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(*Memoirs and Reviews Omitted.*)

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Original Articles are entered in thick type; Translations, Reviews, and Notices of Magazines in thin type.

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VOLUME XV.

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Authors alone are responsible for the statements made and the opinions expressed in their papers.

A PORTABLE FIELD GIRDER, AND A SIMPLE METHOD OF LAUNCHING.

By Bt. Major R. L. McClintock, d.s.o., R.E.

As a good deal has recently appeared in the *R.E. Journal* on the subject of field girder bridges, the following account of certain experiments with such a girder bridge carried out by the Q.V.O. Sappers & Miners at Bangalore may prove of interest.

Part I.—*The Girder.*—The original idea was taken from a French book,* in which it is referred to as "Le Pont du Système Tarron."

The inventor claims for it :—

(1). That it contains only materials readily available in a civilized country, and that it can be turned out with the tools carried by a Field Company of Sappers.

(2). That the whole of the launching operations can be carried out from the near bank.

(3). That it will cross spans up to 45 metres.

If indeed a field girder could be devised to fulfil all the above conditions it might be worth adding to existing bridging equipment, seeing that it is applicable to any gap, wet or dry, shallow or bottomless ; especially if it could also

(4). Be quickly and easily taken to pieces and assembled by comparatively unskilled men.

(5). Have no part too long to pack in a G.S. wagon or too heavy for two men to lift.

Instance of Use.—The French authors give the following instance of the use of this type of bridge in practice :—

At Bozel in 1904 a sudden flood of a local torrent swept away the bridge on the high road and interrupted all traffic with the South. Lieut. Delacroix of the 4th Genie was forthwith sent to Bozel with 74 Sappers and ordered to restore communication by means of a Tarron bridge. This had to cross a clear span of 20 metres and carry a concentrated load of 3 tons. He was given the job on 25th July and began work on the morning of the 26th. He felled his timber in a wood 3 miles off and carted it to site, where his 74 men worked it up. These had never made a Tarron girder bridge before, but nevertheless completed their work by 11 a.m. on the 30th, and launched the bridge the same day—in all 72 hours work.

* *Ponts Improvises, Ponts Militaires et Ponts Coloniaux.* Par G. Espitallier et F. Durand (Octave Doin et Fils, Paris).

General Mechanical Principles.—The general principles of the Tarron design are best quoted from the authors (*vide Fig.* 1) :—"If we consider a series of rigid bars forming, with respect to the horizontal, the funicular polygon MABCDM′, extending from one bank to the other, this system is of itself in equilibrium, and this becomes stable if we join the different angles to the central point of MM′ by ties. Thus we make a girder which, joined to a second similar girder, can carry the roadway of a bridge. Lateral stability is obtained and the whole linked up into one rigid system by joining the overhead angles of the two girders by horizontal transverse struts *m* and by diagonal ties *n*.

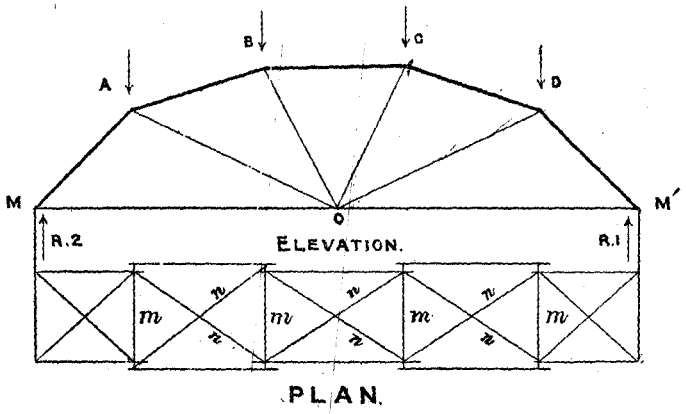


FIG. 1.—"*Tarron*" *Girder—General Principles.*

Length of Components.—The design of the Tarron girder bridges made at Bangalore was based on the following assumptions :—

(1). That the angles made by the two end compression members (MA and M′D) with the horizontal was 45°. (There was no special reason for this particular angle : the French authors suggest 50° as the most economical).

(2). That there should be five compression members of equal length in the arch of each girder.

These two conditions, taken in conjunction with the particular span, at once fix the length of all components of the girders.

Bangalore Experiments.—In the Bangalore experiments a 30′ girder bridge was first made, chiefly to see how the joints worked out and to experiment with the Tarron system of launching from one bank by "Contrepoids et Avancement," of which more later under the head of Method A. The book did not afford much practical help in the actual construction of the girders, as it omitted to give any dimensions or data, and refrained from the description of any joint or other working detail. As in addition the only drawings given were

those reproduced as *Figs.* 1, 2 and 4, it is quite possible that the

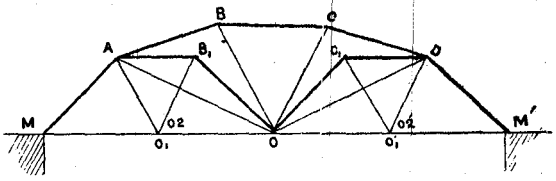


FIG. 2.—"*Tarron Girder*"—*Showing Subsidiary Girders for Large Spans.*

girder finally evolved at Bangalore differed materially from that of Bozel.

However, the scantlings of the various tension and compression members were obtained by the aid of a stress diagram, and the joints, etc., evolved from imagination tempered by experience. The resulting 30′ bridge proving quite successful and having been loaded to destruction, a 60′ bridge on the same principle was put in hand, to carry infantry in file, or loaded pack animals.

Multiple Jointed Tie-Beam.—This extension of span at once introduced a difficulty. 15′ or 16′ being the longest spar which can conveniently be carried in a G.S. wagon, it was obvious that the 60′ tie-beams of the new girders must now be made in at least four parts, thus giving the three joints OMN (*Fig.* 3) to be held up, instead of only one in the middle, as in *Fig.* 1. The French inventor overcomes this difficulty by the introduction of two "subsidiary girders"—MAB_1O and M_1DC_1O (*Fig.* 2) to hold up the two joints O_1 and O'_1, on either side of the centre.

Difficulty of Subsidiary Girders.—Neither the original drawings nor the letterpress gave any information as to how the joints were worked at A and D (*Fig.* 2), where the main and subsidiary girders blend into one. This proved a difficulty in practice, and there seemed no reason why this redundant and weighty arrangement of subsidiary girders should not have its object fulfilled much more simply by four new wire ties—OC, OD and NC, ND (*Fig.* 3). This arrangement

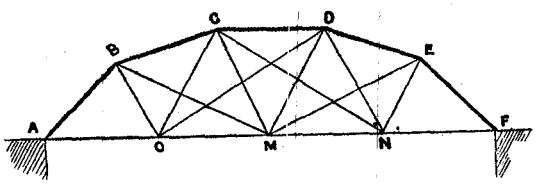


FIG. 3.—*Bangalore Girder—Showing Additional Ties for Large Spans.*

incidentally also relieves the stresses in some of the members very materially.

Span, Load and Scantlings.—The 60′ span bridge was accordingly made on these modified lines, the modification being re-christened the "Bangalore Girder" (*Fig.* 3).

Span, 60′.
Roadway, 6′ in clear.
Headroom, 10′.
Load, infantry in file—*i.e.* $1\frac{1}{4}$ cwt. per foot-run on each of the two girders.

Each of these consisted of the following parts :—

(1). Five compression members, AB, BC, CD, DE, EF (*Fig.* 3). Being in compression, these were of course made of wood, and were 14·08′ long between centres of pin-joints, and 15′ overall. They were made alternately of a single piece of 5″ × 5″ timber, and two pieces of 5″ × 4″. This was done solely to ensure a direct thrust down each member, as otherwise the double compression members (AB, CD, EF) were very wasteful of weight as compared with the single ones (BC and DE, *Fig.* 3).

(2). Ten wire ties of 1″ steel cable, of varying lengths. OB, OC, OD—MB, MC, MD, ME—NC, ND, NE (*Fig.* 3). As these never come into compression, they are made of wire.

(3). One tie-beam, composed of the four sections AO, OM, MN, NF (*Fig.* 3), each 15′ long between centres of pin-joints, and 17′ overall. Although these are in tension when the bridge is under a load, during the operation of launching they come into compression, and consequently must be made of wood. Each of these was a single piece of 8″ × 2″.

(4). All joints were "pin" joints of round mild steel rod, 1″ in section. To each of these a "U"-shaped shackle was fitted, to facilitate the attachment of the wire ties to the various angles.

Connecting Girders into Bridge.—The two girders, prepared as above, were then connected together—

(*a*). Underneath the tie-beams.
(*b*). Overhead along the arch of the compression members.

(*a*). The two tie-beams were cross-connected by two shore transoms (A and F) and three road transoms (O,M,N), each 8′ long by 8″ × 4″ bolted on underneath them. These five transoms carried two lines of roadbearers, of the same depth as the tie-beams, and consequently having their top edges flush with them. The chesses were accordingly supported at four points—on the two tie-beams at their ends, and on the two roadbearers in between.

(*b*). Overhead the two girders were cross-connected by four horizontal transverse struts between the angles BB, CC, DD, EE on the two girders, and by diagonal wire bracing, as shown in the three centre bays of *Fig.* 1, *Plan—n, n, n.*

Weight of Complete Bridge.—The total weight of the whole bridge (less chesses) proved to be 5,436 lbs. and that of the heaviest member 185 lbs. This was quite unnecessarily heavy, the timber used being "Honay" (*Pterocarpus Marsupium*), which weighs 56 lbs. a cubic foot, as against elm which weighs only about 34 lbs. Also the scantlings for the compression members were calculated from a formula which allows a very large factor of safety. There is no doubt that the bridge could have been made considerably lighter with safety.

PART II.—*Launching.*—"*Method A*," "*par Contrepoids.*"—This is the arrangement advocated in the book. The bridge, which can easily be carried by about 100 men, is brought up to the gap and laid down parallel to the near bank, and as close to it as possible. The rest of the operation is best described in a free translation of the book (*Fig.* 4):—"The bridge is prolonged in rear of the shore transom M by a frame making an acute angle with the horizontal. This frame can be loaded on its end with a counterpoise which will balance the weight of the bridge round the shore transom M. A cable runs from the end of the counterpoise over cross-pieces at the ends of arms which stand at intervals on the bridge, and this cable is finally made fast to the far end of the bridge. If the lengths of the various arms are correctly arranged, the stresses in all the ties of the girders remain tensions (this is essential) except in the horizontal tie-beams, which come into compression. As, however, this compression is not great and these tie-beams are of wood of a fairly large cross section, it does not have any ill-effect. The operation of launching consists in turning the whole system round a vertical axis, so as to bring the bridge across the gap. The counterpoise is then allowed to rise, and the outer shore transom settles into its place on the further bank. The various launching accessories are then dismantled."

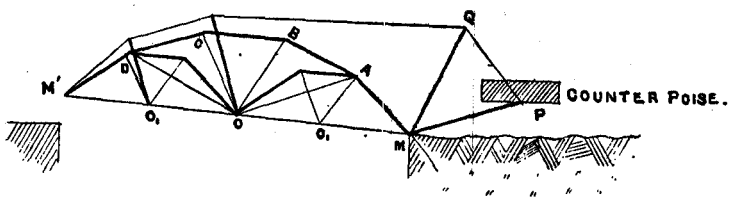


FIG. 4.—"*Tarron Girder*"—*Launching Method A.*

"*Method B*," *by Single Derrick.*—Finding the counterpoise difficult to arrange for the long and heavy 60′ bridge (and not caring much for the method anyhow, for various practical reasons which will at once become apparent to anyone who tries it), we endeavoured to discover some other method of attaining the same result. The device finally adopted as simpler and quicker than all others was a single derrick on the near bank. *Figs.* 5 and 6 and *Photos* 1, 2, 3 explain the method. The bridge, as before, is placed parallel and as close

as possible to the near edge of the gap, with the near shore transom resting on the ground across what will be its final position. The bridge, of course, may be made *in situ*, or constructed under cover and carried up at the last moment.

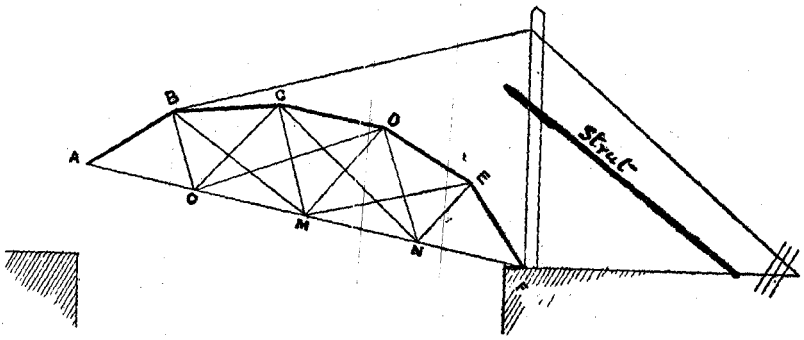


FIG. 5.—*Bangalore Girder—Launching "Method B."*

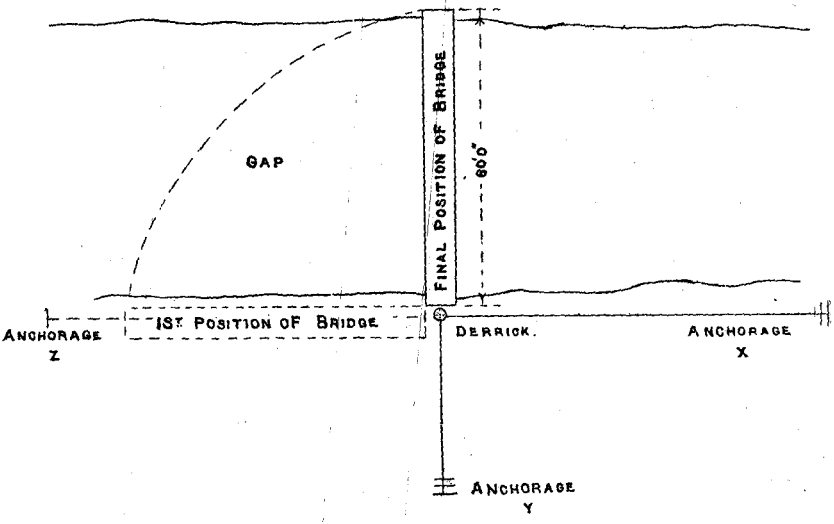


FIG. 6.—*Plan of Launching Arrangements—Bangalore Girder—"Method B."*

In the meantime another party erects a single derrick of any convenient height (that in the photos was 30′, but as little as 20′ will do at a pinch) just in rear of what will be the final position of the near shore transom (*vide Figs.* 5 and 6). If men cannot cross the gap, the fore-guy must be replaced with a back strut, as in the photos. A treble tackle connects the head of the derrick with the far end of the bridge. A suitable tree can replace this derrick entirely.

When all is ready, 30 men haul on the fall of the tackle, the outer shore transom rises in the air, and the near shore transom butts hard up against the foot of the derrick. The whole bridge can now be

pivoted on this point and swung round through a right-angle, till the far shore transom is vertically above its final position on the far bank. If the tackle is now slacked off gently, the bridge settles down across the gap. It can be moved a little forwards or backwards as required by a few men hauling on a rope at either end.

During the operation of launching, the stress at first is taken entirely by the anchor X, and is then gradually transferred to the anchor Y, *Fig.* 6. These two anchors thus represent the Frenchman's counterpoise. These two anchorages should be made rather stronger than those normally used for a single derrick; in sound soil they may be of 3 : 2 : 1 park picket pattern, well driven home. The third guy Z takes little stress and may be secured to a single picket, while the fore-guy may be replaced by a back strut.

Time and Men.—The 60′ girder bridge, weighing 5,436 lbs., was launched by the above method within seven minutes by a squad of 40 native recruits. This was, of course, exclusive of the time taken in raising the derrick, which proceeds contemporaneously with the putting together of the girders. The former operation has been carried out at Bangalore by 50 men in three hours, while on the first occasion of putting together the bridge, 30 men totally unacquainted with it completed the work in four hours. Hence the putting together and launching of a 60′ girder bridge of this type would appear to represent about four hours work for 80 men.

Launching Expedients.—This girder bridge, rigid enough when finally *in situ* and under a load, has a tendency to deform during launching in two distinct directions. First, the three joints O,M,N (*Fig.* 3) in the horizontal tie-beams may rise out of the horizontal. If this is allowed to happen, the whole affair will shut up, and it must be guarded against by lashing temporary struts across each girder between B and O, M and C, and N and E (*Fig.* 3). These struts may be seen in *Photos* 1, 2 and 3; they are removed when launching is complete. Secondly, the long and willowy bridge sometimes has a tendency to buckle longitudinally under the pull of the tackle. This can be prevented by cross-bracing the tie-beams with three small spars and a little rope. This is also shown in *Photos* 1, 2, 3, and is likewise removed once the bridge is across the gap.

Final Remarks.—1. *Girder.*—Among other good points in this type of girder bridge is the absence of any strut or other projection below the roadway level. Consequently the erection of high abutments to raise the bridge clear of the water level is not necessary. It may possibly be objected that large proportion of depth to span (1 to 4) and the consequent height of the girders (about 15′) will make them difficult to handle. This has not been found to be the case, each separate girder being light enough to be put together on the ground, raised into a vertical plane, and then joined to its fellow without any special arrangements being necessary.

2. *Method of Launching.*—It is claimed that "Method B" compares very favourably as regards time and simplicity with any of the other methods of field girder launching in common use. These, I imagine, are fairly summarized in the table at the end of "Method of Launching recommended for Large Girder Bridges" in the November number of the *R.E. Journal*, 1911. All instances given therein of the launching of girder bridges of 40′ span and over, apparently required access to the far bank of the gap, and entailed the erection thereon of some structure, varying from a 30′ sheers to a 60′ derrick—(and usually some other structure on the near bank also)—or the passing across the gap of a couple of suspension cables. In launching by "Method B," on the contrary, until the far shore transom is at rest in its final position on the far bank, there is no necessity for any man to set foot on the latter. He can then cross on the girders. Further, the only launching accessories required are a simple single derrick of moderate height on the near bank. This method seems suitable to any girder bridge which is of fair longitudinal stiffness, or which can be stiffened temporarily, as was done to the "Bangalore" girder bridge in question.

It has been objected that this swinging method of launching is not universally applicable—for instance, to the case of a gap across a highly embanked road, where the bridge could not be constructed along the near bank, at right angles to its proposed final position. The "Method B" has accordingly been developed as follows to meet this case also.

The bridge is put together as before, but *on the road itself* in rear of the derrick (pointing in the direction of anchorage Y, *Fig.* 5). The far end is raised as before by the tackle, and the whole bridge swung round *in a complete semicircle* still in the position required. This necessitates a fore-guy across the gap, and a little manœuvring of the side-guy to anchorage Z as the bridge passes beneath it, but no other modification whatever.

The bridge was launched under these conditions also at Bangalore, the time taken being about 15 minutes.

I owe my acknowledgments to Quartermaster-Sergeant Instructors King and Dolan of "Queen Victoria's Own" Sapper and Miners, the former of whom rendered me much assistance in the construction of the girder bridge, and the latter in the perfecting of the launching arrangements. The photographs are by C.S.M. Pickles of the same Corps.

A PORTABLE FIELD GIRDER, AND A SIMPLE METHOD OF LAUNCHING.

Photo 1. Bridge put together on Near Bank and outer end raised, preparatory to swinging.

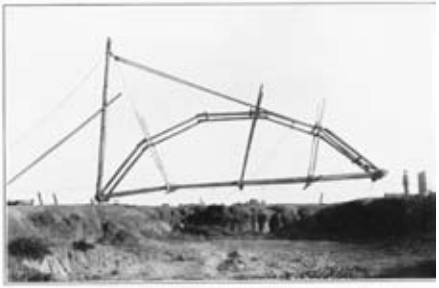


Photo 3. Swinging Complete: outer Shore Transom over Far Bank.

Photo 2. Swinging in progress. Bridge half-way round.

Photo 4. Launching Accessories dismantled and Bridge Completed.

Field Girder

AN ENGINEER OFFICER UNDER WELLINGTON IN THE PENINSULA.

THE DIARY AND CORRESPONDENCE OF LIEUT. RICE JONES, R.E., DURING 1808-9-10-11-12.

WITH LETTERS FROM DISTINGUISHED OFFICERS AT THE SEAT OF WAR IN PORTUGAL, SPAIN, FRANCE, BELGIUM, AND AMERICA AND AFTERWARDS.

(*Edited by* CAPT. THE HON. H. V. SHORE, LATE R.N.).

INTRODUCTORY.

IT is meet and right that we should be reminded, from time to time, of the protracted and exhausting struggle that was maintained by our forebears a hundred years ago, on behalf of the Peninsular nations and in the cause of European freedom, against the Napoleonic usurpation. And no form of reminder proves more acceptable than the personal experiences of men who bore a part in that momentous struggle. For these narratives—no matter how defective they may be from a literary point of view—convey a much more vivid picture of war; the hardships, sufferings, and strenuous labours of those engaged, to say nothing of the miseries, most patiently endured, by the innocent and unoffending inhabitants of territories involved, than can be derived from the nicely balanced sentences, the polished periods, and the fine language of the professional historian, be he never so learned.

The author of the Diary and Letters, which form the groundwork of the present series, first embarked for foreign service with General Whitelocke's ill-starred expedition to Buenos Ayres. But the operations having been brought to a close before his arrival, there was nothing to be done but to return home, where, shortly afterwards, he was a witness of the landing at Falmouth, of some of the débris of Sir John Moore's unfortunate army. He was now ordered to Portugal, and joined the army which was assembling at Coimbra, just before the arrival of Sir Arthur Wellesley to take command, for the second time, of the British forces in the Peninsula. During the Oporto Campaign which ensued, he was on the staff of Colonel Fletcher, the Commanding Royal Engineer, which brought him into close attendance on Sir A. Wellesley during the whole of the operations. During the Talavera Campaign, he enjoyed the same privileged position; and as soon as Sir Arthur had decided, in consultation with his Chief Engineer on the construction of that tremendous defensive

position across the Lisbon peninsula, he found employment during the winter of 1809–10 in superintending the works destined to form the western end of the afterwards famous "LINES OF TORRES VEDRAS." During the summer of 1810, the work on the Lines being well advanced, our diarist accompanied his commanding officer to rejoin the army in the field, *vis-à-vis* of Massena's invading host, and was present, in close attendance on Lord Wellington, at the Battle of Busaco, and during the operations connected with the retreat of the allied forces within the Lines. Following in the wake of Massena's retreat, in the spring of 1811, he took part in the first abortive Siege of Badajoz; accompanied his commanding officer to the field of Albuera, which was reached just at the close of the action; took part in the second Siege of Badajoz; and after it was raised, joined the Light Division, and, during the remaining months of 1811, was on the staff of General Robert Craufurd whom he accompanied on his many hazardous reconnaissances around Ciudad Rodrigo. By the directions of that officer he accompanied the storming party of the Light Division, at the assault of Ciudad Rodrigo, in January, 1812, on which glorious occasion (to quote his own words) "he had the good fortune to lead the 52nd and 43rd Regiments to a small breach, to the left of the large one." Of this exploit, our diarist supplies the briefest and most modest narrative that was probably ever penned by a son to his father. This thrilling episode formed a fitting conclusion to his service with the Peninsular Army. He returned home immediately afterwards, to take up the post of Adjutant at Woolwich, where, later, he performed the duties of Brigade Major; and after holding various responsible posts in Nova Scotia, Dover and Malta, he died at the age of 64, when Commanding Royal Engineer at Gibraltar, in 1854.

Not the least of the interest attaching to these records of war service is the fresh light they throw on many disputed points, and especially on the personal qualities and disposition of the celebrated leader of the Light Division, General Robert Craufurd, with whom our diarist would seem to have been on terms of the closest intimacy during several months, at a critical stage of the war, and whose loss at the storm of Rodrigo he deplores in almost affectionate words. It will certainly be news to most people to learn that that fiery warrior, and stern disciplinarian "kept one of the best tables in the army."

During his service in the Peninsula, the diarist contracted many warm and lasting friendships; not alone with his contemporaries, but with officers of standing under whom he served, and who continued to correspond with him up to the time of his death. The friendly and intimate letters written by his late chief, Sir Richard Fletcher, Sir J. T. Jones, and Sir John Burgoyne, from the seat of war, to the young Adjutant of Engineers at Woolwich (he was only 23 when he took up the post) are by no means the least illuminative, or interesting portion of the volume. The last of the series is from

that distinguished Engineer, Sir John Burgoyne, on the eve of the Crimean War, in which struggle he was destined to play a prominent part.

Rice Jones, the author of the Diary, was born May 29th, 1788. Electing to follow his father's profession he was placed, in due course, at the Royal Military Academy, Woolwich, whence he joined the Royal Engineers, January, 1807.

That the educational requirements of a youth, on entering the Academy, in those distant times, were not of a high order may be gathered from some letters written by a young Engineer officer, while serving under the Duke of York, in the Netherlands, to a near relative, with reference to the entry of his younger brother at the Academy :—

CAMP NEAR EN LE FONTAINE,
October 22nd, 1793.

I had a letter from my mother by last post, in which she tells me that the Duke had written to her, that he would make Kenneth a Cadet in February. As a great deal depends on getting off well at first, I shall write you a few instructions about what he should learn, which you will be so good as to communicate to his master. He must pay particular attention to his Arithmetick. I suppose he is already master of the Rule of Three. He must next learn Vulgar and Decimal Fractions with the Extraction of the Square and Cube Roots. This is what he is required to know to qualify him for admission into the Academy. So that he must be master of these before he goes on farther. After that he may learn Arithmetical and Geometrical Progression with Single and Double Position. Get for him *Hutton's Arithmetick*, as it is the book taught in the Academy, and if he learns another the Masters will probably make him begin over again. As he goes on he must write the Rules and Examples in a book, and take care to keep it clean and neatly written : this he must show when examined for admission to the Academy. I would not have him discontinue his Latin, (though the principal attention should be paid to his Writing and Arithmetick), it will facilitate his learning other languages ; and the learning passages by heart will strengthen his memory, and will be of great service to him in getting thro' the Academy. As to French, he had better not begin it till he gets to the Academy ; for what he could learn now would not be of much service to him, considering the change of Masters and Grammers, except he has much spare time on his hands. If he pays attention to his studies, and is not idle when he first goes to the Academy, he may have an opportunity of getting before many of those who are admitted at the same time, which will make the difference of years when he gets to the top of the Academy.

A month later he returns to the subject :—

GHENT, *November 29th*, 1793.

I wrote to you some time ago, I hope you got the letter, as it mentioned something about Kenneth's studies—understanding from my mother that he is going to Woolwich in February. I would have him now transcribe

from *Hutton's Arithmetick* (beginning with Vulgar Fractions) what I mentioned in my last letter, in a Folio Blank Book. If he writes this well and keeps his book clean, it may be allowed to pass when he goes to the Academy. This will advance him four or five months, besides is a great thing, as they now remain so short a time at the Academy. This is a good time to go there; a number of commissions are now vacant, and more likely to be won, as an augmentation of Artillery is going to take place; indeed the Duke has been obliged to give away nine to people who have not been to the Academy. . . .

Writing again, under date, October 8th, 1795, he says:—"I have seen Kenneth. He has been very idle and near been dismissed; but I believe is now doing better, and I hope will get away before next summer. . . ."

(NOTE.—Before three years had passed, both these fine young men—one in the Royal Engineers, the other in the Artillery, had succumbed to yellow fever in the West Indies).

The Diaries, which form the groundwork of the following pages, are in a clear, small, copperplate handwriting, often so minute as almost to require the aid of a magnifying glass for their elucidation, but all penned with equal care, whether in barracks at home, or on active service in the field. Whence may be inferred a love of method, neatness, regularity, and perseverance. The first entry bears the date, January 19th, 1807; the last, December 31st, 1816; and the whole are contained in three small note-books, bound in red.

The first three months of service were passed uneventfully at headquarters, at Chatham, whence frequent excursions on horseback were made to Hythe, where a brother resided. Once, he made a trip, "with Capt. Cunningham, Royal Engineers, to see the towers and works on the coast." The *raison d'être* of these works, which had been carried out by the eminent engineer, George Rennie, and would naturally be of considerable professional interest to a young officer of the scientific Corps, is thus explained by Smiles, in *The Lives of the Engineers*. During the invasion scare of 1803, Mr. Rennie, as the first engineer of the day, was invited by Government to draw up a scheme for flooding the valley of the Lea:—the eastern side of the metropolis being considered the most accessible to an invading force landing at the mouth of the Thames. The works, however, were only partially executed; Napoleon having changed his plans in the interim. But in 1806, when he was, once more, concentrating on the heights of Boulogne, Mr. Rennie was instructed to excavate a military canal from Hythe to Rye, encircling Romney Marsh, as that rich tract of pasture land is still inaptly styled. It was in connection with this work that Mr. Rennie came to loggerheads with the Ordnance Department. On his demanding seven guineas a day for his services it was pointed out to him that this was equivalent to

the pay of a Field Marshal. Mr. Rennie replied that he considered himself a Field Marshal in his own profession, and, as he refused to make any abatement, the claim was paid in full.

The Martello Towers—as they are called, which still decorate our coast, from Folkestone westwards, were erected at the same period, costing, it is said, £40,000 a piece. As their origin is not generally known it may be well to state that the idea was borrowed from a tower in Martello Bay, Corsica, which, with a single gun, on February 8th, 1794, beat off a combined attack by the 74-gun ship *Fortitude*, and the 32-gun frigate *Juno*. These two ships, notwithstanding their enormous superiority in guns, had to draw off after two hours and a-half steady firing; the former with the loss of 6 killed and 56 wounded, and having been set on fire. Two years afterwards, Capt. Jervis (better known as Earl St. Vincent), in a report to Admiral Young, dated H.M.S. *Victory*, Martello Bay, October 29th, 1796, wrote:—"I have the satisfaction to acquaint you that Martello Tower is reduced to a heap of fragments. Besides the advantage His Majesty's ships, will derive from the downfall of this powerful though simple fortification, I feel as if offering a sacrifice to the names of the gallant fellows who fell in the spirited attack you made upon it in the *Fortitude*." And he went on to state—what is of peculiar significance in view of his well-known antagonism to elaborate coast fortification and the prominent part he afterwards took in opposing the costly schemes of the Royal Engineers:—"Capt. Packenham is preparing a model and section of it (the Tower) to be presented to Marquis Cornwallis; and I hope to see such works erected on all the ports the Duke of Richmond proposed to fortify with citadels requiring two thousand men to defend them, and on every part of the coast likely for the enemy to make a descent on. These works will require no garrison in time of peace, and very few men, as you have experienced, when besieged and attacked by sea and by land."

In the *Century Dictionary* we find the following definite statement on the subject:—"The efficiency of this work (in Corsica) induced the British authorities to build a large number of Martello Towers on their coasts, especially opposite France, in anticipation of Napoleon's threatened invasion."

The only useful purpose ever served by these towers was affording shelter for parties of seamen employed in the coast blockade, during the years 1816–31, and subsequently for the coastguardmen.

Within two months of joining the Corps, Rice Jones was ordered to accompany General Whitelocke's unfortunate expedition to S. America, and sailed from Spithead on March 9th, 1807. The transports put in to the Canaries, where they lay for six days; but "Brigadier-General Acland ordered no officers or soldiers to go ashore." Sailing thence on April 13th, they had a long and dreary passage of more than three

months before reaching their destination. "April 30th, made the coast of Brazil in 6–30 S. Lat. By the different reckonings we were 300 miles to the eastward; should have allowed for a current to the westward of about 1 mile per hour, mean rate.

May 1st, put on an allowance of water. May 23rd. Our fresh stock being finished were obliged to live upon salt provisions for the remainder of the voyage."

Not till July 23rd did they anchor in Maldonado Harbour; having crossed the line no less than three times, *en route*. On arrival "heard of our disaster in S. America."

From the fact of there being only one entry from the day of arrival at Monte Video till the force re-embarked, on September 9th; viz.:—"Took a section of the hill of Monte Video"; one gathers that the author saw no fighting. On the date above-named he "embarked about 11 a.m., with Capt. Dickson's Company of Royal Artillery, and went out of harbour." Little did Jones—or any other of Capt. Dickson's shipmates—foresee the brilliant career in store for that young Gunner, who, in six years time, was to command the whole of the Artillery of the Peninsular Army, under Lord Wellington.

The voyage home took three months; the transports anchoring in Cork Harbour December 17th. Here he heard, for the first time, of the death of his brother James, whom he last saw at Hythe, on April 1st.

The year 1808 was spent in England, chiefly on the east coast, in concerting measures of defence against invasion.

"April 16th. Taking sections of Hollesley Bay and marshes.

May 14th. Placed pickets in Hollesley Bay.

" 23rd. Marched with Guards to Hollesley Bay and marked out the spots for them to encamp.

Sept. 2nd. Lieut. Loyalty Peake ordered to Landguard Fort.

" 24th. I have been constantly going round the coast of Essex, sleeping either at St. Osyth, Gt. Clacton, or Thorpe."

Early in December he received orders to be ready to embark at the shortest notice; and, on reaching London learnt that he was to proceed to Portugal.

1809. While detained at Portsmouth, waiting for the sailing of the transports, the author, ever eager to improve his mind, "went with other officers to the Dockyard to see the machinery for making blocks." The beautiful piece of mechanism here alluded to, the invention of Mr. Brunel, had only recently been installed, through the influence of Lord St. Vincent. When the invention was first brought to the notice of the Navy Board, one of the members exclaimed "What! turn a thing oval!—no, that I never can nor will believe;

turn a thing round if you like; but as to turning a thing oval, it is only wasting our time, and so there's an end of it."

The transports were nearly a week getting to Falmouth, where, on anchoring, those on board "heard the disastrous accounts from Spain, and saw several wounded men landing," the remnants of Sir John Moore's gallant force. Three days afterwards came news "that the *Primrose*, sloop of war (one of the escorting squadron), had run upon the Manacles Rocks on Sunday morning, when we made land, and that every soul on board perished except a little boy." The body of her unfortunate captain was recovered, and buried with military honours at Falmouth.

During the detention here of the transports, from January 24th to February 22nd, Rice Jones whiled away the time in taking long walks with brother officers; his most frequent companions being Capts. Chapman and Goldfinch, of the Royal Engineers; the former, one gathers, was an artist, from the fact of his being left behind, on one occasion, at Flushing, to take a sketch. Opportunity was taken by the people around of the presence of so many young officers, to arrange various social functions, including many balls. Thus;—"February 7th, Chapman and Goldfinch walked to the Ball at Penryn. I was prevented going by not having a good Regimental Coat here." Part of the baggage had got into a wrong transport at Portsmouth, and was not recovered until some months later. Again February 9th. "Chapman went to a Ball at Truro."—"February 16th. Walked to Penryn with the ladies who were at the ball last night." Again, "February 21st. Went to Ball at Penryn, and then walked to Falmouth,"—possibly in borrowed plumes! By way of variety Jones and Goldfinch set off on a riding tour to the Land's End, returning by St. Ives, Camborne, and Redruth.

Sailing orders having at length arrived, the transports set sail for the Peninsula on February 24th; arriving at Lisbon on March 4th, where young Jones was introduced by his commanding officer to the Commander-in-Chief, Sir J. Craddock. Two days later, he took up his billet at No. 12, Rua Largo de St. Roque. He was now appointed Adjutant to the Corps, in Portugal; bought a horse, which his landlord had procured for him, for 210 dollars; recovered his missing baggage; saw the Guards reviewed in the Rocio; and having received instructions from Capt. Chapman* to proceed along the right bank of the Tagus as far as Abrantes, and examine the ground about Thomar and Leyria, in company with Lieut. Stanway, he left Lisbon on March 21st, reaching Villa Franca the same evening—"where we were billetted on a tradesman and used very civilly." It is described as "a very neat little town in a valley, on the banks of the Tagus; the ground in the neighbourhood beautifully varied with

* See Note 2, end of chapter.

vineyards, and orange and olive groves." Later on, this beautiful spot was ruthlessly destroyed by Massena's troops. Next evening they reached Santarem where they were billetted upon a fidalgo, "who was governor of some town, but who did not treat us very well." Next night was passed at Golegao, "in a small house, but used very well." But "their cookery most disgusting." And so on, through "a beautiful country—raining the best part of the day," to Abrantes, where they were quartered upon a priest, "who used us very kindly." Next night was spent at Punhete, owing to some Portuguese soldiers, holding a post on the opposite bank of the river Zezere, refusing to allow a boat to come over for the English officers. "We were billetted in a good house belonging to an old widow lady." The historic town of Thomar—their goal, was reached next day; here they "were quartered upon a Tradesman who entertained us sumptuously." An official call was paid on the Portuguese Governor, General Miranda, who "was very polite and ordered two Engineers to accompany us round the works and the old castle, etc." Thence on to Leyria, "the weather as usual rainy. Billetted upon an old lady who behaved very kindly to us." Of course, they inspected the castle of historic fame, and next day purposed visiting the celebrated monastery of Alcobaca; "but mistaking the road, proceeded to Alcoente, where we arrived very wet and late, and were not able to procure anything to eat but bread and butter, and wine to drink." They returned to their quarters at Lisbon next day, "arriving there late and extremely wet."

Two days later, "Lt.-Col. Fletcher, Capt. Burgoyne, and Lts. Hamilton, Boothby, and Mulcaster landed here, and dined with us." The names of the first two officers will be familiar enough to students of the Peninsula Campaigns. Capt. Charles Boothby, a young Engineer officer of high promise, had the misfortune to lose his leg and his liberty at the Battle of Talavera, six months after landing, and remained a prisoner-of-war, in France, till July, 1810. His career as a soldier having been thus cut short, Boothby took Holy Orders, and was presented to the Crown living of Sutterton, in Lincolnshire, where he died in 1846. The story of his brief military career has been told by himself, in a book entitled *A Prisoner of France* (Adam and Charles Black, 1898).

TO HIS FATHER.

ADDRESSED TO:—
CAPT. R. JONES,
ROYAL DENBIGH MILITIA,
CHATHAM.

LISBON, *March* 5, 1809.

MY DEAR FATHER,

Yesterday morning we anchored safe off this place after a very pleasant voyage (if it is possible to call a voyage pleasant) we had good weather

and fair wind most of the way, and it is reported that we had a narrow and fortunate escape from the French fleet, which they say here is now at sea; for all this I am very thankful and trust you are all well in England and Wales.

We sailed on the 22nd ult. and upon our getting out of the harbour of Falmouth we were taken under Convoy of the *Lavinia* Frigate, Capt. Lord Wm. Stuart, who was laying to for us, with a fleet of 19 sail from Plymouth consisting of merchantships, and transports with Artillery on board. As soon as we anchored Capt. Chapman and myself went ashore and waited upon the Commander-in-Chief, Sir John Craddock. Capt. Chapman has told me that if I like it, it was his wish that I should remain here with him; he is extremely kind and attentive to me, and I believe he intends taking me with him in whatever house he may be billetted. Our officers are billetted upon the inhabitants of this city, and have excellent rooms and accommodations; we get our quarters to-morrow. The British troops are all in this city and environs; they have lately been in constant readiness to embark; but no one seems to know where the French are, or whether this place is to be defended or not; since the arrival of General Beresford and ourselves, they seem to be rather more determined to defend it.

I fear we shall have some difficulty in mounting ourselves here, horses being not only dear but scarce; I am fearful I shall be obliged to draw upon you or Mr. R. Jones once more, as soon as I can find a decent beast, but make no doubt if we remain here I shall soon be able to remit it to you again. We are each allowed forage for three horses and a mule, and are to embark one horse each in case of this place being evacuated.

This is the most beautifully situated place I ever saw; the River Tagus is very fine all the way up. We have just walked to an immense Aqueduct near here, and have been regaling ourselves in a Vineyard and Orange Grove; the Vines are not yet in bud, but the oranges are excellent. The weather is as warm as the summer in England, and everything is in Blossom or bearing fruit. In my next I will give you a longer account, and will now conclude this by desiring my best love to my dear Mother and John, Mary, Anna, Eliza, Ebenezer, and Margaret.

Your loving son,
RICE JONES.

We have seen nothing of our baggage yet and begin to want it very much. Direct to me, "With the British Army in Portugal, Lisbon."—R.J.

LETTERS TO HIS FATHER.

LISBON, *March* 17, 1809.

MY DEAR FATHER,

On the 5th inst. I acquainted you with my safe arrival at this place, and have now the pleasure to inform you that I still continue in very good health. I am billetted in the Rua de San Roque, one of the pleasantest parts of the city; the house belongs to a Portuguese merchant named Don Bernade Silde; he is very civil to me; I have two rooms besides my bedroom and my servant's; I am the only officer that has ever been

quartered upon him and he wanted to feed me at first, but I would not let him.* I find the little knowledge I have of Spanish of the greatest use to me, as it enables me (with the addition of what Portuguese I learn) to make myself understood in general.

This is a most delightful country at this time of the year; it is warm but not uncomfortably, and every thing is green, in blossom or bearing fruit.

The British troops have returned from Cadiz in consequence of the refusal at that place to admit them; they have disembarked at this place and environs; of course the detachment of our Corps destined for Cadiz has rejoined us.

You will I daresay be surprised to hear that I am once more doing the duty of Adjutant; in consequence of the great strength of our Corps here, and our having eight R.M. artificers, Capt. Chapman has appointed me to act as Adjutant to the Corps in Portugal, and has written to General Morse acquainting him with it and begging his approbation of the appointment. I am not very sanguine in my expectations of receiving the allowance for it; but I am glad of the situation inasmuch as my being chosen is flattering to myself, and also, it will keep me about Head Quarters with the Commanding Royal Engineer. There are 10 Engineers in this place at present, ... Capt. Chapman is ordered by Sir John Craddock to proceed into the interior to the neighbourhood of Thomar, Santarem, Abrantes, etc., to examine and report upon the ground there, as a position for an army intended to cover the approaches to Lisbon; he will set off to-day or to-morrow and I expect I shall accompany him with a detachment of our officers here; how long we shall be gone it is impossible to say; it is not improbable the army may soon follow us; at present they occupy a position at Lumiare, about 6 miles from here; it is a very good one, but is too near Lisbon to cover it effectually.

I have not yet been able to get a horse; it is however absolutely necessary before I can move from Lisbon; they are extremely dear and scarce. Capt. Chapman gave 50 guineas for one yesterday; it is hardly possible to get them for money; the French took most, and our army some; with the remainder every one is joining the Portuguese Army, for here every one is in arms. Capt. Chapman has represented this, as well as our want of allowance for servants, in the strongest manner to the Board; I wish it may have a good effect.

Please to give my best love to my dear Mother and my dear brothers and sisters. I am in hopes of soon hearing of your continued good health. Direct to me, "With the British Army in Portugal, Lisbon."

Your very loving son,
RICE JONES.

LISBON, *April* 5, 1809.

MY DEAR FATHER,

Since my last letter I have been reconnoitring the interior of this country.† I went from hence to Santarem, Abrantes, Thomar, Leyria,

* See Note 1, end of chapter.
† See Note 2.

etc., making a circuit of about 270 miles, and am now busy making out a Report upon the ground I passed; Lt. Stanway, a very young officer of ours, accompanied me; Capt. Chapman being obliged to remain in this place where we are commencing batteries on both sides of the Tagus; the Portuguese Engineers will I believe have the execution of those nearest Lisbon. It unfortunately rained every day I was absent from this place; but I am extremely glad I went, as in the event of our being obliged to evacuate this country, I may not have another opportunity of seeing it. We were billetted on the natives of every place we went to, and were in general very kindly treated, being the only English officers they had seen for some time; they were very anxious for the arrival of our troops, and received us with huzzas, etc., expecting that we were advanced and that the others were to follow us. It unluckily happened to be *Lent* all the time, consequently no one had anything to eat but fish; our food was regularly a fowl stewed in rice, and very oily. I could not bring my taste to like their dishes, but was unable to procure anything else: to complete our dislike we were always entertained soon after our arrival at any house, with the cries of the dying cock. I waited upon the Portuguese General Miranda at Thomar, who received me very kindly, showed me all the reports of his Quar.-Masr.-Genl. had upon the Position in that neighbourhood, and sent a Capt. and Subn. of Engineers to show me the batteries they were constructing. Every one in the country was armed, principally with Pikes; but after the termination of the boasted defence of Oporto, I am very dubious of their fighting. From our uniform being like the French we were sometimes mistaken for officers of that nation. A Portuguese outpost that had charge of a ferry boat across the river Zezere refused to come over for us, for all we could say or do, and we were obliged to go a great deal out of our way, to a bridge of boats. At every village we were desired by a guard of the natives armed with Pikes to show our Passports, but I seldom indulged them with a sight of it, and they never objected to our proceeding.

On my return I had the pleasure of finding a letter from you, and was happy to hear you are all well. I continue very well and have experienced no inconvenience, thank God, from the repeated wettings I had on my tour.

On Sunday Lt.-Col. Fletcher, Capt. Burgoyne and Lts. Hamilton, Boothby and Mulcaster arrived here from England, which is a very unfortunate circumstance, both to Capt. Chapman and myself, as he loses his Command and pay for it, and I lose the Adjutancy, Lt. Mulcaster having been appointed Adjt. and Qur.-Mr. before he left England. I am certainly extremely unlucky; I shall lose by these officers' arrival three shillings a day.

Our baggage is at length arrived here; it was brought from Falmouth by a Merchant Schooner; I shall take care to profit by the lesson I have had and not part with my baggage so easily again.

Previous to my late journey I was of course obliged to purchase a horse, but he cost about double his real worth, owing to the great scarcity of horses; he is very strong, 7 years old and sound, but I cannot

say much in favour of his beauty: he carried me remarkably well all the way. I gave 210 dollars (at 4s. 6d.) for him. The Ordnance Commissary has advanced me the money I wanted, so that I have not been under the necessity, I feared I should have been, to trouble you again. If we remain in this country I shall be able to clear my account soon, if not, I can but trouble you at the last.

All the troops are out of this city except the 87th, part of the Artillery and ourselves. The Head Qrs. is at Lumiar 6 miles off; but Sir J. Craddock has generally resided here, as yet. There are a good many reports current respecting the force in which the French are approaching us. Oporto is certainly fallen into their hands, and they are 6 leagues this side of it; other columns are, it is said, coming by other routes, so that it is very dubious whether we shall stand their attack or not. Our force is given out here to be 16,000 or 17,000 men, but I have good authority that it does not exceed 12,000: if so, I am of opinion we shall embark and leave the French in quiet possession of Lisbon, for I fear we can place but little reliance on the Portuguese fighting.

At the time I was detached up the country Capt. Goldfinch and Lt. Alex. Thomson were ordered to Oporto.* We have heard from Goldfinch, who said the French were very near, and the best hope he had was that of being exchanged soon, when taken. We have heard nothing of him and fear he is either Killed or taken prisoner, but hope it may be otherwise. Had I not been Adjt. I believe I should have gone there too.

Please to give my best love to my dear Mother and all my dear Brothers and sisters, John, Mary, Anna, Ebenezer, Eliza and Margaret. Write me all the news as soon as you can.

Your very loving son,

RICE JONES.

NOTE 1.

This was no solitary experience: nearly every British officer who has penned his reminiscences of the war bears testimony to the courtesy and kindness of the Portuguese. "On entering a town or village," writes the author of *Letters from Portugal and Spain*, "we received from the magistrates billets on the best and richest inhabitants; and they were obliged not only to admit us, but to furnish us with lodgings for our whole suite. And to do them justice, we have been treated with the courtesy of visitants; their politeness never allowed us to remember that our quarters had been yielded to a command." Near Coimbra—next to Lisbon, the principal hospital station for the sick and wounded of the British Army, during the war—was a fine Quinta belonging to the Condeça d'A——, where British officers of all ranks were admitted, and received the tenderest care. The wife of a diplomatist, in her interesting *Letters from Lisbon*, penned soon after the war, writes, "How much reason have many of the English to remember the genuine friendship of this family! I am assured by eye-witnesses that during the war the princely

* Both these young officers were made prisoners by the French on their capture of Oporto, but subsequently effected their escape.

mansion was ever open to our wounded officers; so much so that the house resembled a hospital, and the lives of several individuals were preserved entirely through the kind and unremitting attention which they received from their really illustrious and excellent hosts." Mark what follows. "I ought not to omit that their example was followed in a more humble way by the peasantry, during the time of that great struggle; and after this proof of just and grateful feeling, who ought to believe that the Portuguese are incapable of moral regeneration? And yet I hear this asserted every day of my life."

It is, alas! too true that the conduct of the Portuguese Government and many of its incompetent officials during the war, have blinded our eyes to the fine qualities of the Portuguese people, and to the noble conduct of private individuals—the numerous acts of kindness, self-sacrifice and tender sympathy which did so much to alleviate the sufferings of our sick and wounded . . . Even Napier has never allowed one word of acknowledgment of all this to slip from his facile and eloquent pen.

Note 2.

Instructions for Officers of the Corps of Royal Engineers when attached to Columns, or moving through the Country.

The Engineer when moving with a column or otherwise will observe the general features of the country through which they pass, whether hilly, level, woody, open, or enclosed, the state and breadth of the roads, whether they are practicable for artillery, their bearings by Compass, and the Passes and positions in the route. Such parts of the country as may be sufficiently open and level to enable cavalry to act with advantage should be remarked. The Rivers should be particularly attended to, their breadth and depth at the time and place of passing them, and (as far as can be ascertained by enquiry) their state at other seasons of the year should be noted. The bridges, whether of wood or stone, their length and breadth and whether capable of bearing Artillery, or if they could easily be made so should be mentioned. An opinion should be formed of the population of the towns and villages, their distances from each other, and their means of supplying cantonments, provisions, water, and fuel. The situations favourable for encampments should be observed, and whether water, fuel, and materials for hutting are near them. The probability of obtaining mules or draft oxen and carts on the road, should be considered as intimately connected with the movements of troops in this country. In general, whatever can facilitate or retard the march of an army must be carefully attended to, and the whole digested into a written report, accompanied by such sketches as circumstances may admit of. Whenever the army or a column takes a position, the Engineer will make a sketch of the ground upon a scale of 3 in. to a mile, accompanied by explanatory references. Upon arriving at any fortifications or military work, a sketch must be made in the most accurate manner, and in the largest scale the means of the officer will allow, both as to plan and section, accompanied by a general report. They will upon a smaller

scale sketch the ground within about 2,000 yards of the place, and will particularly observe if the work be commanded within 1,000 or 1,200 yards of the place, and by references will distinguish such hills as are higher than the place, and how much they appear to be so; the number of troops necessary to defend such work; the extent of the accommodations and the proportions of it that may be bombproof, the number, size, and construction of the magazines, the supply of water, and the number and nature of the artillery will fall within the report to be made on each work. The nature of the soil, whether favourable or otherwise for sinking trenches and throwing up batteries will naturally be attended to.

(*Extract from Official Papers, in Rice Jones' handwriting*).

(*To be continued*).

PASLEY'S "ESSAY ON THE MILITARY POLICY OF THE BRITISH EMPIRE."

CONTEMPORARY CRITICISMS, 1810—1813.

By COLONEL B. R. WARD, R.E.

IN an article published in the May number of *The R.E. Journal* a short extract was made from the above Essay, and a few criticisms were quoted showing the impression made on the mind of the country by its publication in November, 1810, and by the three subsequent editions published in 1811 and 1812.

Sir William Napier rounds off his *History of the Peninsular War* with the following striking sentence :—

"Thus the war ended, and with it all recollection of the veterans' services."

An exactly similar fate has overtaken the work of Sir Charles Pasley. The services of the writer who first impressed on the national imagination the extraordinary valour of British soldiers, and by so doing encouraged the nation to adopt a vigorous and consequently successful military policy, have been forgotten as completely—nay, far more completely—than the services of the veterans of Albuera, of Badajoz, and of San Sebastian. At the present moment I happen to have access to the following works of reference, the *Encyclopædia Britannica* (9th edition) and *Chambers' Encyclopædia.*

In the Index to the former work the following are two consecutive entries, Paskewitch and Paso Robles. Paskewitch was an officer who served in the Russian Army against Napoleon at Austerlitz and Borodino. Paso Robles is the site of a hot spring boasting a temperature of 122° Fahrenheit in Obispo County, California. *Chambers' Encyclopædia* is equally innocent of any reference to Charles Pasley.

The Corps of Royal Engineers is, however, during the present month doing something to remedy this neglect of Pasley, by the celebration of the Centenary of his foundation of the School of Military Engineering at Chatham.

Of all the things that Pasley did during his long and strenuous life —the publication of the Essay, the foundation and organization of the R.E. Establishment at Chatham, and the discovery of Portland cement—probably the first named will be considered not only first in order of time, but also first in order of national importance.

It may therefore be interesting at the present time, while we are doing honour to Pasley as the founder of the S.M.E., to supplement some of the criticisms quoted in the May number of the *Journal*, by quotations from other contemporary letters and journals which may help us to realize not only the impression produced at the time but also the permanent value of Pasley's Essay.

Pasley himself seems to have recognized that the Essay possessed a permanent value beyond the temporary effect which it produced on the national policy between 1810 and 1815, for he intended many years afterwards to re-issue the 4th edition. The following entry occurs in his diary opposite the date 28th December, 1848 :—"After a great deal of trouble found my proposed Preface of the 4th edition re-issued of the *Military Policy*, and begin writing at it again."

The following letter to his publisher dated London, 21st April, 1849, shows that the re-issue of the 4th edition was temporarily dropped :—

"SIR,

I enclose as much as will make a sheet of the Introduction and Observations to the 4th edition, *Military Policy*, re-issued. It appears to me that it will be best after you print certain sheets of this to drop it for the time being and go on with the 2nd edition of the *Elementary Fortification* which is most in demand.

C. PASLEY."

Nothing further can be traced in his diary as to the re-issue of the 4th edition; and an enquiry at the British Museum shows that they possess no later edition of the book than that of November, 1812.

A single copy of a portion of the Preface of 1849 now in the possession of Sir Charles Pasley's grand-daughter, Miss Tyler, of Linden House, Highgate Road, N.W., would appear to be the only remaining fragment of the book. Although Sir Charles Pasley's intention of republishing remained unfulfilled during his lifetime, the question of its re-publication in our own time would certainly appear to be a matter for serious consideration.

The permanent value of Pasley's work consists in the soundness of the principles which he uses as a basis on which to construct a suitable national policy.

The time was one of crisis and convulsion, and few will deny that the same description is somewhat applicable to the year of grace 1912. No less than our forefathers a hundred years ago do we require to be reminded of those permanent principles underlying politics and war, which, although constantly being lost sight of, cannot be deviated from without running the risk of national ruin.

The following letter from Sir John Stoddard, editor of *The Times*, dated 1st September, 1811, emphasizes the point as to the principles of the Essay :—

"My Dear Pasley,

I would long since have acknowledged with great satisfaction the present of your second edition, but I wished not to write without saying something about the work itself; and I have not found myself at leisure till to-day to make the attempt. As you have added little or nothing but the notes which are not many in number, this edition can produce little change in my ideas of your production. I have however had time to weigh the whole very deliberately, and in proportion as I consider it of national importance, do I feel it desirable that a more complete development of its principles should at some time take place. You have doubtless had the critique in the *Quarterly* and I perceive you are to expect one in the *British Review*, which is to be published to-morrow. The *Quarterly* I understand to be written by Southey and I think it calculated to do the book good. It does not however speak of its general merits in higher terms than I have heard directly and indirectly from many persons of weight who are total strangers to you. Sir William Scott in a large party said it was the most original work he had met with for a long time. . . . I was told also of Sir Hugh Dalrymple's speaking very highly of the book, and no doubt you must have had many testimonies of approbation from military judges, but a man like you will not be satisfied with mere popularity; you will wish to render your work perfectly sound and unassailable in point of principle, in the first place; and secondly to apply these principles as extensively as possible to the actual and probable circumstances of the country. I know but four whose views appear to me comprehensive and important—yourself, Walsh, Wordsworth, and Coleridge: and though in many points you may all differ, yet in the main your principles may be found more consistent than they first appear. I do not add Leckie, for although he is shrewd and fearless in his speculations and rests on some very strong facts, he seems to me very weak and confused in principles, and a stranger to the true English spirit which is allied to a zeal in the general cause of humanity. We live in times of crisis and convulsion and it is at such times that a steady adherence to the soundest principle is peculiarly important."

The Times had previously criticized the 1st edition of the Essay in its issue of the 11th February, 1811, when it devoted three columns to quotations from the book, introducing the subject as follows:—

"Capt. Pasley's *Essay on the Military Policy of the British Empire.*

We take the liberty, without further preface, of introducing a pamphlet with the above title to the knowledge of our readers, though the author of it is entirely unknown to us. The work has, we learn, excited greater attention among the higher classes of political readers in the country than any since the time of *Mr. Burke*, without even excepting Mr. Walsh's celebrated performance on the affairs of France. The author's general object will be best understood by the following extracts from his introductory chapters."

The next day *The Times* devoted more than two columns again to the same work, introducing the further extracts as follows:—

"We can do little more at present than continue our extracts from this valuable publication, taking care to select them from those parts which relate to subjects more generally interesting. The following relate to the Peninsula of Spain and Portugal, countries upon which British feelings have not yet ceased to be alive."

The *Edinburgh Register* inserted at about the same time the following reference to the Essay :—

"Capt. Pasley of the Engineers was severely wounded on this occasion, (*i.e.* during the Walcheren Expedition) a man who in his Essay upon our Military Policy has enforced truths of such practical importance that his individual loss would have been a greater evil to his country than the possession of Walcheren could have counterbalanced."

The *British Review* of September, 1811, devoted Article VIII., containing 38 pages, to the Essay.

After making some general remarks on the necessity for a more hopeful national outlook, and on the need for courage, perseverance and patience, the reviewer proceeds :—

"These preliminary observations bring us at once to Capt. Pasley's work, an attentive perusal of which has, in fact, in a great measure suggested them. It is only strict justice to the author to say, that we recollect no modern publication, of the same description and character, at all comparable to it. The style is throughout easy, unaffected and perspicuous; the reasoning close and logical; the sentiments elevated and original; and it has the rare merit of being unsullied by any feature of party spirit. The author is well versed both in ancient and modern history; and draws from the abundant stores, with which such reading has furnished his mind, reflections generally accurate as referable to the present state of Great Britain, and often pointed with peculiar propriety and facility of application. He frequently reminds us of Polybius by the profundity of his observations, though he bears no resemblance to him in point of prolixity. The arguments and suggestions are throughout traced from principles not presumptuously or dogmatically laid down, but founded upon the experience of past times, and established by a judicious reference of effects to their proper causes.

In composition he aims at nothing beyond his powers; and there is every internal testimony that his labours were instigated by the single and honourable motive of rendering service to his country, whose dangers he has correctly estimated, and whose capacity for exertion on a larger scale he has ably developed and vindicated.

It is fortunate, we will not say surprising, that a military man could be found, who from tone of mind, education, extensive reading, observation, and habits of reflection, was qualified to engage in a book of this nature, as no one but a military man could have properly undertaken it. This observation applies also to the Roman historian before adverted to. In his works we think the soldier predominates, and the reverse in that of Capt. Pasley, who though an officer of established reputation, refers to recent expeditions and campaigns only with a view to illustrate his principles or to point out defects which he proposes to remedy; but he

is never betrayed into details, which would have exhibited his knowledge, and science, without strengthening his argument. He was not writing a military history; but was engaged in the far more important task of pointing out to his country the means of present safety and of future glory. Capt. Pasley's principal object seems to be—to rouse the nation and its rulers, whoever they may be, to a just sense of our military means, with a view both to offensive and defensive war, and to point out the danger of neglecting them;—to show the folly and hazard of an exclusive reliance on our naval superiority;—to prove that systems are better than expedients;—to point out the absurdity of coalitions, as usually formed;—to maintain that our principal reliance should be on our strength, properly called forth and applied; that we should pursue one object at a time, taking Roman Policy for our model in this respect;—to ridicule a purely defensive system,—to condemn generally speaking insular conquests;—and to reprobate the practice of hastily abandoning conquests of any sort when once made.

In frequently enforcing these several topics, he supports his respective propositions by ample and able references to ancient and modern history, as illustrations of them; and is copious in his remarks on some recent transactions particularly those connected with the Peninsula and Sicily. From a frank avowal of his political principles he never shrinks. The point which he most strenuously urges, with a degree of enthusiasm, which we cannot but admire, is the capacity of Great Britain to face Bonaparte successfully, on what has been vulgarly considered to be his own element; and the duty which she owes to herself and to Europe, and to the world, to enter into the contest with vigour, undertaking to show that by pursuing such a course she has in her own hands the means of delivering the Continent from its state of thraldom, and to secure for herself the proud station of pre-eminence amongst the nations of the world."

The following private letter from Lord Oxford to Pasley may be quoted not only as showing his appreciation of the value of the Essay to the Directing Classes of the country, but also because of the valuable suggestion made in it that the next edition should contain an index. A re-arrangement of the chapters as originally written and a full and complete index would be very desirable, should a new edition of Pasley's Essay ever be brought out:—

"37, Upper Brook Street, *Friday Morning*.

When people have a mind to put an author into good humour with himself, I observe that they are fully as attentive to the soundness of their own periods, as they are to dwell on the merits of the work, and think they cannot pass an eulogy, without showing their own powers of composition. I neither can nor will do this but with plain sincerity tell you how very much I was pleased with your *Military Policy*, and what is of greater importance it has obtained the approbation of honest and sensible men in the higher classes of society—some of whom, although they have hitherto slumbered over the Art of War, yet have abilities and courage too, to save the country, if they were not overwhelmed with the weight and number of corruptions. You are aware possibly that one

edition has been sold, another is loudly called for, as well as the second part of the work which I trust is in great forwardness. Give me leave however to suggest an alteration, or more properly speaking an addition to another copy. Your book is valuable itself, and is one of reference, and for us fine ladies and gentlemen who can snatch but little time from pleasure and dissipation, a very complete index is necessary in order to discuss the Art of War in all its several branches, more especially in a sinking State. Many an opportunity have I lost of showing my own genius, from not having time to rummage through your book after a particular passage, in order to illustrate my meaning and to illuminate my audience. I have therefore for my own private advantage made out an imperfect sketch of the kind of index that is wanting, which could easily be enlarged in the manner of the index in Gibbon's *Decline and Fall.*"

The following four extracts are from the letters of Robert Southey. They were written while he was engaged in reviewing the Essay in *The Quarterly Review* :—

"(i.). *To Walter Savage Landor, Esquire.*

KESWICK, *11th January*, 1811.

Have you read Capt. Pasley's book? I take it for my text in the next *Quarterly*, and would fain make it our political Bible.

(ii.). *To Mr. Ebenezer Elliott* (*afterwards known as the Corn-Law Rhymer*).

KESWICK, *7th February*, 1811.

If ever you think on political subjects, I beseech you read Capt. Pasley's *Essay on Military Policy*, a book which ought to be not only in the hands but in the heart of every Englishman.

(iii.). *To Grosvenor Bedford, Esquire.*

KESWICK, *16th February*, 1811.

I am reviewing Pasley's book. The most important political work that ever appeared in any country. The minister who shall first become a believer in that book will obtain a higher reputation than ever statesman did before him. My review will be conciliatory towards the husbanding politicians, that is it will endeavour to make them ashamed without making them angry.

(iv.). *To Walter Scott, Esquire.*

KESWICK, *2nd April*, 1811.

No doubt you have seen Pasley's Essay. It will be in the main a book after your own heart. He talks sometimes of conquest when he should talk of emancipation. A system of unlimited conquest leads at last to the consequences which we have seen exemplified in the fate of the Roman Empire. For ourselves I would wish no other accession of Dominion than Danish Zealand and Holland, with as many Islands as you please in the Mediterranean; Italy to be formed into one independent State under our protection as long as it needed it. I believe that the Ministry do not want inclination to act vigorously; but they want public opinion to go before and protect them against the Opposition. These men and their coadjutors, the *Morning Chronicle* and the *Edinburgh Review*, have neither patriotism, nor principle, nor feeling, nor shame to stand in their way. They go on predicting the total conquest of the Peninsula, with as much

effrontery as if they had not predicted it two years ago—nay even asserted that it was even then completed;—and they deliver their prediction in such a way, that it requires more charity than I possess not to believe that they wish to see them fulfilled; for this is the last and worst, yet the necessary effect of party spirit when carried so far as these politicians carry it."

In the May number of the *R.E. Journal* Southey's criticism in *The Quarterly Review* was quoted from, and the enthusiastic reception of the book in the Army was alluded to. We may close our contemporary references to the Essay by quoting from the private correspondence of two writers of the period. The first is the well-known novelist, Jane Austen, and the other is Mr. G. T. Leckie, the author of *Sketches of Intrinsic Strength, Military and Naval Power of France and Russia, 1808.* It has sometimes been considered a matter of surprise that although Jane Austen's novels from *Northanger Abbey*, written in 1798 to "Emma," published in 1816, cover the last and most dramatic period of the Revolutionary and Napoleonic Wars, there is no indication in any of the books that the calm and even tenor of her way was ever in the slightest degree disturbed by the stupendous political events occurring in Europe. And yet her two youngest brothers, Francis and Charles, were sailors, and served in the great war, each rising to the rank of Admiral.

The following letter is interesting as showing that, although it does not come out in the novels, Jane Austen was not without a genuine interest in large questions of national policy.

It has been said that Napoleon's policy failed largely because he underestimated the power and importance of the feminine element in the world, and took little or no trouble to enlist its sympathies in favour of what he used to speak of as "ma politique." Jane Austen's letter is interesting in this connection, as it shows that the principles of policy laid down by Pasley, inspired as they were by Nelson, could and did, in the case of at least one well-known personality, appeal to contemporary feminine sentiment.

The letter was written in February, 1813, to her sister Cassandra, and a short extract from it runs as follows:—"I am reading a Society Octavo, an *Essay on the Military Policy of the British Empire*, by Capt. Pasley of the Engineers, a book which I protested against at first, but which upon trial I find delightfully written and highly entertaining. I am so much in love with the author as ever I was with Clarkson and Buchanan, or even the two Mr. Smiths of the City. The first soldier I ever sighed for, but he does write with extraordinary force and spirit."

The following are extracts from letters written by Mr. G. T. Leckie to Capt. Pasley between February and July, 1811:—

"I dined the other day with Mr. Hope of Harley Street. He thanked me again for having put your book into his hands and told me he had

sold about 30 copies for you, as he had made it a point with all friends that they should procure it. . . .

Your friend Riley Addington got it at my desire; he is so enchanted with it he told me he should not leave it till he had given it a third perusal; he says you are a philosopher, a statesman, and a soldier in every sense of the word, and he seems much reconciled to *our* view of political justice which you have developed in so masterly a style."

The following letter is dated March 27th :—

"I am sorry to be disappointed in the hope of having you here, not because it would alleviate me in correcting your new edition, for that I will do with great pleasure and as well as I am able . . . Independent of the principles which are congenial to our own, and the only ones suitable to the conduct of a great empire established and maintained by the sword, I much admire its conciseness, with that perspicuity at the same time, which, in my mind makes it approach nearer to the Grecian model of composition than any modern work I have met with. Nothing is wanting to give a clear bird's-eye view of the politics of Sweden, and when one has read this little book, and feels conscious of the mass of ideas he has acquired, he is astonished how the writer could get it into so small a space without disorder. Xenophon would probably have arranged it in the same manner, and I feel much obliged to you for the book, which I value highly. I have recommended it to all my friends, but that is unnecessary for it sells very fast."

The following letter was written in June or July :—

"I dined yesterday with Clinton. There was nobody there but Lord William Bentick. He is charmed with your book. He said it ought to be called the Soldier's Bible and the Gospel for Statesmen."

Lord William Bentick had commanded a brigade under Sir John Moore at Corunna, and afterwards held a divisional command under Lord Wellington in the Peninsula. Shortly after his meeting with Leckie in July, 1811, he was appointed British Minister to the Court of Sicily and Commander-in-Chief of the British Forces in that island. He was appointed Viceroy of India in 1827, his period of rule in India being best remembered by the abolition of Suttee.

His opinion as to Pasley's Essay being "The Soldier's Bible and the Gospel for Statesmen" may be taken as a concise and typical utterance of the best public men of the time as to the value of Pasley's work. The principles laid down by Pasley are no less true and hardly less important to-day than they were in 1810, and it is to be hoped therefore that a new edition of the Essay may be published ere long so that the present generation of soldiers and statesmen may have an opportunity of again studying a work which had so great an influence a hundred years ago.

A LADY'S EXPERIENCES IN THE GREAT SIEGE OF GIBRALTAR (1779–83).

BEING THE DIARY FROM 1ST JUNE, 1779, TO 13TH JUNE, 1781, OF MRS. GREEN, THE WIFE OF LIEUT.-COLONEL GREEN, CHIEF ENGINEER OF GIBRALTAR (AFTERWARDS LIEUT.-GENERAL SIR WILLIAM GREEN, BART., CHIEF ENGINEER OF GREAT BRITAIN, 1786—1802). EDITED BY COLONEL E. R. KENYON, R.E.

(Concluded).

JANUARY THE FIRST 1781.

Monday. Easterly Wind. No sort of Notice taken of this Day upon the Parade—or in any other respect—by the Governor. It was a Cold, Unpleasant Morning, and continued an Uncomfortable Day in all Respects. We had a party at dinner but by no means either cheerful or Easy, as might have been wish'd. The Enemy are not busy to Day. This Day Some Spainish Letters and papers which were found on board the Setee which our Men of Wars Boats brought in on last fryday were brought to the Governor, to our House. I saw several but they gave no very Material account,—mostly seem'd private family Letters; except a Couple which were wrote it should appear by good Judges of our, as well as of their own New Works; but those letters were not Sign'd. There were also some Beads and a Crucifix and other articles belonging to a Priest who had been too much hurried in geting away. There is likewise Some Caps and a few things belonging to a Lady as we suppose, but that is only Conjecture as every Person had quited the Setee, nor was there any Live Creature left but one Pig. These things are all in Captn Leslie's posession. He talks of sending back the Lady's Caps &c and the Letters except those two above mention'd, but I do think the Govr will hardly Yield to Him. It would be highly improper to send any Letters back; that would hurt the People who wrote them. 1st January, 1781.

Tuesd 2. Easterly Wind. A much finer Day than yesterday. A Man of the 72nd Regt Deserted last Night from Bay Side Guard. The Man of the 39th has not been heard of. It is supposed He has either got clear off or has met with the fate of some others who have Dash'd to pieces in trying to get off. Very little firing from Us upon the Enemy. The Col at Captn Loyds whist Party this Evening.

Wed 3. Easterly wind and very Cold Raw Day. An experiment was try'd today, viz., a New Invention for proving, or rather trying of Cannon, upon the Kings Bastion, Under the Direction of Lt Fredrick

3rd January, 1781. of the 72nd (Son to Sir Charles Fredrick, Surveyor Genl of the Office of Ordnance). It gave much Satisfaction to every Body ; the Govr also seem'd Well pleased ! ! !

Thursd 4. Easterly Wind. A Cold Raw Day. All quiet from the Enemy. Find myself exceedingly indisposed, but being under an Engagement to Sup out I was obliged to keep up as much as possible ; and in Consequence I went out to Mrs Fancourts. Very little firing. Auctions every Day. Some times the Several Articles Sold pretty well. The English Rounds of Beef are very good ; but are got up to an amazing price, viz., 7 Rials pr lb equal to 3 shillings.

Fry 5. Easterly Wind. Clear Cold Day. Colonel Ross gives a Dinner to the whole of the officers of the 72nd Regt, Supposing himself the Colonel of that Regt.* It consisted of a very Large Number, 43. All Ended with great Harmony, they sat late. Many People Wonder that the Colonel should take a step of this kind till He was quite Confirm'd in his having got the Regt. He is now in very high spirits and seems to have forgot all past Circumstances. We do not Fire now but little, except when any thing in particular is doing.

Saturd 6. Easterly Wind, fine Day. Moving powder from the South into the Town Magazines and the Castle. The Enemy have been throwing up a great deal of Sand and carrying on their Boyau toward Fort Barbara. This Even the following was in Garrison after Orders :—"The Morning Divine Service to be in the Convent Court to Morrow and on the first Sunday of every following Month."

Sund 7. Easterly Wind. Cold Day. Col up very Early to go to the Southward with the Govr. Things not very agreable, either publickly or privately. Col Din'd out at Col Craigs.

Mond 8. Easterly Wind ; Cold and Unpleasant. A most Uncomfortable Day, and Much discontent in Garrison. The American club Day.

Tuesd 9. Easterly Wind, fine Day. Am taking very ill, with pains in my Limbs and in great Uneasiness in all Respects. The whist Meeting at Captn Hastings.

Wed 10. Easterly Wind and Raining Hard. This, and every Morning of late, We have been trying Experiments by firing from the Old Mole towards the New Work, sometimes with good Success. I am exceedingly ill at this time. Colonel also indisposed. Mr Booth taken ill.

Thursd 11. Easterly Wind. Early this Morning two Moorish Vessels that have been at the Orange Grove for more than 12 Days and which We could not tell what to make of, came to the Mole under protection of a Flagg of Truce, and were received by a Flagg of Truce from Us. They are come from Barbary and bring over all the Christians that were sent from this Garrison some Months agoe, by

* See December 23rd, 1780.

order of the Emperor, beginning with the English Consul and Mr. Butlers family &c &c. The Emperor would not allow any of Them or the English Consul to remain in any Part of Barbary. Mr Butler the Dutch Consul who left this Garrison 16 Months agoe is also come away. They were not allowed to bring any thing with them except their Cloaths, and had only 5 hours Notice. 11th January, 1781.

Fry 12. Easterly Wind. Very Severe Cold Weather, and find myself greatly indisposed. The Colonel much distress'd about Mr Booth, and other very Uncomfortable Circumstances. Do not hear that the People from Barbary bring over any News. Some Coals which came in the late Vessels from England are sold upon the Parade for a Hundred Dollars a Chaldron. They are bought by Government.

Saturd 13. Easterly Wind. Raw Cold Day. I have not been down stairs since Tuesday last, nor do I think I shall for some time to come. The Colonel also much indisposed. It is Still Reported that the Enemy have got Mortars into the New Battery. N.B. By a Spainish Gazette which the Consul got whilst the Vessels lay at the Orange Grove We find the Enemy have given the Name of St. Carlos to the New Battery, it is Supposed in Honor of their King.

This Day the Regulations for Officers Provisions from the 15th Janry to the 11th Febry 1781.

Officers pr Month. 28 lb of Bread; 4 lb of Beef; 4 Do of Pork; 10 oz of Butter; 1½ lb of Cheese (in lieu of 2 lb of Beef); 4 pints of Kidney Beans, or Carravances; 4 pints of Wheat; 3 lb of Flour; 2 lb of Raisons.

The Wheat, Kidney Beans, Raisons, and Flour are in lieu of 12 pints of Pease and 30 oz of Butter.

4 lb of Beef and 12 pints of Oatmeal to be paid for.

Men pr Week. 7 lb of Bread; 1 lb of Beef; 1 lb of Pork; 1 pint of peas; 2½ oz of Butter; 6 oz of cheese (in lieu of ½ lb of Beef); ¾ lb of Flour, 1 pint of Wheat, 1 Do of Kidney beans, ½ lb of Raisons (in lieu of 3 pints of peas and 7 oz of Butter); ¼ pint of Vinegar, 1 lb of Beef, 3 pints of Oatmeal (to be paid for).

Sund 14. Westerly Wind. It began to Rain at Day break and continued to do so till 11. It then clear'd up a little, but about 6 in the Evening came on a very Violent Storm of Thunder and Lightning, attended with a Torrent of Rain. It continued till 12 at Night and brought down as Usual a large quaintity of Stone and Rubish from the Mountain; then abatted and afterwards came on but with less Violence. The Colonel was at Home some part of the time.

Mond 15. Westerly Wind. Raining at Guard Mounting. A Frigate belonging to the Enemy was drove from Algezira during the Storm last Night, and was carried up to the two Rivers. Their Camp and New Batterys, all Seem under Water. We do not keep up much firing now. This afternoon a Mortar was Fir'd from Montague Bastion to St Carlos upon a New plan of the Govrs. It was sunk

15th January, 1781. down in the Ground. It Seem'd to answer tolerably Well. N.B. 4 Inches of Rain fell last Night.

Tuesd 16. Westerly Wind. Raining very hard at Guard Mounting and continued so all the forenoon. The Colonel had the Whist party at his House. I was confin'd by great Indisposition to my Bed Room. I have been ill with this complaint, a Violent sickness, and a Rash all over me for two months past, but it is now Worse.

Wed 17. Westerly wind. Blowing Hard. Find myself Uncommonly ill, all this Day. The Enemy very quiet. A very Dark Night,—exceedingly Cold and Uncomfortable.

Thursd 18. Westerly Wind. In the Course of last Night a Cutter Privatteer, the *Tartar*, Captn Gibson came In. She is only 14 Days from Ports, is come with Dispatches to the Govr and to Captain Leslie, brings some Useful Articles for this Garrison. We learn that the King has declar'd War with the Dutch, and also that our Fleet had Return'd to Ports after having had Sight of the French Fleet. A great deal of News seems to be flying about.

Fryd 19. Westerly Wind. A better looking Morning than We have had of Late. There has been a Promotion of Majors by Brevet, We hear, and also that Genl Skinner Died on Christmass Day.* We have not got any letters by this last Cutter; the Articles which are to be Sold are belonging to Mr. Turnbull. We get a Round of Beef, 42 lb, as yet we do not know the price. N.B. Find it is to be 4½ Rials pr lb.

Saturd 20. Westerly Wind, fine looking Day. The Col went up to breakfast at the Rock Guard, came down in the forenoon very much indisposed, and continued ill all the Rest of the Day. He has been very indifferent Some Weeks, but has not Chused to confine himself.

Sund 21. Westerly Wind. The Colonel taken very ill, sent for Baynes. He continued in his Room all Day, and for the most part very ill indeed.

Mond 22. Westerly Wind. Colonel no better; still in his Room; takes Physic this Day, and does not see any Body. Very ill myself. Get 14½ lbs of English Mutton, 10 Rials pr pound.

Tuesd 23. Westerly Wind, fine Weather. The Colonel still in the same way, keeps his Room. Two of the Privatters, Captn Venture and McLorge, saild to the Eastward last Night, but I had not any letters on board. Whist Meeting at Judge Frazers.

Wed 24. Westerly Wind. Fine in the forenoon. The Colonel a little better; gets out into the Dressing Room; but grew much

* He was then 81 years of age and still Chief Engineer of Great Britain, which office he had held for 23 years. His recommendations on Green's reports on the fortifications of Gibraltar are in the British Museum: Add MSS. 10034. He was succeeded by Colonel James Bramham.

Worse at 3 oclock, and continued very ill all the afternoon ; his Dis- 24th January, 1781.
order Seems mostly upon his Nerves ; attended with flying pains in Head and Breast.

Thursd 25. Westerly Wind ; the Colonel very indifferent, takes a Medicine Early in Morning, which affects Him. He continued greatly indisposed all Day. Miss Evelegh Died last Night, after having been long indisposed ; tho' not confin'd to the House above 12 Days. She was near 13 years old, was buried at Night, very privately, at South port.

Fry 26. Westerly wind, a fine looking Day. The Col has had a very bad Night, but grew Easier about Noon, and Walk'd into the Garden a little. A Man of Hardenburghs Deserted last Night. N.B. A Serjant of the 56th Deserted from Landport Guard last Sunday Morning ; He has left a Wife and children behind. He was in Debt.

Saturd 27. Easterly Wind. The Colonel has had a pretty good Night ; is better to Day but Seems low and Weak. 2 more men of Hardenburghs Deserted last Night. This makes four this week.

Sund 28. Easterly Wind. The Colonel very poorly this Morning and continued so all forenoon. A Vessel arrived from Leghorn this Day, belonging to Mr. Anderson, Loaded with Wines and Brandy &c, says that in Her passage here she saw a Man of Wars Long Boat with three Men's Jackets and some oars. It was the Boat belonging to the *Brilliant* Frigate. He could not get Her, as He was chased by two Xebeques. About Noon the Col grew exceedingly ill ; and We were obliged to send to Doctor Baynes who Bled Him, and He Seem'd rather Easier for it.

Mond 29. Easterly Wind ; the Col much better, and continued so till Evening, had then a little attack of His complaint, which indeed Seems mostly upon his Spirits. Two of Hardenburghs Deserted.

Tuesd 30. Easterly Wind. Very Dull Raw Day. The Colonel but very indifferent, and the Weather not good enough to allow Him to go out. 2 Setees arrived from Minorca in 20 Days, bring Word that the *Brilliant* was there when they came away, but is coming Down Here. These Vessels bring a few Supplies. The Col was better this Evening. Whist Meeting at Col Craigs.

Wed 31. Easterly Wind, better Day. The Colonel finds himself Low and rather Weak, but as the Weather was soft He went out on Horseback about half past 11, Mr Holloway with Him. It is just 11 Days since He was down stairs. He return'd before 2, and Seem'd tolerably well in Evening.

The whole of this Month has passed with very little Firing upon the Enemy, but a Number of Shott and Shells have been fir'd by Way of Experiments from the old Mole and other parts, some with tolerable Success, others very bad. The Enemy also have been trying many Experiments, and have got Mortars in Boats, and likewise

31st January, 1781. they fire shells from the Camp, Seemingly to know the Ranges, &c., but none pointed to the Garrison. They have an astonishing Number of Fascines and Traverses at St Carlos. During this Month We have had a good deal of Rain. We have very fortunately had a happy Number of Useful Articles brought by the Several Vessels, and the Garrison is well Supplied in some articles. The greatest Want now is of Firing and Fresh Stock. The flour also will be growing Short for the Inhabitants, and also Corn for the Poultry, and what few Cows and Sheep which are now remaining.

Thursd February 1. Easterly Wind. Colonel rather better. It was fine Weather at 12, when He Rode out to the Southward. In the afternoon He grew indisposed and was very poorly all Evening, and worse when going to Bed. A Man of the 56th in attempting to Desert fell down the Rock and was Dash'd to pieces. A Party of Miners who was Working not far from there, took him up. They likewise found the Body of a Serjant of the 73rd Regt who deserted about two Months agoe, and He had Shar'd the Same Fate. There is a Man of the 56th who was Concerned in the Same Scheme as the Man who has Suffer'd, and has turn'd Kings Evidence. He was to have gone off with the other Man and Some More; but was Disguised in Liquor and dropt Some hints, which occasion'd him to be taken into confinement, where He made a Confession of all He knew.

Fry 2. Easterly Wind. The Colonel has had a very bad Night; and could not get up to Breakfast. Seem'd very ill all the forenoon. The Govr here this Morning. A very Cold Windy Day. He walk'd out for half an Hour, but seems much worse than yesterday. Mr. Pierson Died this Night, aged 86.

Saturd 3. Easterly Wind. The Colonel rather better, did not go to Parade; or ride out to Day, continued pretty Well all the Evening.

Sund 4. Easterly Wind. The Colonel had a good Night, but as the Day turn'd out very indifferent He did not go out at all. Cold Raw Weather.

Mond 5. Easterly Wind, fine soft Morning. The Colonel tolerable Well, but did not go to the Morning Parade, and was very indifferent in the Evening. He did not go to the American Club.

Tuesd 6. Easterly Wind. The Colonel at the Parade; went to Whist Party at Col Kellets.

Wed 7. Easterly Wind. Col at Grand Parade, seem'd much indisposed all Day. Grew a little Better in the Evening, and when going to Bed.

Thursd 8. Easterly Wind. This Morning a Deserter came In from the New Battery, a Catalan. He reports that We have kill'd a great many People and a Captn of Horse. He says there are 8 Mortars keep Loaded in St Carlos Battery, to fire upon the Ships no doubt. He also says that the Serjant of the 56th who Deserted on 21st Jan hung himself in the Camp the Night He got there.

Captn Martin upon the Batterys this Day and Fired very much all the Evening, and the whole Night long. 8th February, 1781.

Fry 9. Easterly Wind. This Morning a Privatter Cutter arrived from Minorca in 14 days. She brings Word that the *Brilliant* Frigate is cruizing about. This Cutter is to go to Engd in a Day or two. This Evening the Colonel was not very well. I was also very ill.

Saturd 10. Easterly Wind; fine Day. Colonel at Parade, very indifferent in forenoon, better when going to Bed.

Sund 11. Easterly Wind. Cold Raw Day; Colonel rather better; and everything pretty Easy. I write a long Letter to my Sister and sent it to the office. All Well in Evening. A Man of 72nd Regt Deserted.

THE PROVISIONS FROM THE 12TH FEBRY TO THE 11TH OF MARCH 1781.

Officer pr Month. Bread as usual; 4 lb of Beef; 4 lb of Pork; 10 oz of Butter; 1 pint of Oil; 1½ lb of cheese; 4 pints of Peas; 4 pints of Kidney Beans; 4 pints of Wheat; 1½ Do of Rice; 1½ lb of Raisons; 4 lb of Beef, 12 pints of Oatmeal (to be paid for).

Men pr Week. Bread as usual; 1 lb of Beef; 1 lb of Pork; 2½ oz of Butter; ¼ pint of Oil; 1 Do of Peas; 6 oz of Cheese; 1 pint of Kidney Beans; 1 Do of Wheat; 6 oz of Rice; 6 oz of Raisons; 1 lb of Beef (to be paid for).

N.B. Soft Bread the first Week. Buisquit afterwards till further Orders.

Mond 12. Easterly Wind. Colonel rather better. All tolerable in Evening. The Cutter did not go as was expected last Night.

Tuesd 13. Westerly Wind. I write an other letter to my Sister, which I mean to send by Mr Logie. The Colonel better, and went to Major Vinogles. The Whist Meeting.

Wed 14. Westerly Wind. Col pretty Well and continued so; fine Day.

Thursd 15. Westerly Wind. Colonel at Parade, but finds his Eyes painful. He was very indifferent in the Evening. N.B. Two of the Oxen belonging to the Kings Works were sold yesterday, the Colonel not being able to keep them all lest the Grain and Provision for the Cattle would not hold out. He got 100 Guineas for them; one was Killed for the Market this Day, very good Meat; and Sold at a Dollar per lb.

Fry 16. Easterly Wind, an exceeding fine Day. The Colonels Eyes better, but finds an Uneasy pain in his Mouth. It seems to be a Rheumatick pain. We had a Large Company at dinner this Day, Davies family, Col Ross, &c, &c, and we Dress't our English Round of Beef. It weighed 42 lb, and turned out exceedingly good.

17th February, 1781. *Saturd* 17. Easterly Wind; the Colonel very much indisposed with his Mouth and Head. The Cutter not gone. A Cold Raw Day. Col ill at Night.

Sund 18. Easterly Wind. The Cutter gone last Nt. Much talk of the Memorial Relating to the Regts,* Most of which are gone home. Colonel very poorly in Evening.

Mond 19*th*. Easterly Wind. Colonel very much indisposed all Day. At Noon a *Polacre* came from Minorca in 5 Days, brings some letters and a few Supplies. This Evening all was very much Distress'd and Indisposed.

Tuesd 20. Westerly Wind. Cold Day but very clear and good Weather. The Colonel much indisposed but in pretty Easy Spirits.

Mem^m^ in Garrison Orderly Book.

"After each Regt is Reviewed they will march from the Sands and occupy the following Posts :—

12th Regt...Montague Bastion to South End of the Saluting Battery.

39th Regt...Ragged Staff, the fleche, and to South Shed.

56th Regt...Prince of Hesses Battery ; Grand Battery, and to Montague Bastion.

58th Regt...From South Shed, the New Mole, and Rossia.

72nd Regt...Four Companys quartered at the bottom of Irish Town, to pass thro' the Sally Port, Navy Yard, and occupy the whole Cover'd Way of Water port. Six Companys Kings Bastion and to Church Battery.

73rd Regt...From Rossia to Dead Mans Hole and to send a Party to occupy Europa Gate.

The Commanding officers to Report to the Governor the Day before the Review the Manner in which they are to March from the Ground to their Posts.

56th and Hardenburghs not to Fire but to go thro' the Motions. The other Regts to Fire the Parapet firing."

Wed 21. Westerly Wind, very Cold indeed. The Colonel rather better. This Morning an other Vessel arrived from Minorca, brings a very good Supply of Wine, Oil, Sugar, and some Wood for Fires. Had a Fore Qr of Mutton from Genl Boyd.

Thursd 22. Westerly Wind, exceeding Cold. Colonel but indifferent, better in Evening.

Fry 23. Westerly Wind. Still indisposed, could not go out.

Saturd 24. Westerly Wind, still very cold. The Colonel rather better.

Sund 25. Westerly Wind. The Colonel better. Very cold Weather.

* This was a respectful memorial to the Governor drawing attention to the inadequacy of the officers' pay owing to the high rate of exchange and the great cost of all necessaries, and also to their non-participation in the recent extensive army promotions.—Drinkwater, pp. 140–1.

Mond 26. Westerly Wind. The Colonel a good deal better. The 12th Regt reviewed. All Well. 26th February, 1781.

Tuesd 27. Westerly Wind. Colonel Better; 39th Reviewed. All quiet with that Regt. The Colonel went out after Breakfast to the Guard Mounting, and Seem'd pretty well when He return'd. We had Captn Phipps family to Eat some of the Mutton; and Mrs Fancourt in Evening. Mrs Rogers Married this Evening to Lt Wilks of Artillery. Col Ross has made up a New Uniform, the Lappels of the 72nd Colour, but no No on the Buttons.

Wed 28. Westerly Wind, fine Morning. The Colonel not at the 56th Review, but went out afterwards to Guard Mounting. All pretty Well.

During the Course of this Month the Enemy have been very quiet. They are not often at Work at St Carlos. They realy seem as if they intended to remain as they are; Unless Urg'd on by any New Manœuvres of ours. One thing they certainly do, which is to be very Mindful of Signals; and other attentions upon their Coast. We can not help observing that We have Undoubtedly highly Mortified Don Barcelo; as it is Evident He can not keep so good a Look out as He did at first; or else We should not have got In so many little Vessels, &c &c from the East, all of which have been of the Utmost Service to this Garrison. Could We only get a Flour Ship and some Coals our greatest Wants would then be amply Supplied.

During the whole of this Month I have been a good deal indisposed, and keep Low, by a Constant Complaint that has attended me for the last 4 Weeks, which makes me keep still in the House, and some times greatly affects my Spirits. I have been Under the Necessity of keeping up, tho' with some difficulty, as the Colonel has been much indisposed, and it has been the Utmost desire and attention of my whole Mind to pay every possible Regard to his Health; the More So as his Complaints always fall upon his Nerves, and occasions many Unpleasing Consequences.

Thursd March the first. Westerly Wind. Fine Day. Colonel did not go to the 58th Review.

Fry 2. Westerly Wind. Very clear Day, but Cold. Colonel did not go to the Field to see the 72nd but met them as they return'd to their Alarm Posts. They made it very late; having so much to do. The Colonel not well. Colonel Ross did not Join the Regt but was in the New Uniform. He dined with the Corps at the Govrs.

Saturday 3. Easterly Wind. Blowing exceedingly hard. The Colonel went out to the Southward; to see the 73rd take their Posts. They had two pieces of Cannon in the Field, and made a very good Review. The Col at Mr Holloways in Evening.

Sund 4. Easterly Wind. Blowing exceedingly hard all Night. The Colonel went to Guard Mounting this Morning. A Brig taken

4th March, 1781. over to Algezira this Day: She had English Colours; came from the East; had 20 Guns.

Mond 5. Easterly Wind, fine Day. Colonel rather better; did not go to Hardenburgs Review, but to their Alarm Posts. It was a very Warm pleasant Day.

Tuesd 6. Easterly Wind. Cold Day. Redans Review. The Colonel as Usual, at Alarm Posts. A Flagg of Truce this Day from the Enemy, Relating to Major Freake, &c. Colonel at Captn Hastings this Evening. The Whist Meeting.

Wed 7. Easterly, Cold Raw Day. De la Mottes Review. Colonel as Usual. Just as the Regt had got to their Alarm Posts; viz., the Kings Bastion, a Man went off from Landport where He was on Guard. A Serjant observed Him Walking towards the Barrier Gates; and call'd to Him, but He at once set off, and altho' the Guard instantly Fired, as they did from the Lines and upon the Mountain, with Ball and Grape Shott, yet He escaped and got into Fort Carlos. There were more than 500 Musket Balls fired. He was one of the 72nd Regt.

Thursd 8. Easterly Wind. Cold and Raw. Colonel rather better, goes to Guard Mounting now, seems Low at Times, has got his appetite Well.

Fry 9. Easterly Wind. Same Weather. The Colonel better. Auctions every Day. Chiefly Prize and Ship Goods.

Saturd 10. Easterly Wind. Dry Cool Weather. We had a Heifer kill'd. It weighed 200 Wt. We did not sell any but parted it amongst our Friends, keeping what parts We chose. It turns out very pretty Looking Meat. It is about a Year and Eight Months old. A Sir Loin to Genl Boyd.

Mond 12. Easterly Wind. Looks Dull like Rain. The Govr much displeased this Morning, owing to the Neglect of the Two Captains upon Picquet last Night, one of which totaly forgot to go His Rounds during the Course of the Night. The other only Went half the Rounds. It is supposed some Serious Orders or Consequences will follow such a great Neglect of Duty. It occasions much Talk. One of those Captns was Captn Pigot 56th, the other a Hanoverian captain.

Tuesd 13. Easterly Wind. Still like Rain. This Days Orders were as follows:—"The Captains of the Picquet Rounds are in future to report to the field officer of the Day the hour they went their Rounds and the Commanders of all Guards are to mention in their Reports the hours they were Visited and What Rounds." The Whist Meeting at our House this Evening. We understand that some very particular orders are to be made known as to Morrow.

Wed 14. Easterly Wind; a little Rain this Morning. At Noon all Commanding officers were employ'd in reading a very Severe Note from the Governor in consequence of the late very great Neglect of

Duty in the two Captns upon the Picquet,—also a General Censure upon other Nightly and Daily Neglects, &c, a copy of which I will endeavour to get. N.B. It was not put into publick Orders. 14th March, 1781.

Thursd 15. Easterly Wind. Cold Day. A Man of the 12th Deserted last Night from Upper Alls Well. This Day all the Real Invilades are order'd to be got Ready to leave this Garrison. N.B. It is said they are to go on board the *Enterprize* this Night.

Fry 16. Easterly Wind. Raining fast in Morning, not much afterwards. I write a long letter this Day to my Sister, as did the Colonel to Mr Fisher; and sent them to the Office; it is supposed they are to go home by the *Enterprize* which is expected to go as this Nt. 3 Men of 56th concerned in a Robery, taken up to Provost.

Saturd 17. Easterly Wind. Soft Morning. The Frigate is not gone. Much Talk of the bad Behaviour of three officers of 12th Regt Relating to a Jew; in Refusing to Pay their Debts; and ill Treatment to the Man, &c. The *Polacre*, Captn McLorg Master, that went up to Minorca in company with the *Hannah* Captn Venture upon the 23rd of Janry, towards the East, came In this Morning, brings a small Quaintity of Casks of Flour, oil and Wine, brings Letters from the Govr of Minorca to our Govr and much Satisfactory News, Relating to our affairs in South America &c. Also brings an Account of the Attack upon Jersey, where we understand the French had made an attempt; and that they were greatly Hurt and drove off.

Sund 18. Easterly Wind. At Day Break it Rained; then held up till near 11. The *Tartar* Cutter, Captn Gibson Master, the same which arrived upon 18th Janry in Mr Turnbulls Employ, and has been a cruize to the East, arrived this Morning, brings some Supplies and fresh confirmation of our having been sending out Troops to the South Seas. The *Enterprize* not gone. I write a letter to my Daughter Helen, as did the Colonel to his Sister, and they all went to the Govrs office.

Mond 19. Easterly Wind; not any Vessels gone. This Day a Small Vessel came In from the East, which proved to be the Tender, belonging to the *Brilliant* Frigate. She was drove from Her anchors in a Gale of Wind, as she lay at Barcelona, and had been a cruize. She has Several Greeks on Board, was drove In by Contrary Winds and much bad Weather, as had the *Tartar* Cutter; who also had a Smartt Engagement with the Enemys Xebeques and Boats,—9 in all, which He drove off; and Behaved with great Spirit.

Tuesd 20. Easterly Wind. The two Men of the 56th Try'd for a Robery at a Wine House Mans in Irish Town, Colonel Godwin President, Lt Col Cochran, and three Majors and 8 Captains. N.B. It was expected that the three officers of the 12th would have been also Try'd, but the affair with the Jew has been made up. The Whist Meeting, which was to have been at Judge Frazers, was held at Col Craigs. It Rained exceedingly hard all Day and Evening.

21st March, 1781.

Wed 21. Easterly Wind. Not any Vessels gone. The Two Men are to be Hang'd. Auctions are now going on every Day, and the Prices of many Articles are greatly Reduced, as for example, Flour, tho' but a small Quaintity; 200 Wt...22 Drs, Soap 1 R 4 Q per lb., Sugar (soft) 2 Rs pr lb. Beans are now in great plenty, owing to the late Rains. They were at first 4 Rs but now 1 R pr lb. Colliflowers have been Dear, Six and Seven Rials a piece. $3\frac{1}{2}$ Inches of Rain in the last 24 hours,—it is a great happiness to Us.

Thursd 22. Easterly Wind. Fine Morning and Day. A Snow that came In last Sunday from the East, Bound for Liverpool, and who had come In in her way in order to get water, was carried over to Algezira. She had got as far as Caberita point when the Enemy fir'd 5 Shot. However it is conjectured that our own Boats could have brought Her back had they made any Trial. It was a Dead Calm. Mr Aldridch Died this Morning.

Fry 23. Easterly Wind. Raining at Guard Mounting, and continued So all Day. Had a few Friends at dinner, Col Ross, Picton &c, all Well. Some more papers are to be Read to Morrow by the Commanding officers to their Respective Corps, concerning those three young officers of the 12th and their Behaviour to the 2 Jews. It was supposed the affair could not have been so Well made up as it now is, as the offence was of a very Serious Nature, particularly of one of the officers, who had sold his Provisions more than a year agoe to the Jew, for which He Received Money down, and the Man was to have the Provisions, but He has never been able to draw them from the Victing office, owing to our present Circumstances. He therefore wanted his Money back of course, but instead of that was frequently ill used when ever He made any demand, and it was carried so high as to shut him up and Fire, tho' only with Powder, a Pistol at him. This disagreeable Business is finish'd as follows,—and most of it ended thus quietly owing to the Mildness of the Colonel of the Regt and the Govr. The Jew received the full Money, and double Interest for the time, as He made it appear He could have gained many advantages had He been posess'd of the Money, and the three officers gave Ten Guineas each to the Jew. It is hoped this will have a proper Effect upon the Unthinking Young Men who make a custom of ill using any Tradesman who asks for their Money.

Saturd 24. Easterly, a fine soft Morning. The Engineers all mett here at 12 oclock; and the whole of the Jew Business was explained by order of the Govr and it seems as if it was well taken by every Body not having put it into Garrison Orders. The Colonel up to Willis in afternoon to meet the Govr and did not return till past 11 oclock. N.B. Yesterday We got a hind Qr of Mutton from Genl Boyd: Weight 18 lb, very good Meat.

Sund 25. Easterly Wind, a fine Rain all the forenoon, which will

be of the utmost Use to the Gardens. N.B. At this time there is an astonishing plenty of Vegetables, particularly Beans, all owing to the Rain. Col at Mr Holloways this Nt. I was taken very bad with a Complaint in my Head, Jaws, and Teeth, have not been out of my Room since Fryday, and was then very ill, have indeed been in a Daily State of pain and illness for Many Months past, as long as October last but *particularly bad* in Febry and March. 25th March, 1781.

Mond 26. Easterly Wind. Raining a little. Still I am very ill. Col Dined at Genl Boyds, Holloway at Booths. Col at Phipps in Evening. I hear He was in very good Spirits.

Tuesd 27. Easterly Wind. Raining again. My Head very bad. The Whist meeting at Judge Frazers.

Wed 28. Easterly Wind. A Brig coming In from Lisbon was taken over to Algeziras owing to the ill Management of the Master. Mr Ross was on board, and He and the rest of the Crew left the Vessel. He brought In a few Papers, by which We hear of a few alterations. The *Enterprize* and the *Fortune* Sloop sailed in the course of the Nt. The Prize *St. Firmin*, was intended to accompany them, but by some ill Management in geting under sail she Run foul of the Mole Head, so she now remains. Colonel at Captn Eveleghs this Evening. Find myself exceedingly ill indeed.

Thursd 29. Easterly Wind, still raining Hard. Am so very bad with the Complaint in my Mouth as obliged Doctor Baynes to take out a Tooth. Col at Home this Evening. He is now quite Well. A flagg of Truce came with a letter concerning Major Freake of the 39th Regt.

Fry 30. Easterly Wind. Raining soft and easy. Hear that Mr Adair of the 12th had got a Company in the 10th Regt and the Honble Mr Conway of the 39th a Ltcy in the 2nd Battalion of the Royal. Col at Captn Phipps, Stayed rather late. N.B. It is not so Early a Family as our own.

Saturd 31. Easterly Wind; more soft Rain. Find that the Govr has given Mr Conway leave to go to England, and He is to go In the *Tartar* Cutter which is expected to sail this Evening. I therefore write a letter to my Sister, being willing to take every opportunity. Am still in great pain with my Head and Jaw. Can not go down stairs as yet. My having been so exceedingly indisposed in the Course of the last Ten Days has occasioned my making a few Mistakes, which I mean now to set Right. I have also omitted to mention that the two Unhappy Soldiers of the 56th Regt who were Sentenced to be hang'd both did Suffer upon the Wednesday 28th March.

N.B. I have already mentioned the Vessel from Lisbon being taken over to Algezira, but it was not on Wedy. It was on Thursday forenoon. She had 140 Butts of Wine, some Coals, and other Useful

31st March, 1781. Articles. By the News papers which Were luckily Saved, We understand that a Convoy is Certainly intended for this place, It seem'd to be ready at the End of Febry. It can not come too Soon, as Numbers of the Inhabitants are in great distress for the Want of Flour. It will become almost impossible to Raise half the Poultry We could wish, owing to the Want of Grain.

*

Sunday April the first. Westerly Wind. A Rainy Night which has brought the Wind to the West. The Cutter did not go last Night. The Guard Mounted at 7 this Morning. It continued Showery all the forenoon *and* Blowing very fresh. Find my Head and Teeth Still very painful. Articles of War Read to every Corps this Day.

Mond 2. Westerly Wind, fine Morning.

Tuesd 3. A Cutter, the *Resolution* arrived from Plymouth, having had a passage of 29 Days. She brings Coals, Rum, Sugar, and other Articles for Government; and Several letters. We Understand the fleet may be Soon expected. By some letters I hear that the Royals certainly Sailed upon the 28th Novr. Colonel Ross has ask'd Leave of the Govr to go. Barcelo and his Ships seem very busy. Several Xebeques at the Orange Grove. Whist party Col Kellet.

Wed 4. Westerly Wind. The *St Fermin* and all the Vessels gone to the East last Night. Col Ross call'd to ask my Commands for England. He goes in the Cutter which is expected to sail the very first Moment of Fair Wind.† This Evening Lt Burley of the 39th and a party of Soldiers consisting of 30, together with Sailors &c made an attempt In Barges, and Boats to go to Caberitta point in order to Cutt out an arm'd Sloop and some Fire ships as it was said, that have been laying there some few Days. However their Scheme was not altogether Succesfull. It proved a very Stormy Night,—and to conclude this Story, They all came back about three in the Morning, not quite so pleasantly as They went, because at their Return, every one Concerned Seem'd to blame each other. Upon the Second of this Month the following was in orders,—The Soldiers will receive no more Biscuit after this Week, but will receive officers Bread, and the Loaves to be 2 oz heavier.

Thursd 5. Westerly Wind. All the Vessels return In every Night to the Orange Grove. There are two very Large Frigates there. The *Tartar* Cutter not sail'd as yet.

Fry 6. Westerly Wind. All the Same. We do not Fire at all Now,—only by way of Experiments. This Day it was in orders that

* Two pages are here left blank, evidently for the other corrections promised above.

† He returned on 13th November, 1781, to command the 72nd Regiment.

all the officers in each Corps are to draw their Provisions all together, and that it is to be divided after it is taken from the office. No Body can tell what Reasons are to be given for this. However it does not give satisfaction to any Body. 6th April, 1781.

Saturd 7. Westerly Wind. About Noon this Day a Vessel appeared from the West. The Gun Boats and the Xebeques went to try and Cutt her off. She got as Near to Europa as she could. The Master behaved Remarkably Well, and as Soon as our Guns could Protect Her all was Well. There were 9 Gun Boats besides other Vessels in pursuit after Her. All the Batterys that Bore that Way Fir'd, and She was got Safe Into the New Mole. She proves to be a Privatter Brig, from Glasgow in 14 Days, the *Eagle*, Captn Crawford, brings a Certainty of the Convoys having sail'd from England upon the 11th of last Month, also very good accounts of a Victory gain'd from the Dutch, Under Sir George Rodney. The arrival of this Vessel has put Us in better Spirits, as We can not doubt of the Convoys being on its Way. N.B. The Corps of Engineers dined at the Govrs this day. I am rather better now.

RATIONS OF PROVISIONS FROM 9TH APRIL TO THE 6TH OF MAY 1781.

Officers a Month. Bread 1 oz pr Day addition; Beef 4 lb 4 oz; Pork 4 lb 8 oz; Butter 10 oz; Raisons 3 lb; Pease 2 pints; Beans 4 Do; Wheat 4 Do; Rice 1 Do; Oil 1 Do.

5 lb of Beef, 4 pints of Pease, 12 pints of Oatmeal to be paid for.

Sund 8. Westerly Wind. A very fine Day, quite Warm. All Quiet with us and from the Enemy. A Large Suite of officers were at St Carlos this afternoon.

Mond 9. Easterly Wind. It is expected that the *Tartar* Cutter will go this Evening. Accordingly I write a Duplicate Letter to my Daughter Helen. The Colonel writes to his Sister; the Jones, &c &c. All those letters went Under Care of Mr Mackellar.

Thursd 12. This Morning at 2 oclock the Col was call'd up to inform Him that a Cutter was come In, from the West, who brings Certain News of the Convoy being just here. She was sent In by Admiral Darby who is Commander in Chief.

(Note: The relieving fleet came in on April 12th and the bombardment began the same day. The Journal only contains the following notes until June 3rd when it is resumed).

Cunningham 39th was wounded on Sunday 22 April; Died Sunday 6th May,—on Water port Guard. Doctor Chisholm 56 was Wounded, and lost his Leg upon Sunday 15th April.* He was Standing at the

* Drinkwater states that on the afternoon of this day the troops in the town began to encamp at the southward and to be distributed in the town casemates.

outside of the casemate Doors in Kings Bast. Lt Boig of the Royal Artillery was Wounded the very first Day of the Firing, Shot in the Shoulder.

Upon Sunday 29th April, 17th Day of Firing, the Enemy had at a Moderate Calculation fired 65,000 Shott and Shells.

Mr Lowe of the 12 Lost his Leg as He was coming down the Steps from Princes Lines, towards the Castle. He was employ'd as an overseer in Kings Work,—Good Man.

Gun Boats came all the time the Fleet was here and then upon the following Days after they went. N.B. They left Gibr (?) 20th April.

23rd first time after the Fleet, between 5 and 6.
30th 13 Boats Kings Bastion.
May 7th in Morning, between 5 and 6, 14 Boats.
Do the 11th, in forenoon 10 oclock.*
Do the 12th in Nt between 12 and 1. Taken up.†
Do the 20th at 2 in the Morning. Do.
24 at 2 in (?) Morning fatal Night. Do.
26 false alarm. Taken up.
June 1st at 2 oclock. Do.
June 3rd at half past one 2 Serjts Killed. Do.

They are always attended by Mortar Boats. When they come at Nt they always fire a Shell first, about 10 Minutes, and then begin with Shott and Shells. Their signal for Retreating at Night is throwing up Rockets.

Their Balls 26 lbs...Shells 13 Inch. They are about 40 Ft each Boat and carry 18 Rounds each,—Mortar Boats 12 Rounds. Upon the 31st in the Morning They fired 49 Shells, 190 Ball, and a Barr Shott of 35 lb Wt went Into a Large Tent belonging to the Qr Master Genl quite through the Tent; but did not do any hurt,—a very Remarkable Shott came Into our Garden about 10 Yards from the Bow Window. It fell upon a small Walling of stone, about 8 Inches high which was a sort of Bordering. The Shott broke into a Number of pieces, Drove a piece of the Stone Wall up into the Room, breaking the Glass of Bow Window. N.B. I have taken home a Large piece of this Shott, it being Esteem'd a Curiosity in its kind. N.B. The Garrison fir'd Grape shott, as well as shell and it was supposed must have greatly hurt them—2 Hours.

* On this date Drinkwater says "Scarcely a house north of the Grand Parade was tenantable."

† Probably these words refer to Mrs. Green—being an invalid—having to be taken up and carried to the Bomb-proof. See entry below under date June 3.

After the first fortnights Fire, the Enemy began to Slacken Fire. It was often 1,700 Rounds a Day,—particularly the beginning of May.

Upon or about the latter end of May they came down to 400 Rounds the Day,—particularly that was the Number upon Fryday 1st June.

A Jew Woman, a Man, and Young Lad, were kill'd on the Nt of the 23rd May by a Shell from Gun Boats, as were also three other men, and Many Wounded. We did not fire at all, as the Govr had Express'd Disapprobation at our firing on some other occasions. They Seem'd to be about half a Mile distant at one time upon the 31st May; but after that, somewhat nearer before they were drove off. The Large Howitzer upon Buena Vista distress't them a good deal this Night. *Enterprize* went out on Sunday Night 27th May. The *Flora* and *Crescent*, Frigates from Minorca went through on Monday Morning 28th. N.B. The Splinters of a Shell struck the Tin funnel of the Stove in Bomb Proof upon the Nt of 31st.

N.B. Omitted to mention that upon Monday 7th May the Gun Boats fired 345 Rounds of Ball and Shells. N.B. To be attentive in puting down these Mem[a] and to place them in proper dates in order to avoid Confusion. A Ragusian came In on Thursday 31st May and was brought to by the Garrison.

June 3rd. Easterly Wind. Upon Saturday Night, or Sunday Morning at half past one the Gun Boats came, and began in a most Violent Manner. It was with much difficulty I was taken into the Bomb Proof. The Enemy fired more than ever. They came very close. *We* fir'd from the Garrison and a little from Shiping. We had 2 Serjants kill'd and Several others Wounded. It is hardly possible for pen, or even Words, to describe the distress and hurry this business puts us into.

This Day Sunday 3rd June, a very Large Fleet going through. We have heard of this by other means, but it appears very formidable. The Grand Hospital much affected last Night. Upon June 1st more than 200 men Wounded and 60 Dead of their Wounds, besides a Number of Inhabitants who have been Kill'd.

Mond 4. Royal Standard up at Grand Battery. By Noon the Enemy had sent three Balls through it. At one oclock We Fired every piece of Ordnance that Bore upon the advanc'd Work, being 65. No very material hurt was done to the Enemy's Works. The Day being Damp and an Easterly Wind it is supposed had some effect upon the Powder. About 2 there came round from the East a Line of Battle Spainish Man of War, 4 Xebeques and 2 Bomb Ketches, and went to Algezira. Many persons believed that the Line of

4th June, 1781. Battle Ship would have given a Broad Side to the *Brilliant* Frigate as she came very close, but all was quiet. N.B. The Gun Boats have been Commanded by Don Juan Moreno, of the Rank of Major Genl. This We heard by means of some Spainish Gazettes which came down from Minorca. N.B. Barcelo has been gone ever since the Firing.

Tuesd 5. Easterly Wind. All quiet from the Gun Boats, but a good deal of Firing keep up from the Enemy. It is now to be fear'd that the two India Men will be detained some time longer; as those ships laying over at Algezira is much against their going out. I am very indifferent still, and with much difficulty can get down stairs.

When the family were going to Bed, between 11 and 12 an Alarm was given from the Guard Boats, and instantly the whole Camps were up, and the Artillery went to the Batterys &c. I went down to the Bomb proof instead of going to Bed; had the Child taken up, a Fire made in Bomb Proof, and every thing made as Comfortable as it could be, every Moment expecting the Gun Boats. We all knew that one of the Line of Battle Ships had gone to nearer the Orange Grove in the Day, and it was thought she was Under sail in the Evening which led us to suppose she was to assist the Boats, but all was quiet from them.

Wed 6. Westerly Wind. A good deal of Firing as Usual. Could not make myself Easy in the Evening, therefore went again to Bomb Proof,—all quiet.

Thursd 7. Westerly. Cold Blowing Day. Am not quite so Lame as I have been; find myself growing very Tired and indisposed in the Evening. Therefore went to Bed before 10. A little before 11 an alarm was given of Vessels being coming very near our Batterys. It was Supposed it was either Fire Ships, or Bomb Ketches. In consequence all the Troops got up and went to those places appointed for Safety, except those on Duty. I was obliged to be taken out of Bed, and away again to Bomb Proof. This Disagreed with me more than I can express. Our Suspense Continued till past 12, and then it was clearly found to be 3 or 4 Xebeques that was going out after 2 Vessels which sail'd for Minorca.

Fry 8. Westerly Wind. All has remained quiet. I find myself exceedingly ill, the whole Day, indeed Uncommonly So,—obliged to go to Bed after dinner, and Dreadfully alarm'd lest the Gun Boats should come this Night; as I am realy too bad to bear the Moving. However they Luckily did not; and We all got a good Nights Sleep.

Saturd 9. Westerly Wind; Cold and Blowing hard. About 11 a very Loud Explosion was heard, and a very heavy discharge of shells, with the Utmost Rapidity from the Enemy's Camp. It was Instantly Seen to proceed from an accident amongst themselves. Their principal Laboratory Tent, under the Queen of Spains Chair, near the Catalan Camp, Blew up,—also a Building near to it. The fire was Violent; and extended to a Large Heap of Live shells, which Blew

up in a most furious Manner. Nothing could equal the Confusion the Enemy were In. This Tent is about four Thousand, five Hundred Yards from Landport. They beat to Arms. Their whole Line turn'd out under arms. It enabled our officers to form some Idea of the Number of Troops; which by observing the Number of Battalions seems by all accounts to amount to 10,000 men. Their Commander in Chief was Seen Riding with the Utmost Speed, attended by all his Suite in equal haste, towards where the accident happened. I plainly saw the poor Men Runing from the Flames. It continued Burning an hour and half and the bursting of the Shells more than half an hour. This accident must have done them most Essential hurt; and of course lower'd the Ammunition greatly. The Line of Battle Ship which Lay near the Orange Grove sent all Her People on shore to assist, and 6 Gun Boats went from Algezira to the Orange Grove. 9th June, 1781.

Soon after the accident the Enemy Fir'd a Shott from a 14 Gun Battery up to Williss. It came through the Embrasure; Kill'd one Artillery Man, blowing him to pieces. He fell upon an other who was Mortaly Wounded. 2 other Artillery Men were also Wounded by the Same Ball, but it is hoped they will Recover.

A List of the Killed and Wounded, from April 12th to the 4th June.

Killed. 6 Serjants, 1 Corporal, 1 Drum, 37 Private; Total, 45.

Died of their Wounds. 1 officer, Lt Cunningham of the 39th Regt, 1 Serjant, 16 private; Total, 18.

Wounded. 8 officers, 1 Surgeon, 1 Do Mate, 16 Serjants, 15 Corporals, 5 Drums, 201 Private; Total, 247.

Officers Names. Lt Lowe of 12th Lost His Leg, Surgeon of 56th Lost His Leg.

A Remarkable Event happened upon the 22nd of May; which I omitted to set down in its proper place; must therefore now Mention it.

At 2 oclock in the Morning, a Shell thrown from the Enemy, fell upon a Gun on the Church Battery, Line Wall, burst as it fell; a Splinter of which went to the South Bastion 360 Yds from Church Battery, and Cutt the Leaden Apron that Cover'd the Vent; and Fir'd the Morning and Evening Gun.

The Evening after the above a shell fell upon the Grand Battery, the bursting of which Fir'd one of the Guns, which Gun was Loaded with Grape shott and Laid for the Gardens. N.B. The Enemy are every Night in the Gardens and it is remarkable enough that one of their own Shells should be the Means of Sending those Grape shott amongst them; by way of Saving us the Trouble. Lt Cuppage of Royal Artillery was on the Flagg Staff Guard at the time.

10th June, 1781. *Sund* 10. Westerly Wind. This Morning about 7 the Line of Battle Ship came from the Orange Grove. The wind brought Her near to our Guns, and the Garrison fir'd at Her from Kings Bastion. Several shot struck Her. She sheer'd off and went to Algezira. The Enemy Fir'd a Good deal this Day. Went as Usual to Bomb proof.

Mond 11. Westerly wind. This Morning about 7 a Flagg of Truce came from the Enemy, informing us of our having made a mistake Yesterday; as it was a N—* Man of War that We Fir'd at. This Evening Mr Ward saild In an Arm'd Vessel call'd the *General Murray*, for Minorca. I wrote to my Son and my Sister.

Tuesd 12. Westerly wind. This Morning at half past one the Gun and Mortar Boats came as Usual. There seem'd to be a good Number. They were Fir'd at from every part that Bore upon them. The shiping also gave them a Warm Reception. Several of their shells burst in the air; one over our House; and the Fuzee Remains upon the Top of it. They Staid a little better than an Hour. An Unlucky accident happened in a Tent belonging to a soldier of the 56th. His wife, a very Good Young Woman, and a Young child of three months were Blown out of the Tent by a Shell. They were thrown into a Deep Gully, and Child Torn to pieces and the Woman much Burnt and otherwise Wounded. A Man this Day of the Working party kill'd at Willisses,—and in the last three Days 4 or 5 have been Killed.

Wed 13. Westerly Wind; all quiet from Gun Boats.

(*The diary ends here abruptly, Mrs. Green's failing health probably rendering her no longer equal to writing after June 13th. She left the Rock and returned to England on the 22nd July, 1781, and died there on the 21st of June in the following year*).

* This is left blank in the diary but Drinkwater states the ship was a Neapolitan.

MEMOIRS.

GENERAL SIR ALEXANDER TAYLOR, G.C.B., ROYAL ENGINEERS (BENGAL).

(Concluded).

By Col. Sir Edward Thackeray, v.c., k.c.b., late R.E. (Bengal).

On the 21st September the King and Palace fell into British hands. On the same day the Engineer Headquarters were established in the Palace of the Nawab of Juggar. Colonel Baird Smith left the city for Rurki two days later, too ill to travel except by bullock cart, and Taylor took up the command of the Corps at Delhi, somewhat to his disappointment, for he was burning to serve with one of the columns destined to put down rebellion in the North-West Provinces. His work in the Mogul Capital was to restore and re-model its battered fortifications, etc.; place the bastions in a state of defence; block up gates not in use, and strengthen the Palace.

His projects had the complete approval of General Wilson, but not that of Lord Lawrence, who considered them too belligerent and on too large a scale.

The following informal letter to him from the Chief Commissioner preaching moderation in armament sheds a light on their differences :—

"*October 8th.*—I have just been reading your Memorandum as to the best mode of defending Delhi. Now I want to say a few words to you on this matter. It seems to me that General Wilson and you on one side, and I on the other desire two very different objects. The point seems to be, which of the two is really desirable? If the object be to defend the town of Delhi, then you are both quite right. I have nothing further to say. But suppose it be desirable to let the inhabitants return, which I think it is, as far as the great majority go, could we not manage to mount a few guns on the walls of the Palace, if it were merely for show? Walls 9 ft. wide at the top would surely bear 9-pounders; and a few peeping over would have a sedative effect. If we are to defend the outer line, then of course we must keep out the mass of the people. But against whom is the place to be defended? There is no force, that I am aware of which can come against it. Our reputation in having taken it guards us against attack, even if an enemy existed, which it does not. My idea is that we should let the people back under proper restrictions. And this being admitted, can we not secure ourselves . . . by improvising a mode of arming the Palace with a few guns so as to overawe the town. Answer this please when time admits." *

* Quoted in Bos. Smith's *Life of John Lawrence*, I., p. 252.

In November Taylor marched to Agra in command of the Engineer Brigade, and on the 10th of December joined Seaton's Column at Alighur, (near which the enemy were said to be collecting), just in time to take part in the brilliant cavalry engagement at Khasgunj in which the Carabineers and Hodson's so greatly distinguished themselves.

The character of his activity at this time is suggested by the events occupying the morning hours of December 17th. It was the grey of the morning. The column was in movement, and in the neighbourhood of Puttiali, when distant shots were heard. Taylor and Hodson with some of his sowars rode forward to reconnoitre; they came on an apparently deserted village, the gates of which had been built up. Taylor sent back for some powder-bags, with which to effect an entrance. The two officers dismounted; Taylor disposed himself for a nap, while Hodson, armed only with a hog-spear, embarked on a voyage of discovery. "While waiting," writes Taylor, "Hodson wandered alone into an enclosed yard, at one end of which was a long low one-storied house. . . . Forcing in the central door, he found himself without sword or firearms in the presence of 10 swordsmen who immediately attempted to attack him. He stepped back one pace into the yard, and, as each swordsman came through the narrow doorway, so low that it impeded the immediate use of his sword, met him with a fatal spear-thrust. This occurred within a few yards of where we had been sitting. He had been away for a few minutes only, and when he took me to see what had happened in that short interval, I found 10 armed men, dead and dying, lying on the floor of the room." *

Taylor, to whom this incident was distasteful, went alone to the gateway to see how he would dispose of the powder-bags, and then strolled along the base of the village wall. He succeeded in climbing into a low tower springing out of this wall from which he emerged on to the flat mud roofs of the place. Not a sound was to be heard, or a soul seen. He was advancing cautiously, when he became aware of a man on a neighbouring roof on the other side of the street who was kneeling and taking aim at him with his matchlock. Without a moment's hesitation he rushed straight at him, clearing the narrow alley with a shout (his long jumps were celebrated) his disconcerted antagonist dropped his weapon and vanished. He then made his way to the wall with all possible speed, and was glad to see his men with powder-bags appearing on the scene! Having blown in the gates, and satisfied themselves that the village was deserted, they pressed on to Puttiali.

"Hodson's regiment," writes Taylor, "came on the enemy . . . entrenched in front of the village. It was still early morning. Our infantry and the General were a few miles in the rear. The en-

* The compiler of this Memoir who was attached to Seaton's Column saw Hodson mounting his horse soon after this incident.

trenchments seemed to be a parapet and ditch in a straight line. It was of importance that we should ascertain the positions of the guns . . . whether they were distributed along the face, and so, probably, immovable, or concentrated, and so, perhaps, movable. I got this information by riding along the front at a suitable distance. The whole 13 guns were tempted to fire on me in succession as I came opposite each of them. The result was a sketch of the position sent back to the General, with a suggestion that our field battery should come up with a suitable cavalry escort, place itself on the prolongation of the front, and open fire. This proposal recommended itself to the General; the artillery hastened to the front; placed itself suitably; and enfiladed the line of trench. Before our infantry could arrive and take part in the fight, the enemy, some 5,000 strong, broke, and fled, leaving all his guns, camp equipage, and carriage in our hands."

They were pursued by our cavalry—the Carabineers, the Lancers, and Hodson's Horse—for 7 miles.

Among the trophies were the elephant, silver howdah, and sword of the hereditary Commander-in-Chief of the Nawab of Furrukabad.

All these events occurred before noon on the 17th December.

Ten days later was fought the action of Mynpure in which Taylor again took part, and with which one of Hodson's most brilliant reconnaissances is associated.

Towards the end of the year Taylor joined the force under the Commander-in-Chief, and was sent to Cawnpore to prepare an Engineer Park for the Siege of Lucknow, and a bridge of casks for the passage of the Gumti River.

He was in command of the Bengal Engineers at the capture of Lucknow; led the main assault, and was wounded at the taking of the Begum Koti, a bullet passing through the leg a few inches above the knee. He never completely recovered from the effects of this wound.

"The hurt came to me," he writes to his old Addiscombe friend, Dan Robinson, "in carrying the Begum's Palace on the afternoon of March 11th. We had got in and had made good headway. I had mounted up to the highest pinnacle of the Palace to see what was ahead of me, and what further could be done. Pandy, in an adjoining house, took advantage of me!"

Hodson, also, was wounded (mortally), on the same day. "Capt. Hodson of the Irregular Cavalry," writes Colonel John Chalmers, from Lucknow, on the 12th, "the best cavalry officer in this, or, indeed, I think, in *any* other service, is very dangerously wounded, (mortally it is feared). . . . Major Taylor of the Engineers is also wounded, and although not so seriously, he has had to lie up, and is a great loss. As in reality he was the man who planned the taking of Delhi, so here . . . he has pushed on in the face of opposition . . . the immediate consequence of his wound was the giving up of a quarter of a mile of street we had got; as the Brigadier

is said not to have felt himself justified in holding it at the risk of so much loss without specific orders." *

On the 11th March, the day on which Major Taylor was wounded, the artillery and Naval Brigade under Sir William Peel battered and breached the Begum Koti with three 68-pounders.

This was then assaulted by our troops, the enemy losing about 500 men. The writer of this Memoir was ordered to take a party of Sappers to construct a battery at the side of the Begum Koti, and can well remember the storm of bullets. The Begum Koti presented an extraordinary spectacle, the great palace with its enormous mirrors, lamps and chandeliers, dead Highlanders and Sepoys lying in all directions.

At night a great part of the city appeared to be in flames. Fires were seen in all directions, while the shells from our batteries continued to pour into the city. The losses on our side during the operations were about 25 officers killed, and 50 wounded, and 800 men killed and wounded.

The force under Outram which had been advanced on the other side of the Gumti, now re-crossed on a bridge of casks, and pushed forward to capture the Residency. This was the last move and the enemy abandoned the defences. Still, there were detached forts held by desperate bands of natives, and it was not until the 21st that all fighting ceased.

During the operations a sad casualty occurred. At the Jumma Musjid nine cartloads of powder were found in a courtyard which General Outram ordered to be destroyed. As there was a well on the spot it was considered that the best method of destroying the powder, which was in tin cases, would be to throw them down into the water. A line of men was formed, and the cases passed from hand to hand as quickly as possible. By some fatality one of the cases exploded in falling. A flame of fire flashed up, and ignited case after case along the line, until the carts were reached, when they exploded. Capt. Clarke, R.E., and Lieut. Brownlow, R.E., who were superintending the operations, received such injuries that they both died during the night. With one exception every man forming the party to the number of 22 was killed. Strangely enough the only one to escape was the man who was throwing the cases down the well; he was rendered senseless, but eventually recovered. Elliot Brownlow's death was a loss to the Force, and to the Corps; to Taylor, who was with his friend† when he died, it was a personal grief.

As soon as Taylor was well enough to undertake so long a journey, he took his first furlough to Europe after an absence of 15 years. Before his departure he received a warm letter from Lord Canning, in

* Letters from Colonel John Chalmers, p. 66.

† Elliot Brownlow was the brother of another of Taylor's friends:—Henry Brownlow, R.E., who had had charge of the Engineer Park through the operations before Delhi, and cousin of Taylor's valued friend, Charles Brownlow of the 20th P.I., now F.M. Sir Charles Brownlow, G.C.B., etc.

which the Governor-General expressed his high sense of his services, and expressed his regret both for his temporary departure and its cause.

On his return to India in 1861, he was offered the Chief Engineership of the Central Provinces, but preferred to return to his old home and his old friends in the Panjab, and to his old work :—the Grand Trunk Road connecting Lahore and Peshawur, known in the Panjab as "Taylor's Road."

It was five years since he had left this Road, the supreme and sustained interest of his life, to join the camp before Delhi, and during those five years certain changes had been made in his plan, of some of which he disapproved; he longed to have the work in his hands again, refused the better appointment, and returned, as Superintending Engineer only to the Road which had begun to rise into being under his auspices 12 years previously. Among his most valued assistants during this phase of his work were Lieut. James Brown,* Lieut. Blair,† Mr. H. A. S. Fenner, and Capt. Dundas, V.C., his personal assistant, who was killed at Kabul in December, 1879, by the untimely explosion of a mine.

In 1863 Alex Taylor was appointed Chief Engineer to the Umbeyla Field Force, despatched under General Neville Chamberlain, to chastise the Hindustani fanatics who had stirred up ill-feeling on the Yusafzai frontier in 1857, had been driven from their stronghold Sitana in 1858, but had returned in 1861, had erected a new stronghold at Malka, whence they raided with impunity.

Taylor accompanied the Peshawur Column, which moved by the Umbeyla Pass and Chamla Valley past the territory of the Bunerwals, a large tribe reported friendly by the political officers. The column entered the Umbeyla Pass on October 10th and reached its highest point without meeting resistance. Its baggage and rear guard, however, owing to the badness of the road and the incompetence of drivers, did not reach camp till after the 22nd. This delay gave the tribes time to assemble on our front.

On the 22nd October, Chamberlain, considering that the preliminaries to a forward movement might be safely taken, ordered a reconnaissance to be made under the command of Colonel Alex Taylor. He was accompanied by two companies of Sappers, whom he set to improve the road. He found that the Pass was about 2 miles in length, unoccupied by any enemy, and the road fair. Shortly after noon he was joined by a detachment of cavalry under Colonel Dighton Probyn, V.C., and the 20th P.I. under Major Brownlow. The latter occupied the foot of the Pass, while Taylor rode on with the cavalry. The hills through the midst of which the party passed were occupied in force by the Bunerwals but, as far as Taylor could ascertain, none had descended into the valley, or attempted molestation.

* General Sir James Browne, K.C.B., K.C.S.I., R.E.
† Colonel Henry Blair, R.E.

On arrival, without incidents, at their destination, a village 4 miles from camp, Taylor "considered it desirable to take advantage of favourable conditions to push down the valley as far as was compatible with the General's order to be in camp by sunset." Leaving the main body of the cavalry behind, he pressed on with a small escort to a point 7 miles distant, made important observations, and rejoined the cavalry at 4.30.

The aspect of things, however, had changed. The Bunerwals had descended from the heights in great numbers with the object of preventing the party from returning to camp. Colonel Probyn* charged them in a most spirited way, and was supported by Major Brownlow.†

"By this time daylight had quite gone, and the latter part of the return journey was effected in dim moonlight. The enemy pressed Major Brownlow very closely, and several times got in amongst his men, sword in hand. Eventually, as we drew into camp, the camp picquets became engaged, and Major Brownlow's trying duties ceased," reports Colonel Taylor, adding :—"Nothing could have been better than the way the whole affair was conducted, nor than the conduct of both men and officers.‡

The fruit of this characteristic reconnaissance was reliable knowledge of 12 miles of road and its surrounding country.

At the end of the campaign it was decided that Malka should be burned in the presence of seven British officers, Alex Taylor and Capt. Roberts§ being of their number. Their escort consisted of four companies of the Guides Infantry; 25 Sowars; four Buner Khans, with 2,000 followers—the numbers of the latter however actually fell to 60, a sinister symptom. "Sir Hugh Rose," writes Lord Roberts, "was very angry that such a small party should have been sent to Malka and placed at the mercy of the tribes: 'It was madness,' he said, 'none of them will come back alive!'" The hazardous undertaking was carried through, however, successfully.

From the spring of 1865 to 1867 Colonel Taylor officiated as Chief Engineer of the Punjab; took furlough to England from February, 1869, to February, 1871; and again officiated as Chief Engineer of the Punjab from March, 1871, to March, 1872. In 1872 he was appointed Chief Engineer, his office being at Simla during the hot weather, while during the cold season he was engaged on tours of inspection.

"A Brevet Lieut.-Colonel (in 1858) with fifteen years' service, with

* Right Hon. Dighton Probyn, V.C., G.C.B.

† F.M. Sir Charles Brownlow, G.C.B.

‡ See Lieut.-Colonel Alex Taylor's report: dated Umbeyla Pass, 23rd October, 1863. Published by F.M. Sir Charles Brownlow. The Umbeyla Despatches.

§ F.M. Earl Roberts, V.C., K.G., etc.

an established reputation for high military capacity, and judged by men like Lord Napier, and Sir Henry Norman, to be equal to rising to any call on his powers, Taylor seemed to be clearly marked out for the highest place in his profession," writes the always well-informed *Pioneer Mail*,* in March, 1912. "In 1876 he was designated for the Quartermaster-Generalship at Simla, a much more prominent post than it has become now, but he was attacked by an affection of the eyes which under mistaken medical advice was held to be something which would threaten his sight if he remained in the East, and under this warning he returned home." The trouble proved nothing serious, but in the next year the Afghan War broke out, and had Taylor stayed on at Simla, possibly he, like his contemporary Sir Donald Stewart, might have ended his career as a Field Marshal.

When he returned to India in 1876, his sight completely restored by the wise treatment of the great German oculist, Dr. Meurer, he was appointed Deputy Inspector-General of Military Works, and President of the Defence Committee of India, appointments which he held until his retirement in 1878.

In 1878 he was appointed Secretary to Government in the Public Works Department. His name being mentioned in connection with this post before the appointment was actually made, the editor of the *Pioneer* wrote : "as a good administrator, as one of the best engineers in India, as a man whom the department would receive with cordiality, as one to whom England and India owe much . . . the appointment of Sir Alex Taylor will be as welcome to the public as to the official world at headquarters."

He was however prevented by urgent private affairs from entering on the duties which would have given so wide and suitable a field to his abilities and left India.

"Sir Alex Taylor, K.C.B.," writes the *Pioneer* again, "is now on his way home, and the troops of friends he is leaving behind him in India will be heartily wishing him happiness in his well-earned retirement. When he was lately appointed Secretary to Government in P.W.D., we referred to the services by which his Indian career has been distinguished, but the cordiality with which members of his own Corps seem always ready to enlarge on these is a sufficient evidence of qualities on the part of Sir Alexander Taylor, that cannot be recorded in Hart."

He succeeded Sir George Chesney as President of the Royal Indian Engineering College in 1880, and filled that office for a period of 16 years. Sir George, who had been Brigade-Major to the Engineer Corps during the operations before Delhi, in 1857, introduced him to the College as "the man who took Delhi."

"During General Chesney's previous tenure of office," writes the editor of the *Cooper's Hill Magazine*, "the College had pursued the

* Edited by George Chesney, son of General Sir George Chesney, K.C.B., C.I.E., C.S.I., M.P., R.E.

even tenor of its way in gradually completing the establishment of the Public Works in India; from 40 to 45 officers were yearly added to the Department, with the result that it quickly became completely staffed, and fresh officers were only required when vacancies were caused by natural wastage.

"During this time also the College curriculum was so arranged that all students were trained solely from a point of view of service in India. Shortly after Sir Alexander's entry into office, the number of appointments in the P.W.D. was very greatly reduced, and the problem then arose of trying to keep the College on a paying basis, when the previous attraction of an almost certain appointment in India became precarious. With this object in view the curriculum was modified, the purely Indian side of the educational programme was reduced, and the College was thrown open so as to attract students in engineering who had no intention of taking up a Government appointment.

"This change of policy necessitated considerable alterations in the course of study, and involved courses of instruction in subjects that had hitherto been entirely ignored, or at best only very casually alluded to. Under these conditions, expansion became necessary in two directions, viz. :—Additional accommodation, and increased staff.

"In addition to expansion on the engineering side, further progress was made by the establishment of a School of Forestry; and it speaks volumes for Sir Alexander's ability as an administrator that all these expansions were carried out and produced the fullest measure of success in all directions."

"When Sir Alexander Taylor came to Cooper's Hill," writes one of the most distinguished of its professors, "he became at once a favourite with all members of the College Staff. There was nothing of the 'President' about him;—he regarded the Professors as his colleagues, in the strict sense of the word; they had their duties which were distinct from his, and in any changes in those duties, and in anything relating to the educational work of the College, he consulted them without reserve.

"In all matters relating to the scientific studies of the College he acted on the best advice that he could get. When vacancies occurred on the Staff, he suppressed any desires that he entertained with regard to the new appointments, and made such appointments entirely on the recommendatien of his colleagues.

"This strict conscientiousness characterized the whole of his *régime*; he always acted with loyalty to the India Office, and especially to its requirement that expense was to be avoided.

"It was thought by some, that when the number of students at the College was greatly reduced, owing to congestion in the Indian Public Works, he should have recommended the Government to send the Royal Engineers to Cooper's Hill, where the training was in

many ways most suitable. He was rather in favour of this plan; but there were of course some difficulties, and he thought that the military authorities would regard them as insuperable, and refuse his request. Subsequent events, however, proved that there was at least a reasonable chance of acceptance at the time.

"He was an intensely religious man, and he regarded moral discipline and example as the highest interest of the College. His life was in accordance with his religion, which was a simple system, aloof altogether from rites, ceremonies, and ritualistic observances:—His conscientiousness and strict honesty were the visible expression of his religion. He attached great importance to regularity on the part of the students in their attendance at the College Chapel.

"It was always very pleasant and instructive to discourse with him on the events of the Great Indian Mutiny; but from his account no listener would ever imagine the important part that he took in them.

"His last months at Cooper's Hill were spent in revising the College rules, even down to the most minute details, for the guidance of his successors, and when he left it, it was felt by all at the College, both professors and students, that they had lost not a President only but also a companion and friend."

Though no longer young when he succeeded Sir George Chesney he was "in spirits, the youngest member of the College Staff. He was an enthusiast in all that concerned the interests of the place, and having been a keen yachtsman threw himself into boat sailing on the Thames with boyish recklessness on the subject of capsizes."*

"It is said that the students sometimes turned his enthusiasm for yachting to their own advantage, and on being summoned to the 'Duke's study for a carpetting,' would maliciously introduce the subject of sailing, and, by propounding some new 'gym' hoped that they might escape the full penalty of their misdeeds. . . .

"Shortly before he resigned the Presidency of the College, and when he was not far short of 70 years of age, he was seen on one occasion to climb up to a third floor window of what was known as the New Block at Cooper's Hill with the object of testing by personal trial, the possibility of obtaining ingress to the College by other routes than that of the Porter's Lodge!

"Sir Alexander was loved and respected by every one with whom he came into contact; he was a firm friend, and always did his best to help those who were in any sort of trouble. He was a strict disciplinarian, but generally had a strong tendency to take a merciful view of a case. But in the event of anything of grave importance taking place, he was the very last person any student of Cooper's Hill cared to meet." †

The students knew that their President had been a noted athlete in his young days:—a "record" long jumper, a redoubtable football

* *Pioneer Mail*, 1912. Obituary Notice.

† *Cooper's Hill Magazine*, March, 1912. Obituary Notice.

player, an enthusiastic fisherman and sailor, and they had been told by distinguished visitors, whose names are among those of the men who made Northern India, of some of his famous exploits :—of the swim across the Indus at Attock, for instance ; and of the adventurous journey in a corracle down the unnavigable mountain torrent, the Punch, during which he was accompanied only by an Attock boatman on a mussuck, etc.

The personality of such a man could not fail to appeal to young men, and the Cooper's Hill men of his day will always think with regret and admiration of their old chief.

On leaving Cooper's Hill, Sir Alex Taylor gave up all public work. His doctor put a stop to sailing ; and, cut off from his work, and from the active pursuits which had been the salt of his life, he gradually lost all muscular strength, though not health.

The few friends of his early strenuous Punjab days who still survived now rallied about him :—F.M. Sir Charles Brownlow, F.M. Earl Roberts, Mr. James Macnabb, Sir Donald Macnabb, Mr. George Ricketts, Sir F. Maunsell, Sir Dighton Probyn, and others ; the associations clustering round them bringing the brightness of happy memories into his life.

He passed away at midnight, February 25th, 1912, at the age of 86, in his own home and surrounded by those he loved.

The War Office proposed that he should be buried with military honours, but his family felt that he would have preferred to be laid at rest as unostentatiously as he had lived. He was buried in the village churchyard of Englefield Green, a large concourse of friends from the neighbourhood being present, and many of his Cooper's Hill subordinates as well as a few of his old Delhi comrades :—General Sir Frederick Maunsell, K.C.B., Colonel Commandant, R.E., General Sir John Watson, V.C., General Pemberton, and others. Lieut.-General Sir J. S. Ewart, Aide de Camp General in Waiting to the King, Adjutant-General to the Forces, was also present, having been graciously sent by His Majesty the King to represent his high sense of the value of the services of his loyal servant.

It is of course impossible in the space available to make more than a passing allusion to many of the distinguished services rendered by Sir A. Taylor during his long career.

But his old comrades and brother officers have determined that these services shall not be allowed to pass into oblivion, for, in addition to the portrait the Corps has decided to put in the Headquarters Mess, a strong committee has been formed, with Lord Roberts as chairman, Sir F. Maunsell as vice-chairman and Colonel H. Finnis as hon. secretary, and has decided to erect a monument to him at Delhi. By this means his memory will also be preserved at the place where more than half a century ago he contributed so largely by his valour, foresight and professional ability to the capture of the city, and, consequently, to the maintenance of the British Empire in Northern India.

Lieut Colonel Albert Charles Smith RE

LIEUT.-COLONEL ALBERT CHARLES SMITH, R.E.

By H.M.V.

LIEUT.-COLONEL ALBERT CHARLES SMITH died at 87, Cadogan Gardens, on the 3rd March last, aged 69, having been born at Woolwich on 5th June, 1842.

He was the second in a family of eleven children (six sons and five daughters), son of Henry Smith, Esq., by Charlotte Gordon, only child of William Burgess Whitnall, Esq., of the Ordnance Office. Henry Smith was for over 50 years in the War Office, and finally became Accountant-General retiring on full pay in 1861. At the time of the Crimean War he had very arduous and difficult work, and Mr. Disraeli mentioned his services with approval in the House of Commons. Soon after Albert's birth his father took up his quarters in Devereux Tower in the Tower of London, and the third son, Clement (now Canon of Windsor and Rector of Whippingham), was born there. Albert and his brothers spent their childish days in the Tower of London, but later his father removed to Peckham, and Albert and his elder brother Frederick (afterwards a merchant in China), attended the Camberwell Collegiate School as day scholars.

In August, 1853 (when eleven years of age), Albert joined Carshalton House near Croydon, at that time the preparatory school for Woolwich. After five years there he proceeded to the "Shop," and left it on 1st November, 1860, with a Lieutenant's Commission in the Royal Engineers. After going through the usual course at Chatham he was ordered to Pembroke.

He lost his mother in January, 1860, when he was at Woolwich and in May three years later his father died. He thereupon resolved to volunteer for service in India so that he might be in a position to assist his younger brothers now under the guardianship of his uncle, Frederick Smith, Esq., who in 1866 went to reside at Binfield, in Berkshire.

He left for India November, 1863, landed at Madras 5th January, 1864, and was a few weeks after ordered to join the Madras Sappers (now the Queen's Own) at Dowlaishwaram, close to the site of the anicut across the great Godavery River. During his stay there he was engaged on drill, fieldworks, etc., and studied Telugu, the language of that part of the country, but twice he had most interesting shooting for ten days with Arthur Frank Hamilton (who became a lifelong friend until his death as General in 1898) in the Godavery jungles in the vicinity of the beautiful gorge of the Godavery River. This gorge for 2 miles is so narrow that a stone may be thrown from the bank to the middle of the stream—on both sides the hills rise

to a height of two to three thousand feet with steep sides clothed from water's edge to summit with luxuriant tropical vegetation. The depth in summer season varies from 100 ft. to 200 ft., floods rise 50 ft. above this when there is a torrent 250 ft. deep and no craft that ever floated could stem the current. His service with the Queen's Own Sappers only extended to some seven or eight months when he was directed to join the Department of Public Works in the Kistna District and he reached Bezwada on 27th September, 1864.

In October he was placed under the order of Capt. Hasted, R.E., and took charge of the construction of Cowtram Loch, on the Buntamilly Channel, some 12 miles from Masulipatam.

A few weeks after he had a most disagreeable experience for on 1st November occurred a most disastrous cyclone which caused the sea to rise many feet above its normal level, inundating the country for many miles, and almost destroyed Masulipatam with a consequent loss of life of 30,000 people. This was one of the most terrible inundations known to history.

About 8 a.m. on 1st November the barometer was rapidly falling and at noon rain set in with violent gusts of wind, by 8 p.m. the wind began to shift to E. by N. increasing in violence so that trees were blown down and roofs lifted off houses. At 10 p.m. the gale was E.N.E., and now came another danger more to be dreaded than the wind. At this hour it was spring high tide at the tidal lock. The sea driven into the bight of the coast at the very moment of high tide, an enormous wave 13 ft. above high tide was borne inland by the gale. The flood was at its height at the fort about 11 p.m. and in Masulipatam half an hour later. The huge wave penetrated at one point 17 miles from the coast and extended along the coast for some 80 miles, inundating some 780 square miles of country.

Before midnight the water began to subside and then it seemed that if possible the horrors of this awful night increased. The terrible wave now receded with a continuous roar uprooting and carrying almost everything before it to the sea—huge blocks of masonry on the causeway between the fort and the town being carried away many yards. It was long before Masulipatam recovered from the disaster. Fortunately for Smith the flood did not quite reach Cowtram.

At the time he was living in a rough shed near the lock. As it seemed likely to collapse he retired to his so-called office (a shed of a similar kind); presently the house came down and an hour later the office also fell. Meantime he had taken refuge in a cowshed with 20 natives and this building they managed to hold over their heads, standing the while, wet through till the morning when Smith went to Cowtram village and put up in a shed there. For several days he had to remain there endeavouring to put things to rights and of course for some weeks there was an immensity of emergent work to be done in closing breaches, etc.

Some natives in a parlous condition came in from Masulipatam

on their way inland and with his usual kindness he gave them dinner, looked after their comfort for the night and rose early next morning to see them off. Capt. Hasted was naturally anxious about his assistant and meeting a man from Cowtram he asked him how the Sahib was. The man replied "Master sitting tight at Cowtram."

In the following September he took charge of the Irrigation Works, Chabrole District, in the Western Delta, and this he held for some years.

He served in the Kistna for some six years till September, 1870, opening out a new main canal with all its necessary locks, weirs, bridges and distributary works.

Towards the close of August, 1868, he went on three months' leave to Northern India in company with a great friend, Andrew J. Stuart, of the Madras Civil Service. They reached Calcutta on 8th September and after a stay of ten days went to Darjeeling. On the 30th they were at Delhi and thence visited Agra, Cawnpore, Lucknow and Allahabad. After this to Jubbulpore and the Marble Rocks where they stayed five days. They then returned to Benares, etc., reaching Calcutta 14th November and ten days later were back again in the Kistna. Towards the close of 1870 he again went on leave to Madras, Bangalore and Ooty and finally left for England on a tour of home duty in February, 1871, joined at Chatham in August and a few months after was posted to Woolwich District.

During all his time in India he devoted a good deal of attention to shooting. Although he had but little opportunity for big game shooting he shot much small game and employed some of his spare time in making drawings of the birds he shot. He made a fine collection of these paintings but unfortunately his drawings were lost or stolen. He had a great love of animals and was especially fond of dogs and horses. This love of sport and animals was inherited from his grandfather, Mr. W. Whitnall, who lived in Kent and used often to take Smith and his brothers into the country for shooting and coursing.

When he went home in 1871 his uncle Fred (the guardian of his younger brothers) resided at Binfield, in Berkshire, and it was there he first met his future wife. On 12th June, 1873, he was married at St. Mark's Church, Hamilton Terrace (by the late Canon Duckworth), to Constance Mary, third daughter of the late Thomas Craufurd, Esq., of Baidland and Ardmillan, Girvan, Ayrshire.

In February, 1865, Capt. Hasted had left the Kistna and Capt. C. J. Smith took his place. Two of the same name being in the department in the same district, it became necessary to distinguish one from the other and it was then that the two designations "A.C." and "C.J." were introduced in speaking of them and these sobriquets stuck to them all their lives. On 24th August, 1873, "A.C." was promoted to Captain and three months later, accompanied by his wife, he landed in Bombay, on 5th December was appointed Executive Engineer, St. Thomas' Mount, and before the close of that month they paid me a visit at Bangalore where we had

a joyous Christmas, our mutual friend, Arthur Edgcome, of Engineers, being also with us. In May following to our great sorrow Capt. Edgcome died at Pennaconda, his death being due to dysentery and was caused by his devotion to duty, as he insisted on continuing to work when he should have taken rest.

"A.C." remained in the Chingleput District, Headquarters, St. Thomas' Mount, being in charge of military works—with many irrigation works in the district—till June, 1877.

While he was in this position the memorable visit of the Prince of Wales (after King Edward VII.) took place (11th to 18th December, 1875). The Prince remained a week which was full of festivities—receptions, dinners, a grand ball at the Madras Club, a race meeting at Guindy and a meet of the hounds at St. Thomas' Mount—which last was arranged to take place in the grounds of Chabrole Park where Capt. and Mrs. A. C. Smith had the great honour of entertaining the Prince and his suite to breakfast. King Edward never forgot their hospitality.

In June, 1877, "A.C." went home on furlough, and returning two years later was posted as Executive Engineer to South Arcot, his headquarters being Cuddalore, and as I was Superintending Engineer I had ample opportunity of appreciating the great value of his services. Here he had charge of large irrigation works and roads, bridges and other buildings extending over a district of 5,000 square miles. We visited together all parts of the district and went to Pondicherry (French territory) and paid a visit of inspection to the celebrated fortress of Gingee, some 40 miles N.W. of Pondicherry. I had been also in close connection with him for several years in the Kistna and visited many parts in his company—amongst other places the beautiful Fort of Condapilly where it was customary from 1865 to 1867 for the younger officers of the district to assemble for a 10 or 12 days' picnic at Christmas. This was a most enjoyable holiday, and everybody was full of life and spirits. The daytime was occupied in shooting and climbing among the beautiful hills. After dinner singing and jollity, occasionally winding up with fireworks and a bonfire, everyone friendly and cheery.

"A.C." was transferred to the Presidency Division, 13th September, 1881, but re-transferred to South Arcot in the following April.

Two years later he was sent to the Neilgherry Division (August, 1884) which included military works, Government headquarters and new drainage and water supply of both Ooty and Wellington besides the roads in the coffee districts of Wynaad.

In the year 1884 he went to Australia for a few months and visited one of his brothers at Sydney. As he was an officer of the Royal Engineers the Government of New South Wales gave him a free pass over their railways and asked his opinion on various matters connected with public works in the Colonies.

He remained on the Neilgherries for two years and in August,

1886, was appointed Superintending Engineer and transferred to charge of 6th Circle, 29th November, 1886, headquarters Trichinopoly, having in August acted for me as Superintending Engineer at Bellary till November while I was in England on leave. In February, 1887, he went on furlough on private affairs for 22 months returning in November, 1888, and was transferred to 4th Circle in December, 1888. He retained this till May, 1889, when he handed over charge to me and proceeded to the care of 6th Circle and works connected with the famous Periyar Irrigation Works till April, 1891.

In the meantime he had been promoted to Major, 1st July, 1887, and Lieut.-Colonel, 8th January, 1888, having on 20th October, 1886, elected for continuous service in India. From the 8th April, 1891, he officiated as Chief Engineer and Joint Secretary to Government with charge of General Buildings and Roads Branch till the following July when he went on special leave to England. Returning on 17th January, 1892, he was sent to 6th Circle again as Superintending Engineer, 1st Class, which included in his charge the beautiful Pulney Hills.

On completion of five years as Regimental Lieut.-Colonel he was placed on half-pay, 8th January, 1893, and a few weeks later he went on furlough for 11 months and did not again return to India.

I have omitted to mention that in August, 1876, "A.C." came to stay with me at Bangalore, and from 20th September to 2nd October travelled with me while I was on tour to French Rocks, Seringapatam, Mysore and the lovely falls of the Cauvery at Sivasamoodrum.

After leaving India being still very fit for active service he decided to apply for an engineering appointment under the Local Government Board and the late Lord Wenlock, who was then Governor of Madras, wrote to him to say that he hoped he would be successful in obtaining his desire "as from the opportunities I had of seeing your work while on duty in the Presidency of Madras I believe you would be able to carry on the work which you are anxious to obtain with credit to yourself and satisfaction to the Government." The result of his application was that on the 1st March, 1897, he was appointed Temporary Engineering Inspector of the Board and was added to the Permanent Staff on 24th May, 1902. On the 5th June, 1907, he had to retire from this post having reached the age of 65. The work of the Inspectors consists in holding enquiries in all parts of England and Wales on all sorts of subjects, water supply, sewerage works, street improvements, alterations of local boundaries, etc. They sit very like magistrates and take evidence of the facts elicited and then make reports to the Board with recommendations. The Board consider all the facts and act. During the year each Inspector holds 80 to 100 enquiries and during the 10 years "he carried on his duties well and to the entire satisfaction" of the Head of the Department who at first was Major H. Tulloch, C.B., R.E., and later Colonel Hasted, R.E.

Colonel A. C. Smith during his 30 years' service in India had charge

of all kinds of Engineering works, including large irrigation schemes, military works, and roads and bridges, and in all he undertook he was entirely successful. His character was a noble and a loveable one. He was sweet-tempered, sincere and genial with much quiet humour, considerate for others, never said an unkind word of anyone, in fact I believe he never thought harshly of any except when perhaps impatient at injustice to others. I knew him for nearly half a century and have seen him under all varieties of circumstances in camp and in society; we travelled together on many occasions and have frequently visited one another in our homes and he was always the same true and genuine friend, given to hospitality and full of the milk of human kindness. I deeply regret his loss as the snapping of a link with many most pleasant phases of life. In his dealings with his subordinates in India his conduct was invariably marked by kindness, urbanity and much toleration for their errors and faults—he was just to them but full of clemency and as a result they almost adored him. To meet him was to me the greatest pleasure and to part was invariably a source of regret.

As regards his work (of this I had ample means of judging) he was earnest, painstaking and thoroughly conscientious, clever and versatile. He had much knowledge of art, could paint and act; had considerable knowledge of music and possessing a fine baritone voice which he used with skill. His character may be summed up in the words cheerful, constant and friendly, altogether admirable and delightful and a true English gentleman whom to know was a pleasure and a privilege.

A mutual friend of ours (Colonel H. D. Love, R.E.) thus writes of him:—

"The salient features of his character were his straightforward honesty, patriotic sense of duty, unselfishness, modesty as to his own abilities and attainments, kindness of heart, *bonhomie* and hospitality. He had multitudes of friends and so far as I know not an enemy in the world. As for his work, his conscientiousness, his tenacity of purpose, joined to his known abilities and his sterling common sense, are a sufficient guarantee that all he undertook was well and thoroughly done."

For some time before the end his health was not good, but it did not occasion serious alarm. I stayed with him for a few days in December when he was fairly well, but towards the close of February he became seriously ill and on the 3rd March he passed away. He leaves a widow and a son, Major Harry D'Arch Smith, of the Suffolk Regiment, who is married and has two little boys.

Colonel A. C. Smith's funeral took place on 7th March at Brompton Cemetery where his remains are interred. His brother, the Rev. Clement Smith, Canon of Windsor, officiated at the ceremony.

TRANSCRIPT.

THE GROUP SYSTEM OF FORTIFICATION APPLIED TO FORTRESSES.

Extracts from an article by D. Kolosovski in the December, 1910, number of the *Injenerni Jurnal.*

THE chief object of fortresses is to safeguard, and consequently to facilitate, wide strategic operations of armies in war. A fortress which occupies an important point in the lines of operation between two combatants, gives essential assistance to the active operations of the side which possesses it. A fortress pushed far out towards the frontier, will, with the help of the forces using it as a pivot, cover the mobilization and deployment of the field armies; another in some other locality or at some other period, by the action of part of its garrison, may hamper the action of a considerably larger force of the enemy in the open, or it may attract towards itself his field armies, compelling them to modify or even entirely to interrupt their offensive movements, and thereby afford leisure to its own side to organize its forces for the attack.

A fortress must be sited with strict reference to the plan of campaign which is most advantageous to the government in a given theatre of war. It must be given such strength in fortifications and armament that it may enable a comparatively weak garrison to hold out against greatly superior forces of the enemy, and it must be so designed that, with a slight increase of garrison above that considered as the minimum necessary for its passive defence, it may be able to actively influence the surrounding country—for a comparatively weak field force acting in the neighbourhood of a fortress can operate boldly against superior forces of the enemy.

History gives many examples of fortresses submitting to sieges with garrisons greater than those for which they were designed, and it is important that they may with such an increase obtain corresponding advantages. In other words, the skeleton of the fortress, with its permanent works, should allow room for and afford support to the development of subsidiary defences, including possibly even complete positions of temporary or field character, lying to the front of, or adjoining and in link with, the fortress positions.

The present design of a fortress consists of a closed circular position with forts as its *points d'appui.* In the intervals between the forts there are weaker works or infantry trenches, and behind these, in a belt of 1 to 2 *versts* in depth, are the fortress batteries. In this belt, and partly in rear of it, are the expense magazines and protected accommodation

for the gunners. The main reserves of artillery, ammunition, and supplies are concentrated in the central fortified enclosure of the fortress.

In 1906 and 1909, two designs of fortress construction were devised in Germany, both of which appeared after the experiences of Port Arthur had been fully digested. The most striking difference between them is that in the latter the radius of perimeter is reduced from 8·9 kilometres to 6·7 kilometres.

The present effective range of the shrapnel and high-explosive fire of siege artillery is 8 kilometres, and consequently, with the contemplated approach of an investment line to within 4 kilometres of the fortress perimeter, in neither of these two cases is the centre of the fortress safe from accurate fire. The guns of the fortress have a still greater effective range, up to 10 and 12 kilometres, and thus it is now considered possible, by reducing the fortress radius and obtaining thereby other advantages, to risk the bombardment of the central enclosure. A reduced perimeter means reduction in the cost of works and the cost of garrison, and men saved for the field armies.

Further differences between the two schemes show how greatly the cost of fortress construction is increasing in the light of modern requirements. In 1906 the Germans considered it sufficient to place forts with artillery in turrets, or groups of forts and turret batteries, at intervals of 8 kilometres, with intermediate works as permanent infantry positions in the intervals, at $2\frac{1}{2}$ to 3 kilometres apart. Now, they think it necessary that the permanent forts should be in immediate rifle or machine-gun connection with one another, *i.e.* 1,000 to 1,600 metres apart, and that they should contain no artillery except for opposing storming parties, or in a few cases in turrets for sweeping the approaches to the infantry positions in the intervals. All the fortress artillery is now sited in the intervals and behind them, preferably in turrets, but partly in open emplacements.

Owing to the intensity of modern artillery fire it is now considered necessary to provide for the deployment of a great number of guns of all kinds in the short extent of front attacked, and for this purpose in the fronts liable to attack a large number of permanent works, magazines, observation stations, shelters, telephones, roads, etc., must be provided in the artillery belt or immediately behind it. As most of these works cannot defend themselves, and are therefore liable to destruction should the enemy succeed in occupying the intervals between forts even temporarily during an assault, it has become necessary to hold the intervals continuously with infantry works. These works take the form of closed groups of trenches, surrounded by obstacles, and provided with shelters strong enough to resist the shells of field guns and the splinters and shrapnel of siege guns. The groups are prepared for garrisons of from one to four companies, and the larger groups are provided with *réduits* from which all the trenches and communications are commanded with rifle fire. The passages which are left open between these groups must be carefully protected by cross-fire from the neighbouring works. The shelters for these groups and reserves of material for obstacles, etc., must be provided in peace-time.

But the increase of garrison is the most costly consequence of an increased perimeter. The garrison of a fortress is estimated by tripling, or sometimes by quadrupling, the number of men required for one relief of the outposts, which are established at 1 or 2 *versts* beyond the main fortress positions. On an average this works out at 1,000 men and 10 guns of fortress calibre per each lineal *verst* ($\frac{2}{3}$ mile) of fortress perimeter, but it depends to some extent on the size of the fortress reserve and that in turn depends on the special importance which is attached to the fortress in an *active* sense.

No practicable increase of perimeter will, independently of local conditions, protect the fortress artillery from enfilade fire, and this must be met by concealment, traverses, and the chequer-wise siting of batteries.

Having shown the importance of reducing the length of fortress perimeters, it is necessary to study the conditions which place a limit on such reduction. Fortresses must not be liable to simultaneous siege on all sides. They must also be large enough to allow of suitable length in the fronts which are attacked. A length of front of from 6 to 7 *versts* would meet the case, allowing for the deployment of 300 to 400 guns, and a corresponding force of infantry. Finally within this length of front there must be a fairly wide space safe from well-directed reverse fire, which with siege artillery must be considered to have a range of 8 *versts*. To satisfy these conditions a perimeter with radius of 5 *versts* would seem to be the irreducible minimum.

But every fortress design must be governed entirely by local conditions. There must be good infantry positions, and in rear of them well-covered and ample spaces for the siting of the fortress batteries; communications with the rear should be well concealed, and there must be natural observation points for the defenders, and an absence of such for the possible besiegers. A regular circular design is difficult to apply to the ground, and always leads to extravagant extension in order to satisfy purely military requirements.

These considerations have led to the discussion of a possible solution in the direction of group designs, and the author mentions for the sake of criticism two schemes of circular fortresses, in both of which the perimeter is divided up into groups of about $3\frac{1}{2}$ *versts* in extent, with intervals between them of about 6 *versts*.

In order to criticize and appreciate the value of the proposed systems, they must be analysed from a purely tactical point of view, by considering the operations which can be directed against them.

For capturing a fortress two methods may be used, either separately or in combination, open assault and a regular siege. Until recently the former was greatly in favour with the Germans, but they are now beginning to look upon it as risky and hardly to be recommended as an independent operation.

The regulation method of assault on a fort contemplates a numerical superiority of the attack over the defence of 16 to 1.

It would not be difficult to show that an open assault upon one of the groups of a fortress of group design, even if made with this superiority of numbers, would have little chance of success, owing to the heavy artillery

fire which could be brought to bear upon it from the group itself, from the neighbouring groups and from the central enclosure. The best scene for the counter-attack is the ground in rear of the group, and consequently the intervals between groups should be kept free from detached works of all kinds, which could be seized by the assaulting troops, and used by them in covering their retirement, or in strengthening their outpost line in preparation for the siege which would inevitably follow upon an abortive assault.

Turning now to a regular siege as at present designed against fortresses with continuous lines, the investing troops would occupy a zone extending from 4 to 8 kilometres beyond these lines. It is estimated that a division of these troops would occupy from 12 to 13 kilometres of the perimeter of the investment, except on the sides selected for attack, and in these it would occupy not more than 6 kilometres. Owing to the importance of maintaining connection in *depth*, which is recognized in fortress as in field warfare, each unit would have its independent line of advance, and only at the foot of the glacis would the regiments of a brigade occupy a common trench. The gaps between these separate lines of attack are useful as facilitating the rapid advance of assaulting columns. Where the forts are situated at intervals of $1\frac{1}{2}$ kilometres, each brigade would attack one fort and the half-intervals on each side of it.

There would probably be two attacks, a main attack carried out by three divisions, and a subsidiary one carried out by one or two divisions. The total length of front attacked by the one or two separate attacks will be about 10 to 15 *versts*.

If this system is applied to the proposed schemes of group design, it will be seen that in a regular siege one attack would probably embrace two groups and the interval between them. This would necessitate the deployment of artillery, and consequently of infantry also, continuously across the interval between the groups in hastily prepared positions, and the result would be a line considerably weaker than in the present system of fortification. The groups must be large enough individually to receive the whole shock of a regular siege.

In designing fortresses it is well to keep in view the fact that wars are decided by the action of field armies, and that fortresses are only intended to facilitate the action of these armies. They should therefore adapt themselves to the manœuvring of the armies around them, or to the passage of the armies through them, and for their own defence they should require the smallest possible number of men and guns.

At the same time so important is *active* action even in defence, that fortress works should be so constructed and sited that every increase of garrison or armament beyond the minimum necessary for passive defence may be placed to the advantage of active defence in a greater and greater degree, even up to the point of taking the offensive and breaking the blockade.

These requirements can only be satisfied in a fortress of group design, in which the intervals between groups are free of works and suited to the action and manœuvring of field troops.

The groups must be proof against assault and adapted individually to

resist a siege. They must be fully self-contained, and will differ only from small fortresses in that their flanks and rear are protected by the fire of neighbouring groups.

Any excess of garrison, beyond that required for holding the groups, adds to the active properties of the fortress and to its influence on the surrounding neighbourhood. In opposing an assault, even the smallest excess would be able to operate in the ground between groups or central enclosure, which would create for it exceptionally favourable tactical conditions, and would form an outside reserve to the groups, or a general fortress reserve, with which activity could be given to the defence. At the same time everything is ready for a siege, and no supplementary works have to be made at the last moment outside the groups, as part of the normal scheme of defence. In this case if there is an excess of garrison advanced positions can be occupied and entrenched, existing positions can be extended, and the siege works of the attack may even themselves be attacked by counter-approaches from the flanks. Sevastopol gives a brilliant example of active defence made possible by an excess of garrison.

The actual size of each group can only be decided by the ground, but fronts liable to attack will be longer than those which from their position or by the nature of their surroundings are not so liable. The designing of a fortress is reduced to choosing round the selected point (river or road crossing, etc.) a series of positions similar to those chosen in field warfare. The tracts of country included in these positions must be of sufficient extent to allow of the deployment of all means necessary for their defence, and they must be surrounded by perimeter fortifications, for protection against assault. Their fronts must be prepared to resist both assault and siege, and their flanks and gorges assault only. The intervals between them are limited by the effective range of modern fortress artillery, and must not exceed 5 to 7 *versts*. The whole extent of these intervals must be under observation from stations within the groups, and a thorough system of buried telephone communications must allow of information obtained in the observation of fire being passed from one group to another, and thus reduce considerably the distances to be observed. If, owing to the nature of the ground, a group has to be moved so far to the front, or to a flank, as to be out of reach of support from neighbouring groups or from the central enclosure, a permanent work in the nature of a miniature group must be interpolated to maintain connection.

The proposed system is peculiarly applicable to any kind of ground, and it has the advantage of not being bound down to any particular radius of perimeter. Without material increase in garrison or armament it can be extended considerably further afield than the existing systems. This quality is especially valuable when the central enclosure contains objects which cannot be protected under casemates, such as a fleet, factories or workshops.

Plate I. shows an example of the author's proposals for the fortification of a modern fortress. The point selected for defence is a railway junction and river crossing, lying in a basin, and surrounded on three sides by hills, on which the main positions will naturally rest. It is further

assumed that strategic conditions make a regular siege probable from the north and east, possible from the west and impossible from the south.

Groups I., II. and III. are independent fortress positions, capable of deploying and siting within themselves sufficient equipment for opposing a siege of a fortress, including primarily a sufficient quantity of fortress artillery.

Groups IV. and V., on sides not liable to regular siege, are mainly artillery groups protected against assault. No. VII. is subsidiary, and also mainly an artillery group, and No. VI. is a central enclosure of normal type.

Plate II. gives an example of the modern German method of fortifying a length of front liable to regular siege, applicable to the lengths lettered A—B in *Plate* I.

In a fortress of group design the batteries containing the guns of the permanent armament will be chiefly concentrated on the flanks of the group, in order to develop an especially heavy fire on the intervals. Some of the guns are mounted in casemates and caponiers, but the majority will be in turrets in order to secure the advantage of all-round fire.

Some batteries of the permanent armament and also some of long-range quick-firing guns must be placed in the central enclosure. These also require all-round fire and should be mounted in open masked turret batteries.

The gorges of the groups must be closed by lines of obstacles, flanked from defensive works of special design, which are sited at intervals of not more than 1 *verst*. These works would consist of bombproof barracks adapted for infantry defence, and can be utilized to cover the entrances to the barracks and shelters prepared for the group reserve, and to protect the 2nd line magazines, group supply stores, etc., which would be sited in or near them. The bombproof barracks are intended for the off-duty reliefs of gunners and sappers.

In Groups I. and III. one or two 2nd line forts are added to command the interior of the groups, where local conditions or too great depth render this necessary.

All stores and reserve armament must be collected within the groups and central enclosure, so that the remainder of the fortress area may contain nothing that the enemy can damage during a temporary occupation. If it is necessary to have any structure with a military value, such as a bridge, outside the group area, it must be protected by some special work such as a 2nd line fort, with a system of obstacles under fire from some fort or defensible barrack.

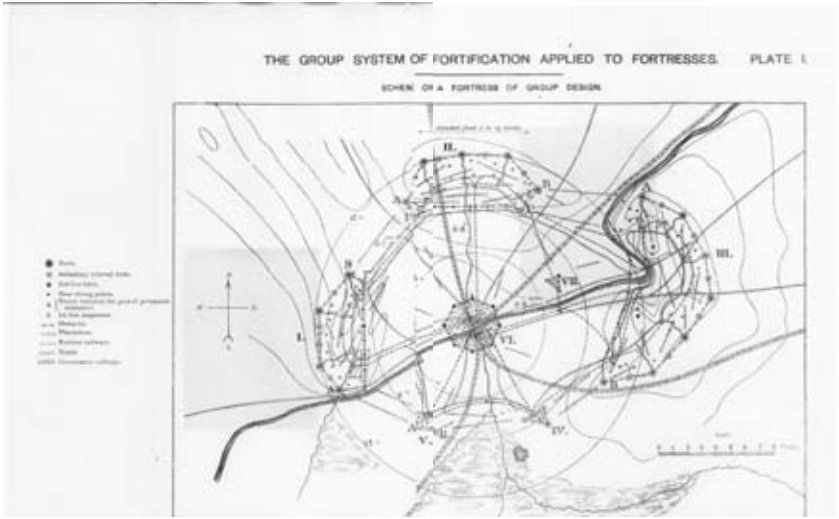
The fortress communications are arranged in the usual manner, circular and radial along the whole perimeter, the radial roads and railways being placed in rear of groups.

The whole fortress area must be thickly masked by plantations. It is best to make them in belts 35 to 70 ft. in width, aligned between pairs of strong points or observation stations. In this way their edges will always be under observation, and they will serve as screens without affording

cover to the enemy. Similar plantations may also be placed in front of the fortress positions. In war time they can be cut down to form abattis or they may be left to mask front positions or even counter-approaches. Lastly a fortress of this description must be abundantly equipped with searchlights. The fronts of the intervals between groups must be lighted permanently by fixed lights, and the interior part of these intervals intermittently by movable lights from within the groups. These latter will be additional to the lights intended for use in opposing assaults, which are also intermittent.

In the scheme of group fortification shown in *Plate* I. the radius of perimeter averages 12 *versts* and the total area included in the fortress reaches 400 square *versts*; of this area however only 130 square *versts* are actually occupied, which is equivalent to a circular area of normal type with a radius of 6 to 7 *versts*.

F. E. G. Skey.



Fortification Applied to Fortresses

TABLE OF ARMAMENT OF FORTRESS OF GROUP DESIGN SHOWN IN *Pla*

No. of Group.	Work.	Howitzers.				Guns.					Machine Guns.	Total of Guns.			Total Machine Guns.	
		27 c.m. and Greater.	21 c.m.	15 c.m.	Field.	15 c.m.	10½ c.m.	Field.	For Opposing Storming Parties.	For Flanking Defence of Ditches.		Fortress.	Field and Smaller.	Total.		
I.	4 forts	—	—	—	—	—	—	24[1]	24	32	32	—	80		116	I.
	5 interval and 1 2nd line forts ...	—	—	—	—	—	—	12[4]	12[5]	36	48	—	60	152		
	6 rear strong points	—	—	—	—	—	—	—	12[5]	—	36	—	12			
	Permanent armament of intervals [2]	4	—	20	—	35	25	—	—	—	—	84	—	84		
	Group reserve [8]	—	—	80	20	—	40	60	—	—	—	120	80	200		
II.	5 forts	—	—	—	—	—	—	30[1]	30[6]	40	40[2]	—	100		124	II.
	6 interval forts	—	—	—	—	—	—	12[4]	12[5]	36[6]	48[2]	—	60	172		
	6 rear strong points	—	—	—	—	—	—	—	12[5]	—	36[6]	—	12			
	Permanent armament of intervals [7, 9]	4	—	26	—	40	30	—	—	—	—	100	—	100		
	Group reserve [8, 10]	—	—	80	20	—	50	70	—	—	—	135	90	225		
III.	7 forts	—	—	—	—	—	—	42[1]	42[6]	56	56[2]	—	140		174	III.
	6 interval and 2 2nd line forts ...	—	—	—	—	—	—	16[4]	16[5]	48[6]	64[2]	—	80	238		
	9 rear strong points	—	—	—	—	—	—	—	18	—	54[2]	—	18			
	Permanent armament of intervals [7, 11]	6	—	34	—	70	50	—	—	—	—	160	—	160		
	Group reserve [8, 12]	—	—	80	30	—	55	60	—	—	—	135	90	225		
IV.	1 fort	—	—	—	—	—	—	8	6	8	8	—	22		20	IV.
	2 rear strong points	—	—	—	—	—	—	—	4[5]	—	12[6]	—	4	26		
	Permanent armament of groups ...	—	—	6	—	10	10	—	—	—	—	26	—	26		
	Group reserve	—	—	—	—	—	—	8	—	—	—	—	8	8		
V.	1 fort	—	—	—	—	—	—	8	6	8	8	—	22		26	V.
	2 interval forts	—	—	—	—	—	—	8[3]	4[5]	12[6]	12[6]	—	24	48		
	1 rear strong point	—	—	—	—	—	—	—	2	—	6	—	2			
	Permanent armament of group ...	—	—	6	—	16	12	—	—	—	—	34	—	34		
	Group reserve	—	—	—	—	—	—	12	—	—	—	—	—	12		
VII.	1 fort	—	—	—	—	—	—	8	6	8	8	—	22		20	VII.
	2 rear strong points	—	—	—	—	—	—	—	4[5]	—	12[6]	—	4	26		
	Permanent armament of group ...	—	—	6	—	10	10	8	—	—	—	26	8	34		
VI.	8 forts	—	—	—	—	—	—	—	16[5]	48[6]	48[6]	—	64	64	48	VI.
	Permanent armament of group ...	4	—	—	—	30	20	—	—	—	—	54	—	54	—	
	Forts, etc., for guarding bridges ..	—	—	—	—	—	—	—	8	12	18	—	20	20	18	
	Total	18	—	338	70	211	307	386	234	344	546	874	1034	1908	546	
	General reserve ..	—	20	100	—	40	40	—	—	—	—	200	—	200	—	
										Grand Total..	...	1074	1034	2108	546	

REVIEWS.

THE CIVIL ENGINEER'S COST BOOK.

By MAJOR T. E. COLEMAN, Staff for R.E. Services.—(E. & F. Spon. 5s.).

THIS is a little book which should be of great use to any R.E. officer who may have to execute, or report on the advisability or possibility of executing work beyond that usually met with in a division. The author has compressed the most varied information on all engineering subjects—from dry docks to disconnecting manholes—into 289 pages 4″ × 6″, giving the approximate cost of each per unit of length, weight, etc.; and—what is probably of greater value—the actual cost of works executed in various parts of the world. Unfortunately in the latter case the dates are often omitted, and it may be hoped that they will be inserted in subsequent editions.

The section on Reinforced Concrete is particularly full and good, but very scanty details are given for steel-framed buildings and roofs, though iron roofs are fully dealt with. It seems of little use to give the cost of the old Charing Cross Station roof, which collapsed in 1905! Another subject which might be treated in subsequent editions is that of earth dams.

On the whole, it is a book which should certainly find a place on the D.O.'s table, alongside the same author's "Approximate Estimates."

C.R.S.

THE RUINS OF MEXICO.

By CONSTANTINE GEO. RICKARDS, Oxaca, Mexico.—(H. E. Shrimpton, 105, Regent Street, W. £2 2s. 0d.).

THIS work treats of the ruins in the States of Chiapas, Yucatán, Tabasco, Oxaca and Puebla, the text giving tersely the facts about the wonderful antiquities of Mexico. There are 260 collotype plates in the volume, and these give a clear insight into the marvellous features of ancient Mexican architecture. The author says that his object in presenting the work "is to induce those who take a real interest in archæology to dive into and study the many good works that have been written on Mexican antiquitities." Mr. Rickards' volume should have that effect, for of itself it is fascinating and it should induce the student to go further. The excellence of the workmanship of the production deserves all praise.

NOTICES OF MAGAZINES.

REVUE MILITAIRE DES ARMÉES ÉTRANGÈRES.

November, 1911.

REORGANIZATION OF THE OTTOMAN ARMY.—A radical change has just been effected in the Turkish Army, under the influence of the Chief of the General Staff, Izzet Pascha. It consists in the adoption of the ternary formation, or formation by threes. The objects of the reform are to modify the organization of the commands, to prepare the methodical increase of the military forces, and their better tactical employment. The "ternary formation" consists in the adoption of army corps of "nizam" (active troops) each of three divisions, subdivided into three infantry regiments of three battalions each. The division also possesses a battalion of rifles, a squadron, a regiment of artillery, a supply column with three days rations and a sanitary formation. The corps troops also comprise unallotted units of rifles, cavalry, artillery, engineers, ambulance and A.S.C. As regards the "redif" or reserve formations, the divisions will be similarly organized, but the number of battalions will not be necessarily fixed at nine. It will be larger or smaller according to the geographical features of the district from which the division is recruited. The nizam and redif formations will be grouped in "ordus" or inspections, which correspond geographically to theatres of operations, *e.g.* Macedonia, Thrace, Armenia, Mesopotamia. The ordu is commanded by an inspector-general, who is assisted by an inspector of redif formations, and an inspector-general of artillery in each ordu. Previous to this reorganization, ordu commanders had forces under their command which were so large as to be unwieldy. The reorganization therefore ensures the better commanding of the Turkish Army in time of peace as well as in time of war. Since 1854, the strength of the Turkish Army has increased from 168 to 527 battalions. Up to 1907, this increase was gradual, it was then noticed that a slight numerical retrograde movement was taking place, and it was found necessary to grant to Christians, as well as to Moslems, the privilege of bearing arms; at the present moment, there are up to 25 per cent. of Christians in every regiment, but this proportion will gradually increase as public opinion gets accustomed to the idea of several religions in the army.

Turkey is now divided into military districts as follows:—

1st Ordu.—Constantinople, including Thrace, and extending into Asia Minor from the Black Sea to the south of the Constantinople-Afioum-Kara-Hisar-Boulgourlou Railway, which belongs to this district and touches at the Head Quarters of a large number of the redif divisions of the command.

2nd Ordu.—Saloniki, including Macedonia, and extending into Asia Minor into the region of Smyrna and stretching into Syria. Railways also connect up the Head Quarters of most of the divisions of this command.

3rd Ordu.—Erzindjian, including Armenia.

4th Ordu.—Baghdad, including Mesopotamia and Chaldea.

Besides these four ordus, there are a certain number of indepe formations :—An army corps of active troops consisting of three divisions; a regiment of rifles of three battalions; a cavalry brigade of two or three regiments; corps artillery, including if possible two groups of three batteries each of mountain artillery, and a group of 6″ howitzers; a sapper battalion; a bridging train; a telegraph company; a train battalion, which supplies an A.S.C. company to each of the three divisions of the corps; an ambulance company and four field hospitals. Besides all these troops there are left the troops of the active army employed in fortresses or on coastal works, two battalions of railway troops and 65 regiments of irregular cavalry. The reorganization of the Turkish Army on the "ternary" principle is an excellent step, it modifies its organization, and is likely to increase the efficiency of the whole army.

Foreign News from Divers Countries.—*Austria.*—In view of the increased importance of communication in the field, the creation of a regiment of telegraphists has been decided upon. The regiment is at present largely a cadre formation, including four battalions, each having a school of telegraphy and also of an experimental section and a wireless section.

Spain.—The old corps of military administration has been abolished and replaced by two others, the "intendance" department, corresponding to our A.S.C., *i.e.* having charge of supplies, buildings, remount establishments, both in barracks and in the field, and an audit corps. The officers for the "intendance" department will be educated at a special military academy, based on the same principles as the military academies from which officers for the other arms are drawn, and this department will also find paymasters.

Russia.—An air committee has been created which is attached to the direction of engineers. It includes :—(*a*). A president chosen from the engineer committee. (*b*). Permanent members,—the principal members of the air section and the officer in charge of workshops, the commandant of the school of aviation, the commandant of the air battalion. (*c*). Consulting members,—an artillery officer, a general staff officer, a mechanical engineer of the corps of engineers, a representative of the navy. (*d*). Besides the committee has the right to call in outside people who are known to be experts on any question which it may happen to be studying at the time. The duties of the committee are :—(1). To examine inventions and investigate all matters relating to the question of aeronautics in as far as their usefulness to the army is concerned. (2). To examine models and sketches which accompany demands for materials for the technical air troops. (3). To examine the training programmes of the air troops. (4). To follow the development of aeronautical science in Russia and abroad. Arrangements are being made to carry out at every summer training combined exercises of all the various M.G. detachments in divisions and army corps. This training will last 15 days and will include a detailed inspection of the material and methods of training the *personnel;* field firing, both with and without accompanying infantry or cavalry; and a shooting competition. The director of the exercise will be a general officer, a brigade commander in the case of the massed M.G.'s of a division, and a divisional commander in the case of the massed guns of an army corps.

A. H. Scott.

RIVISTA DI ARTIGLIERIA E GENIO.

February, 1912.

SIEGE WARFARE.—The February number of the above-mentioned Journal publishes a long and very able article by Major De Antoni of the Engineers, from which a few extracts are given.

Organization and Conduct of the Defence.—As we are not able to study the operation of siege warfare before defining the particular character of the places against which the attacks are directed, it is necessary to assume certain points relating to the strong fortified places built in non-mountainous country.

In new works of fortification, owing to the incessant progress in the methods of attack, the principal materials used in their construction are cement, iron, and steel.

The type of modern forts, always casemated, and open to the sky, like that of the preceding epoch, consists of a nucleus, more or less large, of cemented works, undistinguishable from the surrounding ground, in which nuclei, in varying numbers and designs, are the fixed armoured casemates, the towers, and the revolving turrets containing the artillery.

The massive works of former times are reduced in number, and have assumed the character of strong heavily armed works as bases; while the large intervals are defended by a few permanent forts, and many occasional batteries constructed at the moment of arranging the defences. A modern fortified place on a war footing should comprise the following: (*a*), the body of the place—nucleus—enclosed or not; (*b*), a line of principal forts, distant from 6 to 8 k.m. from the nucleus; (*c*), occasional batteries placed at intervals between the forts; (*d*), a line of advanced positions—fortified and mobilized during the war—at a distance of from 2 to 4 k.m. beyond the line of principal forts; (*e*), a zone of distant positions, guarding the easiest and most probable lines of advance of the assailants, at distances varying with the nature of the ground (on an average about 10 or 12 k.m. from the advanced posts). Except in special cases, fortified places in times of peace should be prepared only with the principal lines of defence, while the other elements of defence should be organized at the time of putting the place in a state of defence.

The *armament* for the permanent works of the place which is kept ready in peace time, is called that of *security*, and that provided for the batteries at intervals and the complementary works is called *reserve* armament.

The *garrison* comprises:—(1). The *garrison of security*—which is kept sufficient against surprise attacks or those of *viva forza*; (2), the *defensive garrison*—which is formed from the *garrison of security* plus the *mobile reserve* of the place composed of organized detachments—divisions or army corps—of the mobilized army, and the technical troops of artillery and engineers.

During the state of siege the *defensive garrison* is subdivided into (*a*), *the general reserve*—with reserves of artillery and engineers; (*b*), the *troops for the sectors*; (*c*), the *fort troops*. The *general reserve* comprises one or two nuclei of infantry troops and other arms, at the exclusive disposition of the commandant of the place.

The *troops for the section* provide for the service of the advanced posts maintaining a reserve.

The following may be retained for the formation of the garrison —(*a*), For the garrison of security:—(1). *Infantry*: From one to two companies for the principal forts; from one-half to one company for the secondary works; one battalion—with field artillery and mitrailleuses—for each interval of extension of 2 to 4 k.m.; some battalions in general reserve, according to the probable direction of the attack. (2). *Troops of artillery and engineers as required.* (3). *Very few cavalry.* (*b*), For the defensive garrison, a widely approximate estimate *of one man per lineal metre of the line of circumference.*

II.

Siege Operations.—The attack of a place may be attempted by rapid attacks—such as surprises, and the attack *di viva forza*—or by prepared attacks—such as bombardment by artillery of medium calibre, the blockade, or the regular siege.

Surprises.—The attack by surprise will seldom succeed unless it is conducted against places badly defended, incomplete, and badly garrisoned.

Against strong modern forts, the surprise attack is destined to failure unless it is undertaken with overwhelming forces at the commencement of hostilities, when the arrangements for the defence of the place are not yet completed.

It is impossible to give definite rules for surprise attacks on a fortified position, because the conduct of the attack will be greatly influenced by local conditions; but it is of course necessary to procure by means of careful reconnaissances exact information as to the place to be attacked.

After examining with care all the obstacles that the several columns of assault are likely to meet with, detachments of engineers should be told off to precede the various detachments of the attack. To these, special tools and materials should be distributed as follows: (*a*), To a group of men at the most advanced point, explosive shells to throw at all the accessory defences, either in the ditches, in the surrounding roads, or in the interior of the flanking casemates; (*b*), to a second group, that will follow immediately after the first, the material for the crossing of the ditch, and scaling ladders; (*c*), to a third group, a large supply of tools and material for defensive purposes, for the purpose of rapidly clearing the zone of the attack. Each detachment should have a well-determined object; in all cases the operation should be completed with celerity and with the greatest vigour.

The Attack "di viva forza."—This form of attack may be attempted with some probability of success against strong forts, surprised during the period of preparation, and before the system of defence is completely organized.

General Von Sauers is in favour of it, on the grounds that at no moment is a fortified place less able to resist such an attack than at the commencement of the investment; and that all the time employed by the attack in slow siege operations, affords facilities to the besieged for obtaining reinforcements and increasing the difficulties for the besiegers; and he seems to be in favour of a vigorous and decisive attack before such difficulties have accumulated.

On the other hand the difficulties of this form of attack are confirmed by the history of sieges, and especially by that of Port Arthur during which the attack on Von Sauer's system was repeatedly attempted without favourable, results. The first general attack upon the advanced line of the works,

commenced on the 18th August, had to be suspended without having obtained any sensible advantages, in spite of the loss of 14,000 men.

Again the attack made upon the works on the 19th September—when it was believed that the defences had suffered from bombardments—led to immense losses without result.

General Langlois in some conferences held in Paris in 1906 and recorded in his book: *La guerre possible*, observes that the violent attack, which he styles "brusquée," should be developed on the following lines:—

"With an army of several corps, provided with complete mobile siege parks, which might push back the defences on the line of forts, this operation may succeed but with a considerable sacrifice of men and ammunition.

"This advantage obtained, siege batteries may be established at once before all the lines of circumference, and on the front selected for the decisive attack if cover can be obtained.

"During these operations, which will occupy days and not hours, a great quantity of ammunition must be collected for the batteries, and when all is ready, the place may be bombarded with a vigorous and unrelenting fire and the infantry are hurled forward to the attack."

Great preparation is required for this form of attack which will last for days and perhaps for some weeks, according to the railway power that can transport the parks and ammunition from the lines and bases to the siege batteries.

The author divides his article under the following headings:—(1), The attack by surprise; (2), the attack "*di viva forza*"; (3), the bombardment; (4), the blockade; (5), the regular siege.

All these methods of attack are fully and lucidly described.

The duties of the Commanding Engineer are thus enumerated:—

To execute the necessary works of fortification;

To arrange for the obstacles in front of the lines;

To put in practice demolitions, or means of destruction for impeding the advance of the enemy;

To increase the communication by easy junction and connecting roads;

To post up indicating tables assigning to the troops the various ways of access to the places of combat;

To prepare bridges over the water courses at convenient points and to repair such as have been broken by the enemy;

To arrange for inundations whenever they may be possible and opportune;

To arrange for permanent observatories.

In conclusion the author sums up that, where the place is well organized, where there is no want of provisions, arms or ammunition, and where there is an arduous defence conducted by an able and intelligent commander, it is impossible to set limits of time to the period of the operations, because we cannot estimate the physical forces that have to be considered.

But now indeed siege warfare as well as that of the field differs entirely from what it was in the glorious days of Vauban and the old deliberate and systematic operations of attack and defence, and consists rather of the strife of men, of minds, and characters, which refuse to be fettered by fixed and unalterable laws.

E. T. THACKERAY.