. The obstacles, generally objected to and most dreaded, numbered four; these are—

1. The pernicious effects of Ashanti wars and scares.
2. The expense of transporting heavy machinery, and the troubles attending skilled labour in a wild country.
3. The labour question generally; and,
4. The climate, or rather the prepossessions against the climate which prevail in England.

Allow me, briefly, to show how I came to the conclusion that two out of the four are mere bugbears, and that the remaining obstacles are easily to be surmounted.

You have all heard of what the West African Coast, in 1880 and 1881, agreed to call the "Ashanti Scare," officially denominated in the Blue-book the "threatened Ashanti invasion." It was not wholly a "scare." The caboccers, or chiefs, crafty as Africans mostly are, were determined to try us. But when they saw the vigour of our preparations, ships and soldiers sent up from all directions to the Gold Coast, they simply collapsed. They gave up the absurd "gold-axe," which is supposed to symbolise war backed by wealth. The "scare" has done great good, by showing how weak the once mighty military power has now become. She is actually at war with her neighbour Gy'aman, and she cannot master even that one petty kingdom. In fact, the hideous little negro despotism, spoiled of her props, seems crumbling to her fall.

My doubts about transporting machinery were at once solved, when I found that some of our mines in the interior are actually using stamps and steam-engines, are crushing quartz

and are amalgamating gold. But here, I venture to assert that gold-getting has begun at the wrong end. I heard nothing of surfacing, sluicing, and hydraulic-mining by the jet—and similar simple and inexpensive processes. I could not learn that a single hill had been asked, or that a single rivulet-bed had been dug into for stream-gold and nuggets. I heard only of deep-sinking, shafting, tunnelling, and quartz-crushing. And yet, as I have said, the natives set us the example. Whilst the husbands sink pits to act as shafts, the wives pan the pay-dirt from "women's washings," and expect to extract from 40 to 50 lbs. of the gravelly soil immediately below the surface-humus between half-a-dollar and two dollars a day. *Probatum est!* Why not, then, begin at the beginning, and wash on the largest scale the overburden before attacking the rock? The proceeds of panning would purchase machinery and pay its transport; and, at last, when the hillocks are cleared of trees whose roots hide nuggets, and are levelled by the jet or sluice, the quartz-reefs will stand out, like those of Arabian Midian, in the form of stone walls. These will be worked by mere quarrying with the sledge-hammer, till the floor-rock is found. California owes her agricultural, and especially her viticultural, development chiefly to the hydraulic system, which, in a few years, prepared her surface for husbandry on a large scale. It will be the same with the Gold Coast.

As regards the labour question, there is no difficulty for the immediate present. The country people, Fantis, Appolonians, and others, are working on tribute, and are contracting for piece-work. At Cape Coast Castle there are still disengaged hands. But I here foresee extensive speculation; all these tribes know gold well, and have fingers like fish-hooks. The same is the case with the Krumen, who are found to work satisfactorily in some mines. This market, however, is getting tight; and although not more than 5,000 hands are employed on the whole Western Coast, the demand for some hundreds more would lead to a great rise in wages. When recruits are wanted, they may, perhaps, be raised in Yoruba-land, and in the Bassa and Drevin countries; of that, however, I am far from certain. Even when the five working mines are fully manned, there will be all manner of difficulties, and there will be a complete break-down when the number of companies shall rise from five to fifty. The only plan then will be to find a new labour-market, and here are, happily, no diffi-

culties. For years the slow old West Coast has been talking of a Chinese immigration, the one thing wanted to galvanise the inert and paralysed body. The French have already sent a corps of Chinese workmen to begin their Senegal Railway. In due time we shall follow suit. My companion and I have worked out a project for supplying, not only the mines and the Gold Coast, but the whole of British West Africa with Chinese and Indian coolies; and, if others be wanted, with the sturdy and hard-working Wasawahili of Zanzibar. We shall be the greatest benefactors West Africa ever known.

It remains now to consider the question of climate. Topically speaking, it is equatorial, within five degrees of the line. But the nearer we approach the equator, the cooler and more equable becomes the temperature—a fact ignored by geography books. At Fernando Po, in north latitude 4°, I never slept without one blanket, and often required two. The cause is the canopy of vapour, which ever intercepts the solar rays, and which absolutely prevents sunstroke. At Axim we found the average daily temperature 75° to 80° Fahr., rising to 92° and 96° Fahr., and falling by night to 70° or 75°. There are only two seasons, the rains and the dries; the hottest weather, in our winter, is as bearable as that of Trieste in August. The unwholesome season follows the rains in September, the rule of the Nile valley. Yellow fever is unknown. There is no reason why a man who takes tolerable care of himself, and who is well lodged and fed, should not labour for years at the mines; at the same time, I should advise a trip northwards after each spell of eighteen months.

This climate-question, of which so much has been said in England, would hardly have occurred to an old coaster. When I hear a man enlarging upon the subject, I know him to be a theorist. The West Coast of Africa is not more unwholesome than was that of Western India when I was first stationed there; Bombay, as well as Sierra Leone, was once called the "White Man's Grave."

You will object that Captain Cameron and I both suffered from ague and fever during our short stay on the Gold Coast. "I thought you were fever-proof," has been said to me more than once; but a man is never fever-proof in Africa, and rarely cold-proof in England, at least, as long as he breathes the upper air. And we gave the climate no chance. New arrivals are advised by all old hands to avoid, for the first three months, over-exertion of mind

or body. This, in our case, was equivalent to prescribing a generous diet of beefsteaks and port to a pauper patient. We had to do in 24 hours the work of 48; we walked instead of ham-mocking, the better to collect specimens; and my companion, after a heavy day's work, often sat for hours in the dewy night to make his observations. Nor did we stay long enough to become acclimatised. Under other circumstances, we should have passed, at the end of a month or so, through a mild seasoning of ague and fever; and, after the third month we should have been fit for any amount of exertion. I repeat, that, in our case, the climate had no fair play.

But look at things as they are. Of the four English managers of mines, three have retained vigorous health after years of residence in the Coast. Only one suffers from rheumatic gout, a complaint certainly not confined to Western Africa. As Mr. Walker told you a few days ago, we all know Englishmen who have lived a score of years, and many more, at Bathurst (Gambia) and at Freetown (Sierra Leone), and who have returned home hale and hearty. I see sundry in this room, as good men as if they had lived in England all their lives.

And now, permit me briefly to recapitulate. The good news we bring home is the prodigious wealth of the land; I know nothing to equal it in California or in the Brazil. Gold-dust is panned by native women from the sands of the seashore. Gold spangles glitter after showers in the streets of Axim. Gold is yielded by the lumps of yellow swish that revet the wattle walls of hut and hovel. Our washings range from half an ounce to four ounces per ton. In California, nine-pence pays.

There, then, is the gold, and it will be our fault only if it remains there. During the last century this section of the West African Coast annually exported to Europe between three and three and a-half million sterling of gold, in the shape of dust, nuggets, and bars. The abolition of slavery, and the manumission of "pawns," brought it down to an average of £126,000 during the last decade. Such, at least, is the calculation of the experienced Mr. Paulez Dahse;* but we have the very best of slaves, the machine which never tires, the steam-navvy, and the quartz-stamp.

* Page 2, band 5, "Deutsche Geographischer Blätter," published by the Geographical Society of Bremen, G. A. v. Halem, 1882. The reader will find the figures in page 102 of Mr. Dahse's most able paper, which amply deserves the honour of a translation. I am informed that this has already been done by Mr. N. Bruce Walker, jun.

"Long Tom" and "Broad Tom" will do single-handed in a day the week's work of a gang. England also wants gold. A few years ago, her annual supply was twenty-five millions sterling, now it is reduced to eighteen. I see no difficulty in again raising the export of West Africa to the highest figure it showed during the last century, and I know no land better able to supply the measure required in England, to preserve the balance of the precious metals, than this old-new California, our neglected El Dorado, the Gold Coast.

I thank you for the honour you have done me in listening with such good will to a mere *resumé* of an extensive theme—such "boilings down" mostly lack savour. And, in a parting word, I venture to solicit your good will in favour of our proposed exploitation.

DISCUSSION.

Mr. JOHNS said he was engaged in these gold mining operations, and he felt very strongly that the labour question was of great importance. His idea was, that they should get all the companies engaged in the enterprise, to adopt some general system of importing Chinese labour, which had been found so valuable in California. It was evident that something of this kind must soon be set on foot, if the enterprise were to be as successful as it ought to be. The various tribes on the coast from which their supply of labour was drawn, understood each other very well, and unless something were done, they would soon find the price of labour rise against them. There were several companies now engaged, but he feared if they all acted on purely selfish motives, they would entirely break down; they wanted a spirit of union amongst them, in order, not only to import Chinese labour, but also to fix the price of European labour, to protect themselves in case of alarm, and other matters. He found great difficulty in the City, however, in getting other companies to take this view, but he hoped before long they would agree on a conference on the question of labour, which was the only one of importance. One or two companies he knew privately, would soon be sending home very important remittances, but he did not think there ought to be any secrecy in the matter; they ought to communicate everything to their shareholders.

Mr. THOMAS CORNISH said he went to the African Gold Coast last year, and as an old Australian miner, he was exceedingly well pleased with the prospect he saw there. He had samples which were washed out in his presence, showing the extreme richness of the titaniferous sand along the coast. Going up the Ancobra, too, there were many excellent "prospects," though they had not time to examine them carefully; he felt sure there were many places there which would pay well, both for sluicing and dredging. He was not able to go to Appolonia, being taken ill, and

having to cut short his visit, but he could bear testimony to the good prospects for gold mining on the West Coast generally. The great difficulty, no doubt, would be the labour question: the West Coast being so different from Australia and California, where a white man could work hard from morning to night; and where food was plentiful. In Africa it was necessary to employ black labour; the Kroomen were very good workers, and soon learned how to use a pick and a drill; but when you were working with two or three of them in a level, at any depth, artificial ventilation would be very necessary. The wages were about 1s. 3d. or 1s. 6d. a day; and if the companies were to fix some such rate, it would be very fair, and the men could earn good wages at it. The question of white men's health would also have to be studied, and one very necessary thing would be to avoid over-indulgence in stimulants, for that was one of the greatest curses on the coast.

Mr. WALKER did not think any European would ever be able to stand the climate of Africa without a moderate amount of stimulant. He had passed upwards of 30 years there, and he did very well on two bottles of whiskey a week. There was no doubt about the richness of the country, and it was only a pity that Captain Burton was not able to see more, because, from his large experience in other auriferous regions, his testimony was of the greatest possible value. With regard to Europeans' health, he had had a considerable number of carpenters and other men at work under him, besides sailors, and his experience was, that those who had plenty to do maintained their health much better than those who were idle.

Mr. OLIVER PEGLER said his experience on the coast led him to the conviction that Captain Burton's statement on the question of the richness of the gold in the lagoon were exceedingly moderate. He had spoken of from one to four ounces as being realised, but he had seen as much as twenty ounces on some occasions. This was a country which extended over 100 miles, and the sands of every river contained gold. On his visit, he made the best use of his time, and landed wherever the steamer touched, and for a thousand miles along the coast, there were evidences of gold. The geological formation was eminently typical of gold, particularly the alluvial strata, and these alluvial deposits were so gigantic, that the puny efforts of the natives in the past had made no appreciable impression upon them. They only went to a very shallow depth, and rarely, if ever, tunneled, though he had seen some open trenches. They dug down a little way, and then enlarged the hole until it fell in, and then the fetish man stepped in and made them leave the neighbourhood. In one place he came across some old mines, perhaps 20 years old, where the natives had gone down 50 or 60 feet, when evidently a large mass of earth had fallen in, and the working had been abandoned, but the richness at that depth was very striking. In one place he came

upon one thousand or two thousand natives busily engaged on a small area of a few acres, working in gangs, day and night, washing for gold. With regard to the labour question, no doubt the Kroomen were a splendid set of men, but when operations became much enlarged, he feared this source of labour would become very limited. He had seen gold mining in Venezuela carried on very successfully with Indian coolies, but, in his opinion, it would be better to have Chinese, as they possessed more strength, and were better able to shift for themselves. In Africa, however, there need be no lack of food. There was abundance of vegetable produce. A great many people threw cold water on this enterprise, on account of the climate, but when greater provision was made for comfort, sickness would decrease. If anyone had travelled in Britain 2,000 years ago, when it was covered with forests, and had been taken ill, he would probably have sickened and died. The West Coast of India was, at one time, as unhealthy as the West Coast of Africa, but Bombay was now one of the finest cities in the world. Demerara, again, was one of the healthiest cities, barring yellow fever. In all these tropical countries fever was the great evil, but he would rather live in Africa, with its chances of fever, than in England, with its east winds. If the companies would treat their workmen properly, they might live there very well. He had had some experience in India, and it was known that the South Wynaad district was considered very unhealthy; but he had insisted on the company with which he was connected paying every attention to the health of the miners, and having proper dwellings, and, he believed, they had not lost a single man. If they had good dwellings and food, there was not much danger. Nine-tenths of those who perished, did so through over-indulgence in stimulants.

Mr. LIGGINS said he had listened with great attention to these two valuable papers, but regretted to say that he had not learned anything from them which he did not know before. He had on his finger a ring, which he had had for 25 years, made from gold found at Cape Coast Castle, so that he had no doubt about gold being there, but that was no proof that it would pay to get it. Ballarat had sent nearly 300 millions of gold to this country, but it scarcely paid to get gold there now. He knew Demerara very well, but no one who lived there considered it a healthy place. He was always very well there, but he could hardly reckon the number of his friends who had died there. This did not altogether result from the climate itself, but the effect of the climate was to lead to self-indulgence; a man took one glass of grog, which did him no harm, and then took a second and a third; and then, perhaps, went to sleep in a damp verandah, and caught a chill, which led to what, in England, would be called influenza, but there was a fever; and this went on time after time, until he succumbed. The climate was a tolerable one for an English gentleman who knew how to take care of himself, but in

the case of working men there was more difficulty. He could mention innumerable cases of working men whom his father and he had sent out there, who had been thoroughly well treated and cared for, but who could not resist that curse of the West Indies, the new rum, which finally destroyed them; not so much from its direct effects, as in the way he had mentioned, by leading to carelessness in other matters. He believed, therefore, that it would be utterly useless to send English workmen to superintend these gold mines. He knew a mine in British Honduras from which he had seen splendid samples of gold years ago; but it had never paid those who put their money into it, simply because it was impossible to get suitable labour. He had also seen gold 20 years ago which was found in Venezuela, or British Guiana, but they had never seen anything but samples. He had had experience of coolie labour in the West Indies, and of Chinese, and, in his opinion, the only way in which there was any chance of working these mines at a profit, was by means of Chinese labour.

Dr. HEWAN, being called upon by the Chairman to give his opinion on the climate of Africa, said he must begin by condemning what Mr. Walker had said about the two bottles of whiskey a week. There was no doubt that indulgence in spirituous liquor was the great cause of mortality on the West Coast. Indulgence generally led to over-indulgence, and in his experience, a great deal of the evil effects of the climate, so called, were really due to the manner of life in the climate. Some people overate themselves, and got bilious attacks, and when they ate they generally wanted something to wash it down with; he did not see why men should not enjoy as good health there as in many other tropical climates. No doubt it was moist and enervating, but you never heard of sunstroke there. If a man would avoid damp, drinking, and exposure at night, especially moonlight nights, he would do very well. The main thing was to avoid spirituous liquors; they were of use sometimes, no doubt, but they should not be taken habitually.

Mr. CHRISTIAN MAST wished to have some idea how far what was called the Ashantee scare was in reality a source of danger. He understood that behind the Gold Coast lay the kingdom of Ashanti, with a population of from four to six millions, and that the kings and kinglets of the interior were very desirous of having an outlet to the coast, which had caused the previous war, and might lead to further troubles.

Mr. HYDE CLARKE, said they might derive one comfort from Mr. Liggins's remarks, and that was that he did believe in Chinese labour. He was astonished that a man of his experience should say it was impossible to employ European labour in this district, because anyone of them who had been concerned in such operations knew that they could get men from

this country to work in any part of the world, even under much worse conditions than those offered by a mining company in West Africa. Mr. Liggins spoke from his experience as a West India planter, but Captain Burton was talking of a different thing altogether; he was not speaking of employing casual European labourer on a sugar plantation, but of a distinct class of this country, the mining population. Those men would go to any part of the world where they were offered fair treatment and good wages; many of them were saving men, and therefore, sober men, and there was no doubt that a fair supply of them to superintend and instruct the native labourers could be obtained. A very important point raised by Captain Burton and referred to by Mr. Johns, was the importation of labour, and on that he must say a word from his own experience. Mistakes were often made about cost of labour. You heard that the average price of labour was 1s. a-day, or whatever it might be, and you might fancy that you could get the labour you wanted at that rate, but the moment you began employing a considerable number of men, you used up all the surplus labour and raised the price against yourself. The only practical mode of meeting the difficulty was by importing labour, as had been recommended, so as to swamp the results of competition among the local labourers. But there was sometimes a practical difficulty which ought to be mentioned. The employer had to pay the passage of the labourer, and then if he did not take care, the labourer might run away and get employment with one of his competitors. It would be very necessary, therefore, that some means of enforcing labour contracts should be provided; this was a point worthy the attention of the authorities on the West Coast, and when it was done, labour might be safely imported. The question of cheap labour was very thoroughly treated by Sir Thomas Brassey in his book entitled, "Work and Wages," which was founded on his father's experience; and he there stated that whenever his father carried out any large operations abroad he never calculated on the low price of labour in the country, but always on the English rate, and that he found could be safely taken as the standard. This might at first sight appear to be a paradox, but it was very fully explained and justified in the work he had mentioned. Mr. Liggins appeared to have been rather frightened at Captain Burton's statement as to the wages gained by the women in gold washing, but he derived considerable encouragement from it, because he understood that it included both the woman's work in washing, and also her husband's in digging the stuff, and if 2s. a day was the least amount earned under such circumstances, it was plain there was just the opportunity for the employment of capital and organisation. They were much indebted to Captain Burton for his information, which was the more valuable from his great experience in all parts of the world, and he had had an opportunity on this occasion to carry out the studies which he made as the translator of the great Portuguese poet, and the

illustrations he had given of the voyages of the great explorer of the African coast.

Mr. MARTIN WOOD asked if the British protectorate extended over the whole district described, how far it extended inland, and if there were any guarantee for security for life and property, as well as for the fulfilment of contracts.

Captain CAMERON said a British Commissioner, and a force of British constabulary, were established as far as any of the mines, and the limits of the Protectorate were well known as to the boundaries of the various tribes, though they were not yet accurately defined geographically. It was not necessary for him to say anything about Captain Burton's paper, for they had worked hand in hand the whole time. They were both of opinion that immigration of labour was necessary for the whole West Coast, and that it would be provided best from China. At Lagos, a Frenchman told him he should be glad of 600 coolies for his commercial operations. He quite endorsed Mr. Cornish's remarks; he did a little dredging on the Ancobra, and the results looked very promising, though they had not been tested. He hoped the "flats" would be lifted by machinery, and worked down by sluices and "long toms." Ventilation he had seen managed very successfully by means of fans worked by hand labour, but immediately two galleries were put in communication with each other, so that there was an up and down current established, these difficulties would cease. Of course, in driving a heading, air would always be wanted to drive out the smoke after blasting. Mr. Pegler was an experienced mining engineer, and he endorsed his remarks, but he might add that in two places he had actually seen tunnels which had been driven by the natives. One of these was on the Ancobra, some distance from its junction with the Abunsa, where there was a tunnel driven in the bank (which communicated with a shaft) about 50 or 60 feet long, and some of the stuff in it was apparently very good. Mr. Liggins's experience was, no doubt, very valuable, but he believed more in what was told them by Captain Burton, Dr. Hewan, and other gentlemen, and there was no doubt that as the coast became better known, Europeans would live longer and more comfortably there. It was the same with other places. In 1857, Zanzibar was supposed to be so unhealthy that no one was allowed to sleep on shore, but when he was ill there with fever, Sir John Kirk sent him on shore that he might recover. Science was always progressing, and as people went more to new climates, they would adopt better means for ensuring their health. They might lose some men, but what struggle was there in which some lives were not lost for the benefit of humanity. The Ashanti scare simply showed the hollowness of the present Ashanti empire. He did not calculate labour at the English rate, but rather higher; he knew it cost £120 to build at Bombay, though labour was cheap, what you could build for £40 in an English dockyard.

You ought not to calculate by the rate per day, but by the amount of work done for a given sum of money.

Mr. DIPNALL said it seemed very difficult to get at the exact facts; one gentleman said the wages of a woman gold washing were so much; then another said that included her husband; one said the cost of labour might be calculated on the English scale, and Captain Cameron had first shown that this was not at all safe; so that an outsider was considerably puzzled to know how the matter really stood.

Mr. SWANZY said his firm had been in the African trade many years, and it was nearly four since they had embarked in gold mining. They then sent out an engineer, who accompanied his partner, Mr. Crocker, to several of the native mines, and they were so satisfied with his report that they spent a considerable sum of money, and sent out a good deal of machinery for the purpose of working for gold. They had as yet had no difficulty with the labour question, but had had to turn a good many away; the rate of paying being eight dollars a month. The manager of one of the other mines also told him that he found no lack of labour. Possibly when the time came, which Captain Cameron prophesied, when there would be fifty companies at work, there would be a lack of labour, but it had not arisen yet. With regard to the climate, if it was as bad as some people seemed to think, merchants could not carry on their business. They did not intend to send out Englishmen to do the actual work, but to instruct the natives, and see that it was done properly; they had had four or five at a time working there, and their health had been perfectly good; his partner had been up at the mines two years, and he held it was healthier there than on the coast. He might say in conclusion, that it was not a question of gulling the public in any way; his firm had been established fifty years, they had spent a good deal of money on this enterprise, and had very substantial returns to show.

Mr. ANDREW thought one evening was much too short in which to discuss this question, on which there was much difference of opinion. He believed, however, there would be no difficulty whatever in getting a sufficient supply of labour.

The CHAIRMAN said the two main questions affecting this subject were those of climate and labour, on which various opinions had been expressed. Everyone admitted that there was a large extent of alluvial country full of gold deposit, which might be extracted, and the only two factors which had to be considered were, whether the climate and the supply of labour would enable Europeans to extract it at a profit, and without leaving their bones in the midst. It had been said of Demerara, that it was a very good climate if it were not for yellow fever, which rather reminded him of Gay's play of the "Beggars"

Opera," in which Polly had defended herself very vigorously against her traducers, by asking what there was against her character, "barring that she was a thief, and fond of the men." The great fault of Europeans, which had cost many thousands of lives, was that they continued the same diet which suited them in a cold climate, where they could take plenty of exercise, in the tropics. They would take a solid breakfast, then a luncheon, with champagne or other stimulants, then a heavy dinner at seven, and perhaps supper afterwards, with abundance of strong liquor; and of course they could not expect to retain their health. They would do much better to follow the example of the natives. They heard a great deal of what the Chinese could do; but their diet was almost exclusively rice and weak tea, with a little mild tobacco; and he was sure that if Europeans did the same, they would not be much the better for it. It astonished him very much that Africa, which had been for so many years the great storehouse of labour for the rest of the world; for Europe and America, more especially, with its continuous demand for slave labour, was not able to supply the labour for its own occasions. It seemed very hard to send to China for labourers to come and take away African gold, when there were so many millions of strong vigorous negroes there. If they were fairly paid and well treated he did not believe there would be any necessity for going to China for help; though he had no doubt any amount of labour could be obtained from thence. Even at the present day the slave trade was still carried on in Africa, and, however hardy the Chinese might be, he could not believe that people born in the country would not stand the climate better than strangers. He would not go into the question of tectotalism, but he could not help thinking that in the case referred to, the three glasses of grog would do quite as much harm as sleeping in the verandah. Those who lived carefully, and, above all, temperately, might, no doubt, preserve their health in tropical climates; he had tried it for 25 years, and did not find that his health was seriously affected. Captain Burton had already immortalised himself by his great discoveries in connection with the Nile, and he had now done a great service by bringing forward the fact that there was this large quantity of gold in Africa, not deep down in the earth, but really on the surface; and he thought both the moot questions of climate and labour might fairly be answered in the affirmative. The latter he should certainly say might be met without going away from Africa. By utilising native labour in a legitimate way more would be done to root out slavery, than all the fine speeches and philanthropic efforts in other directions could ever accomplish. He concluded by proposing a hearty vote of thanks to Captain Burton.

The vote of thanks was carried unanimously, and the proceedings terminated.

Captain BURTON adds the following remarks to the

discussion:—He perfectly agreed with Mr. Johns upon the important subject of unity and "solidarity" amongst the companies, for what benefits one mine benefits all. Mr. Cornish had stated facts concerning the washing and dredging of the Ancobra river; this was one of the late M. Bounet's pet projects. He agreed with Mr. R. B. N. Walker that two bottles of whisky a week do more good than harm. He regretted that Mr. Liggins had learnt nothing from the paper, and could only hope that all in that room were not so learned. But random statements cannot be accepted against facts; the four mine managers on the Gold Coast show that Europeans can live there, and can work there. He could not join in the total abstinence theories of Dr. Archibald Hewan; in these matters, every man must find out what suits him best. He thoroughly disagreed with two remarks made by the Chairman. The first was, advising well-fed Englishmen to live like Kroomen, or other natives; the experiment has often been tried in India, and mostly with fatal effect. The second, viz., the injunction to engage labourers, not in China, but in Africa. Throughout the Dark Continent, the free man objects to work, so this was virtually proposing a system of slave recruiting. The cry of "Africa for the Africans" reminded him only of "Ireland for the Irish."

Miscellaneous.

CULTIVATION OF GINSENG IN JAPAN.

The ginseng plant is of bushy growth, and belongs to the family *Araliaceæ*. It presents, in its cylindrical, dark roots, a medicine highly prized by the Chinese and Japanese. It grows wild in the shady mountain forests of Eastern Asia, from Nepal as far as Manchooria, while, until very recently, it was found cultivated in Japan only. In the large forests of Chinese Manchcoria, the first plants were discovered, and although these roots were carefully gathered, the amount was far too small for the demands of China, and thus its cultivation was started in Northern China, Corea and Japan taking part in the enterprise; yet, for several years, to supply the steadily growing demand, it was imported from the United States, where, in the neighbourhoods of Baltimore and Philadelphia, great quantities of *Panax quinquefolium* were gathered. The Japanese select for the cultivation of the ginseng tree, black and moist soil, as the only kind in which it will attain perfection, and become pure white, as if grown in ferruginous soil it becomes reddish, and is less valuable. The soil being well prepared and manured, it is then laid out in beds, always east and west, about 27 Japanese feet long, and 2½ feet broad, with a distance of 2 feet between