

23rd Regiment has been re-embarked. I hope and believe that these delays will not culminate into disaster; but they are already too serious to be passed over without notice and comment. The all important question of transport has been neglected from the first. It was known that the Gold Coast had no beasts of burden, that all food for the army would have to be carried by natives, and that these natives must also be fed from their loads. It was known that they were indolent and timid, equally prone to run away from danger and work. Is it not, therefore, obvious that with the regiments which were held in readiness at home a sure means of transport should have been also prepared, that the troops might always be able to advance, and Coomassie carried by a dash? The Gold Coast is an elephant country; elephants might have been imported. Mules and horses die on the Gold Coast, but they would have lived long enough to carry many loads to the Prah. But in order to make success mathematically certain coolies should have been supplied from our other tropical possessions.

This expedition is African travelling on a grand scale, and every African traveller knows that transport is the problem which he has to solve. He avoids, if he can, employing the natives of the country through which he has to travel, as they can always run away. But it often happens that only the natives of the country can be obtained. He then uses every precaution to keep them in his service; he attends to their just complaints; he takes care that they are well housed and fed; and, if he uses coercive measures, he takes care that they shall be of a kind which will not merely irritate or frighten, but which will be of a decisive character. Kroomen are the only good labourers upon the Coast, and it was ascertained so early as October that Kroomen in large numbers were not to be obtained. At the same time, it had become evident that our native allies were worthless as fighting men. It would have been in any case a dangerous experiment to trust the transport of this expedition to Fantees; but, if it were decided not to apply for elephants, mules, and coolies from abroad, and to have no bearers but these timid and indolent people, the experiment should, at all events, have been made with system and care. In the first place, however, the native allies were not disarmed and converted into carriers nearly so soon as they should have been. At a time when bearers were urgently needed I saw thousands of Denkeras lying on their backs in a camp beyond Mansu. Secondly, when these people were disarmed, it was done in a loose and slovenly manner. The Chiefs are not summoned to a Durbar; no special arrangements were made. They should have been promised a liberal bounty for all the men that carried loads, and threatened with a fine for those that ran away. The men themselves should have been punctually paid and properly fed, and also regularly organized. Something of this has been done since the arrival of the European regiments; but that was rather late, and carriers still run away in crowds. It is sometimes maintained that they do not run away on account of real grievances, but because they are afraid to cross the Prah. Well, has it not always been known that these people dread the very name of Ashantee? Could it not have been foreseen that they would run away if they could?

We are hopeful, however, that Sir Garnet Wolseley possesses that fertility of resource and power of reducing obstacles which will always atone, and more than atone, for past oversights and errors.

EXPLOSIVES.

It is now some time since we directed the attention of our professional readers to this subject, although in our frequent remarks on torpedoes we have incidentally touched upon the various explosive compounds used in the construction of those terrible instruments of modern warfare. In our present remarks we simply wish to bring before our readers what has been accomplished, in improving, if not perfecting the now well known explosives, as an introduction to the recent interesting experiments made in the Austrian Service with dynamite.

It is comparatively of but recent date that gunpowder has ceased to occupy its former exclusive position as an explosive agent. Gun-cotton, one of its earliest rivals, has for some years competed with it as an explosive, but owing to the delicacy with which it was necessary to handle this compound it has never seriously jeopardised the status of gunpowder. Indeed, in ordinary warfare the latter has always been able to hold its own. Thanks, however, to the improvements effected in modern science we have at last succeeded in rendering gun cotton far more serviceable. As many of our readers are no doubt aware, this latter explosive is manufactured by steeping cotton wool or fibre in a mixture of nitric and sulphuric acids. This does not effect the cotton in appearance, but its qualities are altered in other respects, for we find the same quality of cotton is considerably increased in weight, caused in great measure by the cotton parting with a quantity of water and absorbing in its place the elements of nitric acid. In this manner the cotton becomes impregnated with a large amount of oxygen, which, on the application of heat, is ready to form gaseous compounds with the carbon already existing in the cotton. Under the Able process the explosive substance thus formed possesses three characteristics rendering it peculiarly fitted for military engineering operations. In the first place we find that cotton thus prepared, when in a wet condition, is non explosive; secondly, this same wet or moistened gun-cotton is rendered immediately and powerfully explosive by the detonation of a small portion of dry cotton in contact with the wet; thirdly, it may be brought under fire without fear of accidental explosion. We shall, no doubt, hear shortly of its effect in actual warfare, as we learn the Ashantee expedition is supplied with this explosive, to be used in connection with military engineering services.

We next come to nitro-glycerine, an explosive oil somewhat analogous to gun-cotton. This compound is produced by the action of nitric and sulphuric acids on glycerine. The chief drawback in this substance, is its extremely treacherous nature. M. Noble in his valuable researches and experiments, in endeavouring to obviate this serious drawback, discovered the important fact that its explosive power was not reduced, but increased by mixing liquids with solid substances in themselves thoroughly innocuous. This led to the production of the next explosive we propose considering, viz., dynamite, which quite turns the tables, as we find it one of the safest at the same time most powerful and convenient explosives applicable either to industrial or military purposes. Dynamite, we learn, from good authority, is made by mixing nitro-glycerine with a porous earth, known in German as "Kieselguhr." "The earth absorbs the oil, and the result is a plastic, putty-like substance of a brick dust colour, containing

about 75 per cent. of nitro-glycerine, and 25 per cent. of absorbent earth." The British Dynamite Company, occupying extensive works at Ardeer, near Glasgow, are the manufacturers of this preparation in this country. They make two descriptions, No. 1, the ordinary "Kieselguhr" article, which, as we have stated, contains about 75 per cent. of nitro-glycerine; and a cheaper quality No. 2, containing about 20 per cent. of nitro-glycerine mixed with nitrate of potash and powdered charcoal. We next come to lithofracteur, which is practically dynamite under another name, being compounded of nitro-glycerine, sand, earth, powdered coal, sulphur, sawdust, and nitrate of soda, or nitrate of barite. Another explosive compound, which, however, has never been brought into general use, is one that was brought under our notice some years since, and which at first attracted considerable attention in scientific circles. The chief characteristic—so far as we could judge, for the matter was kept a strict secret—was the safety with which it could be manipulated, owing to the fact of its being manufactured in separate parts, which were only united at the moment when required for use. Separate, it was non explosive; its parts united, it formed a powerful explosive. It was tried in blasting rocks, and for other purposes in which gun-cotton and other similar materials were in use, and with fair success. But in further experiments it did not seem to offer sufficient guarantees for its success—at least, such as would justify the formation of a company that was ready to undertake its production had it been more satisfactory in its results.

On a future occasion we propose bringing before our readers some most interesting details relative to the recent Austrian experiments.

TORPEDO ACCIDENT.

During the progress of some experiments with Whitehead's fish torpedo at the Royal Arsenal, Woolwich, on Saturday morning last, a sad accident occurred which caused the death of one man and inflicted serious, if not fatal, injuries on four others. The experiments were being made on the banks of the canal in the Royal Arsenal, having been commenced on Thursday last, and it appears that one of these torpedoes was being prepared for lowering into the water on a trolly or truck in the shed constructed over the canal for the purpose, when suddenly the air vessel at the end of the machine gave way with a loud report, something like the discharge of a gun. The torpedo, which is about 8ft. long and made of steel, was completely shattered. The largest portion of the torpedo remained in the shed, together with most of the smaller pieces, but the end piece, which contained the motive power, about 3ft. in length, was blown a distance of forty-three yards into the timber field adjoining. At the time of the accident there were nine men employed at the canal upon these experiments, which were under the direction of Mr. Thomas E. Miller, chief engineer, Royal Navy, a member of the torpedo committee. He was in the shed at the time. Edward Baker, who was killed on the spot, was engaged turning the handle of the screw propeller, while William Fishenden was occupied in oiling the machine according to the orders of Mr. Miller, who was standing next him. The other men were in various parts of the shed. Fishenden is the most injured of all the survivors, and how Mr. Miller escaped unharmed