

UNCLE SAM'S SIGNAL CORPS.

Field Telegraphy and Military Ballooning Described.



UNCLE SAM has some little tricks up his sleeve, which in time of war could be brought into service at a moment's notice and which, says W. J. Rouse in the New York Times, would prove very annoying to an enemy. Comparatively little is known about the Signal Corps of the army and its important work, and it is the purpose of this article to describe in a general way some of the interesting things this little body of men accomplish in these days of military progress. Aerial military manoeuvres, photographing from great heights and distances, laying, equipping, and operating telegraph and telephone lines in time of battle at a rate as fast as a horse can travel, are interesting matters, and all of them are achieved by this branch of the service.

The Signal Corps on a peace footing consists of ten officers and a score or more sergeants, together with small detachments of enlisted men detailed for this special service on the frontier where instruction in the work of the corps is being given. Brigadier General A. W. Greely of arctic fame, is in command of the corps and has his headquarters at Washington, D. C. The largest school of instruction at present is at Fort Logan, Colorado. Captain W. A. Glassford, Chief Signal Officer, of the Department of the Colorado, is in charge and has in his detachment three Sergeants and eighteen detailed enlisted men.

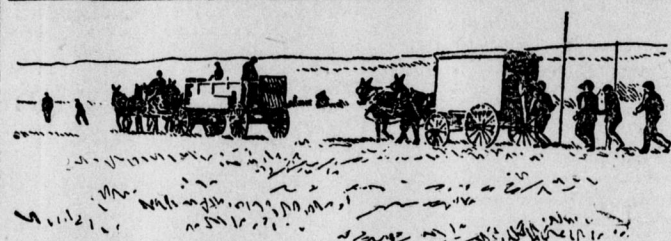
In the present day, owing to the rapid advance made in modern firearms, the necessity has arisen for a means of instant communication from one part of a battlefield to another. For the transmission of orders, instructions, reports, &c., nothing is so swift as electricity. The manner of its adaptation for this work is interesting in the extreme, and the means by which telephone and telegraph lines are put up and operated are unique and original. The aerial exploits of some of these men outrival the wildest dreams of old-time aeronauts—for a balloon train is now a part of the field equipment of the modern United States Army.

The country surrounding Fort Logan is particularly adapted to the uses of the Signal Corps for field work. Its diversified character renders the correct and practical use of the various instruments employed easily taught. The high peaks immediately in the background afford lofty stations in temperate weather for long distance signaling and heliographing.

Supposing that a state of actual warfare exists, we will go with the signal men into the field and see how the field telegraph and telephone lines are put up and operated. The telegraph train consists of three wagons of the usual army type, built more for rough, hard service than for beauty. The electrical batteries are securely packed in wooden bins or cells in one of these wagons, to prevent their toppling over in transit. Another compartment in this same wagon provides safe storage for the telegraph instruments and necessary supplies. The wagon is drawn by two or four mules as the nature of the country demands.

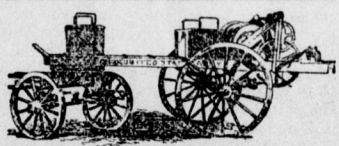
order to halt was sounded. The officer in command had selected his imaginary line and directed the battery wagon to be placed in a certain position when halted. The men ran to the wire wagon and swarmed over it; others of them attacked the pole, or lance truck, and in an instant a stream of poles was issuing from that wagon that could only be approached by an army of circus employees dismantling a big tent.

The general direction of the line was indicated by the officer and the men set to work. Two of them, armed with huge crowbars, trotted off in the direction the line was to take. One of them halted at about fifty or sixty



ERECTING MILITARY TELEGRAPH LINE.

yards from the battery wagon and thrust the sharpened end of the steel bar into the ground. The other passed him and went twice as far, when he, too, thrust the sharp instrument into the yielding soil. The first man had now run around him, and his place, where he had dug the first hole, was taken by a group of men armed with one of the lances, an insulator, and the end of the wire, which was now spinning out of the rear end of the wire wagon. In less time than it takes to tell it, the lance or pole was set, the insulator was in position and the wire was attached. The men were already at the second station, where a pole was going up, before I had time to make a photograph. The men with the crowbars were now far away and going further all the time. That row of bristling poles seemed to grow like



THE BALLOON WAGON.

magic and one could almost see them run. In an incredibly short space of time—but little longer than it would have taken me to walk to the edge of the timber—the line had disappeared among the trees. While I was wondering what would be done next, the instrument in the battery wagon began to tick and a message came in over the newly constructed line asking for further instructions. Orders were flashed back and the line was continued all the way to the foothills.

At times, in actual warfare, it is not only desirable but necessary for a commanding General to get instant news from the very front. Of course a field telegraph line like the one just described could not be maintained there long. To overcome this, however, the field telephone can be used, and, in case its instruments are out of order

by a flexible wire and communication is possible at all times, even while the wire is being laid. Messages may be sent and received with as much facility as if the instruments were attached to a solid wall in a comfortable office.

Eminences, hills, bluffs, or other elevated portions of land, when so located as to be in view of headquarters in the field, serve as admirable sites for heliograph stations. Of course, unless an uninterrupted view of the country is to be had, no heliographic signaling can be accomplished. The system in vogue now in the Signal Corps is the latest and most improved, in the matter of instruments procurable, but the method which provides for the transmission of messages by light flashes, is old. It is astounding, however, to note the fact that telegraphic messages have been flashed with this little instrument a distance of almost 200 miles. The system of dots and dashes of the telegraph code is reproduced by means of long and short flashes of reflected sunlight. While it is true that any operator may read



the words spelled out in this manner, yet the information thus gained would be totally unintelligible to him, as everything is sent in cipher.

An exhaustive system of signaling, by means of flags and heliograph by day, and at night with rockets, bombs, flash-lanterns and electric searchlights, is in vogue. Messages can be sent, under any and all sorts of conditions, and in the face of seemingly insurmountable obstacles, so that a commander may at all times be kept fully advised of what is transpiring in any or all of his commands.

Military ballooning has also advanced to such a state of perfection during the past few years that it will be perfectly within the range of possibility, in case of war, to accurately photograph an enemy's position, obtain accurate maps of his fortification, etc., without sending any one within his lines. There is at Fort Logan, a fully equipped balloon field train, ready for service at any moment.

The balloon train consists of three wagons, similar in construction to those described above, and which transport the field telegraph paraphernalia. The balloon itself, a huge affair, has place in the forward end of the wagon. At the rear end there is a large reel, upon which are carried several thousand feet of stout cable. In a middle compartment to the balloon wagon, room is reserved for the basket and netting. In the second wagon are stored the hydrogen gas tubes needed for inflating the airship. These tubes are constructed of steel and are as light and as strong as it is possible to make them.

There is a generating plant for gas at Fort Logan, and it is there that the tubes are filled. They are shipped, in various quantities as may be needed, to various points throughout the country. A supply sufficient for several inflations can be carried with the field train, and if larger supplies are needed, additional wagons are pressed into service. The balloon itself is constructed of the finest and most costly material, gold beater's skin being used for this purpose. The heavy wagon is of sufficient weight to hold the balloon captive, and if a change of base is necessary during an ascension, the wagon has simply to be moved in the desired direction. Telephonic communication is maintained through the cable which holds the balloon to the wagon.

As the members of the Signal Corps are also topographical engineers it is a simple matter for them to prepare accurate maps of the country beneath them, while suspended out of harm's way above an enemy's camp. The adoption of telephotographic lenses also gives them means by which accurate photographs can be made as if the artist were actually in the fortifications.

Statistics show that it is almost impossible to hit a captive balloon with musketry fire when at an elevation of 2000 feet. The balloon is kept moving almost incessantly, and in that lies a great measure of its safety. Nearly all the standing armies of the world are now equipped with balloon corps, and the value of this sort of aerial surveying in time of war is incalculable, at least it is so admitted by the military experts, and they ought to know.

Whether or not experiments have been made in the use of explosives dropped from balloons, I have not been able to learn, but, from what one can see of the use of these aerial monsters at Fort Logan, it would not be strange if the wildest dreams of moderns may soon be realized and the terrible death-dealing airship may soon evolve, as did the Holland submarine boat, from Jules Verne's "Twenty Thousand League Under the Sea."

Asylums for the Homeless.

Paris has, apart from two places where paupers can spend the night, fourteen asylums for the homeless, which last year lodged 144,037 persons, of whom 15,557 were women and 2606 children. Among the lodgers were 246 professors and teachers, eighteen students, five authors, five journalists, 120 noters and singers, thirty musicians and sixteen music teachers.

SOME CURIOUS BOOKS.

OLDEST BIBLE IN THE WORLD IS VALUED AT \$100,000.

A Cyclopaedia of 225 Volumes, Each Two Feet Long and Six Inches Thick—A Book Without Words—Almanac 300 Years Old—Smallest Book Ever Printed.

One of the greatest historical book relics in existence is preserved in a private library in England, in the shape of the original book upon which all the kings of England from Henry I to Edward VI took the coronation oath. It is a manuscript of the four evangelists written on vellum. The binding, which is still in a state of perfect preservation, consists of two oaken boards, an inch thick, fastened together with stout thongs of leather, with the corners defended by large brass bosses. On the right hand side, as the book is opened, is a crucifix of brass, which was kissed by the king.

A Hebrew Bible in the vatican library is claimed to be the oldest in the world, and is valued at \$100,000. If not the oldest, it is doubtless the heaviest, since it is so weighty that it takes two men to lift it, the binding being in heavy metal. It is stated that in the year 1512 Pope Julius II, refused to sell this Bible for its weight in gold, the greatest price offered for a book.

The British museum has lately secured from Thibet a copy of the "Jangym," the monster encyclopedia of Thibetum Buddhism, and the largest set of volumes in existence. The series is composed of 225 volumes each of which is two feet long and six inches thick. The price paid was 3000 rupees.

Among large Bibles a German edition owned in Minneapolis, Minn., deserves a prominent place. This volume is over 200 years old, and is printed in type of large size. The pages are nearly two feet in length and of corresponding width. At the top of each page is a line in red ink which reads, "This is a history," and the work is ornamented with many illustrations of a decidedly primitive character.

One of the most peculiar works in existence is a book entirely without printed matter, which is known as the "Wordless Book." It has but ten leaves, twenty pages, each of different color. For over 300 years it has been treasured in the monastery of St. Rupert, where its wordless pages are reverently consulted on Easter, St. John's eve and Christmas. On these days, the monks claim, the leaves of the sacred volume become miraculously covered with appropriate texts in characters of pure gold.

Another strange unprinted book is in the possession of the family of the Prince de Ligne, in France. In this volume the letters are neither written nor printed, but are all cut out of the finest vellum and pasted with infinite patience on blue paper. The book is said to be as easy to read as if printed from the clearest type. The German Emperor Rudolph II., is reported to have offered in 1640 the enormous sum of 11,000 ducats for this remarkable and unique work of art.

An almanac 3000 years old, found in Egypt, is preserved in the British Museum. It was found on the body of an Egyptian, and is supposed to be the oldest in the world. The days are written in red ink, and under each is a figure followed by three characters, signifying the probable state of the weather for that day. It is, of course, written on papyrus.

An interesting Norwegian mediaeval relic is on exhibition at the Museum of Antiquities in the University of Christiania, consisting of a wooden book. The pages, or tablets, of which there are six, are of boxwood covered with wax, each one having a thin border, so as to prevent them from sticking together on closing the book. The contents are chiefly drawings representing scenes from village and rural life. At the end is a large catalogue in Latin of various kinds of animals, with a translation into old Norwegian. The tablets are fastened together at the back, and the cover is carved and inlaid with various small pieces of differently colored woods. It dates from the 12th century, and was found in an ancient church.

The smallest book ever printed is owned by the Boston public library. It being a copy of Dante's "Divine Commedia." This volume, though containing 500 pages, is less than two inches square, and two sheets of paper were sufficient to contain the whole 14,223 verses. The type was cast in 1850, and several ineffectual attempts were made to finish the book, but the compositors and proof-readers abandoned the task because of the strain upon their eyes, and work was not resumed upon the book until 1872. The type was so small that the printers did not attempt to "distribute" it; so, after using, it was melted. The type-setting alone required five years, and the proof-reading was so difficult that not more than 25 or 30 pages were printed per month.

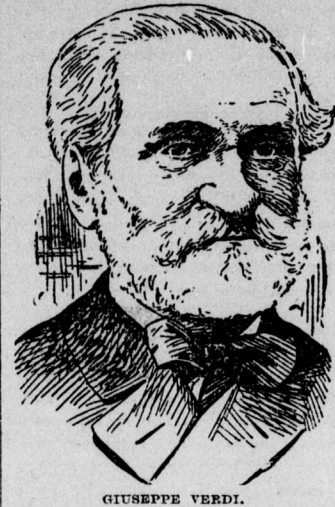
A biography of Corder, a notorious murderer, is preserved in the Athenaeum library at Bury St. Edmunds, England, which is actually bound in a piece of the skin of the murderer himself, the doctor who dissected the body having had a portion of the skin properly tanned and prepared for that purpose.

In the jewel house of the Tower of London, is a book bound throughout in gold, even to the wires of the hinges. Its clasp consists of two rubies set at opposite ends of four golden links. On one side is a cross of diamonds, on the other the English coat of arms, set in diamonds, pearls and rubies, forming, as regards workmanship and materials, the most costly book in the world.

MOST NOTED LIVING COMPOSER

Giuseppe Verdi is the Author of Many Popular Musical Works.

Giuseppe Verdi's father was the keeper of an inn, a fact which would seem to prove the theory of some men of science that all human beings are born equal in possibility. What Verdi



GIUSEPPE VERDI.

has done for mankind cannot be measured. His influence has been like the sunlight. "Ernani," "Rigoletto," "Il Trovatore," "La Traviata," "Aida"—these names tell the story of what joy and peace and pleasure the genius of the Italian of humble origin has brought to his kind. Verdi is now nearing the end at the age of eighty-three. His compositions have been very numerous. As early as 1847 he wrote the "Masnadieri." It was composed for Jenny Lind and was sung at Her Majesty's Theatre, in London, with the great soprano in the principal part. "Trovatore" is his most popular opera. "Aida" is his greatest work, but opinions vary on this point, as they vary about the greatest of Shakespeare's plays. Signor Verdi has done other things than write music. He has been a member of the Italian parliament, and has served his country in the capacity of minister of public instruction. France gave him the Legion of Honor, Russia gave him the Order of St. Stanislaus, Italy the Order of the Crown and Egypt the Order of Osmanieh. Austria presented him with a cross of commandship of the Order of Franz Joseph. Of late years Verdi has written works that are almost as well known as his earlier efforts. They are "Otello" and "Falstaff." The latter was written when the composer was seventy-nine years old.

Matrimonial Commandments.

Matrimony has ten commandments. These were studied out by Theodore Parker, shortly before the day of his wedding. They took the form of ten beautiful resolutions, which he inscribed in his journal. They were as follows:

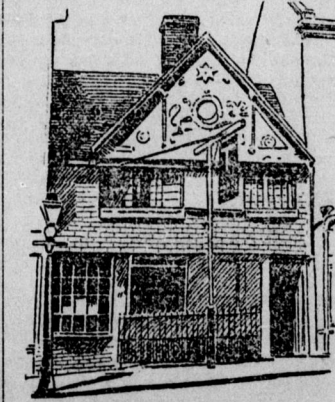
1. Never, except for the best reasons, to oppose my wife's will.
2. To discharge all duties for her sake freely.
3. Never scold.
4. Never to look cross at her.
5. Never to worry her with commandments.
6. To promote her piety.
7. To bear her burdens.
8. To overlook her foibles.
9. To save, cherish, and forever defend her.
10. To remember her always in my prayers. Thus, God willing, we shall be blessed.

A Likely Tale, This.

Pulpit Harbor is wondering how a gull brought down by B. K. Carver came to his death. The bird was shot at with a forty-four-calibre rifle and picked up dead fifteen minutes later with not a drop of blood on it and not a feather ruffled. The local wise men of the place scorn that he came down like Davy Crockett's coon, "because he knew 'twant no use," to do anything else, although Mr. Carver is esteemed a mighty hunter, but are divided in opinion as to whether the bird had his mouth open and the bullet went straight down his throat, or whether it went so near that it stunned him and he fell and was drowned.—Lewiston (Me.) Journal.

An Old House With a History.

One of the places in which tourists in England revel is Bull's Tavern. It looks to-day just as it did when it was erected in 1612. When repairs were necessary they were made with the



CROMWELL LIVED HERE.

idea of carefully preserving the appearance of the old place. It was here that Oliver Cromwell made his headquarters for nearly a year. Ten births and six weddings are dated here, and there is a story of a murder to lend a charm for those who love the morbid.

USEFUL CASTOR OIL.

How It Is Secured and Some of Its Numerous Virtues.

The much maligned castor oil bean, which grows within cultivation in almost all parts of the world, in America, particularly in South America and the southwestern part of the United States, produces an oil which has many other than medicinal uses. The bean contains from 50 to 60 per cent. of oil, 100 pounds of beans yielding about 30 pounds of fine oil at the first pressing, 16 pounds of a second quality by additional heat in the pressing, and five to 10 pounds by heating the mass with steam or in an oven and a final pressing.

The extract obtained from the last-named process is valuable for burning purposes. In the East the beans are obtained from the pods by allowing them to dry in the sun, and then thrashing them out with flails.

In this country the pods are passed through hard wooden rollers, set about three-sixteenths of an inch apart, which merely crush the pods without reducing the mass to a pulp. The beans are then placed in heavy canvas bags, which are placed in a hydraulic press, if the work is conducted on a very large scale, or a hand press if only a small amount is treated. By slow compression the oil is extracted and runs into receiving tubs.

The cold-pressed oil, as it is known in the trade, obtained in this manner is about one-half of the total oil contents of the bean. For the balance the cakes are removed, crushed and heated to about the boiling point of water, then re-bagged and again subjected to the press, or, what is preferable, to keep the two qualities of oil separate, use a separate press and greater pressure. After refining by boiling with water in large retorts the oil is ready for use. As a preservative of leather castor oil has no superior. Mice and rats, which are very destructive to leather articles, will not touch harness or other articles which are occasionally dressed with castor oil, while such applications render the leather pliable and soft.

When applied to ordinary shoes a polish can easily be got immediately after its use, which is rarely so with other oils. As a preservative for leather belting it has no equal. As a lubricant for heavy bearings it is advocated by many English manufacturers, many of them going so far as to have all of their shafting and also their cylinders lubricated with castor oil. A castor oil lubricated bearing rarely, if ever, becomes hot, even under extraordinary circumstances.—Philadelphia Record.

Gigantic Bow Used in China to Kill Tigers.

In the Smithsonian institution in Washington one of the most interesting objects is the bow used by the Chinese to kill tigers in the jungle district.

It resembles greatly in size and shape a crossbow of the mediaeval period. The whole is cleverly compounded, the power being obtained from ten pieces of bamboo, forming an elliptical spring, and producing an immense power. The barrel part of the weapon is a block of wood, in which two grooves have been cut, and in these rest two arrows, about a foot and a half in length, and from a half inch to an inch in diameter. In the end of these is stuck loosely a shaft, three to five inches in length, with a barb at the end.

The trigger is a compound one, and is released by the pressure on a thread. So strong is the bow that in China it took six men to pull it back, bending the bow, when it broke, and one of the men was severely injured.

The weapon is placed in one of the paths frequented by the tiger. It rests on two bamboo sticks driven into the ground, holes being cut in the bottom of the bow for that purpose. The trigger is set, and its presence is concealed as far as possible. When the tiger passes it and brushes against the thread laid out for the purpose the arrows, with their shafts, which have been dipped in poison pots, are driven into its body.

Revolutionary Scholars.

Rev. George Channing wrote an account of the school of his youth, which he attended just after the revolution. Girls and boys attended together the primary school and sat on seats made of round blocks of wood of various heights, which were furnished by the parents. Children bowed and kissed the teacher's hand on leaving the room. The teaching of spelling was peculiar. It was the last lesson of the day.

The master gave out a long word, say multiplication, with a blow of his strap on the desk as a signal for all to start together, and in chorus the whole class spelled out the word in syllables. The teacher's ear was so trained and acute that he at once detected any misspelling. If this happened he demanded the name of the scholar who made the mistake. If there was any hesitancy or refusal in acknowledgment he kept the whole class until, by repeated trials of long words, accuracy was obtained. The roar of the many voices of the large school, all pitched in different keys, could be heard, on summer days, for a long distance.—The Chautauquan.

Willing to Participate.

His Lordship—I am deeply interested in the new gold discoveries. Friend—You don't think of going to the Klondike, do you? His Lordship—Oh, no! But I thought of advertising that I should be glad to communicate with any successful miner who might happen to have an unmarried daughter.—Puck.

American dynamite is finding an excellent market in South Africa.