

**REGIMENTAL BAGGAGE.**

Our illustration, from a photograph, depicts the arrival at Camp Alger of the quartermaster's train of the 34th Michigan Volunteer Infantry. It also affords some idea of the bulk of what Cæsar termed the "impedimenta" of a single regiment—a matter to which few people give little thought or attention. What, then, must be the proportions of the wagon train accompanying a brigade, a division, or corps? And yet this illustration gives only an inadequate idea of camp equipage proper, plus, perhaps, the commissariat supplies for a few hours—supplies that require to be replenished at frequent intervals and often from considerable distances. Who has ever told of the difficulties encountered by the quartermaster's and commissary departments between Biquiri and the hills overlooking Santiago?

Here too, also, is furnished a clew to the difficulty of transporting large bodies of troops across considerable stretches of water, and the apparent lack of facilities afforded by the largest ships. The "City of Pekin," we are told, could accommodate but barely 3,000 men; even then she was relieved in part by the fact that quartermaster's stores and camp equipage for the campaign were not included in regimental impedimenta. In a general way, it may not be difficult to compute the amount of provision necessary to such a force for a period of fourteen days, but when it comes to estimating the supplies for a six months' campaign for 24,000 men, and the space and tonnage required for transshipment and storage, including horse boxes, forage, etc., the problem assumes no inconsiderable proportions. Remember the "Great Eastern," with all her enormous bulk, could, when crowded, carry but 3,000 men with their baggage, camp equipage, etc., along with supplies for two months. It is only when all these facts are taken into consideration that the difficulties attending the moving of an army, on either sea or land, can be at all appreciated.

**THE RED CROSS SOCIETY AND THE AMBULANCE SERVICE.**

The Society of the Red Cross appears to be generally misunderstood, for it is neither a charity organization per se, or an "order," but merely a confederation of relief societies existing in different countries, acting under the treaties secured by the Geneva Convention, and deriving its specific title from the fact its work

is carried on under the red cross emblem. Its aim, broadly stated, is a system of national relief applied to the mitigation of the sufferings induced by war, pestilence, famine, or other great calamities, without reservation as to friend or foe, race or color; its purposes are now so generally appreciated that on all occasions, by all civilized people, those connected therewith and

The first International Conference looking to such universal organization as now obtains was held in Geneva, Switzerland—hence the red or Geneva cross—in 1863, and an outline treaty drawn up that subsequently was greatly remodeled and improved. This treaty, as at present constituted, has been subscribed to by thirty-two powers, including Japan, certain South American republics, and several European states and grand duchies. It was, of course, not available during our late Civil War, its place being substituted for by the Sanitary Commission, but it was no inconsiderable sanitary and hospital factor in the Austro-Prussian war. In the Franco-Prussian conflict it assumed magnificent proportions, and the services afforded won the warmest encomiums from both parties to the strife. Since, it has found a field of usefulness in almost every war, including petty rebellions in the Balkan States and Turco-Hellenic Peninsula—often when one or the other of the two sides had given it no recognition. Russia carried it to the gates of Samarkand and within the walls of Khiva; and even in South American wars its labors have been inestimable; and now its ships fully equipped are in Cuban waters, and its surgeons, nurses, attendants, etc., are faithfully performing the duties

wearing the proper badge receive the treatment that is due to neutrals and non-combatants, this treatment being even extended to those under the immediate charge of the Society.

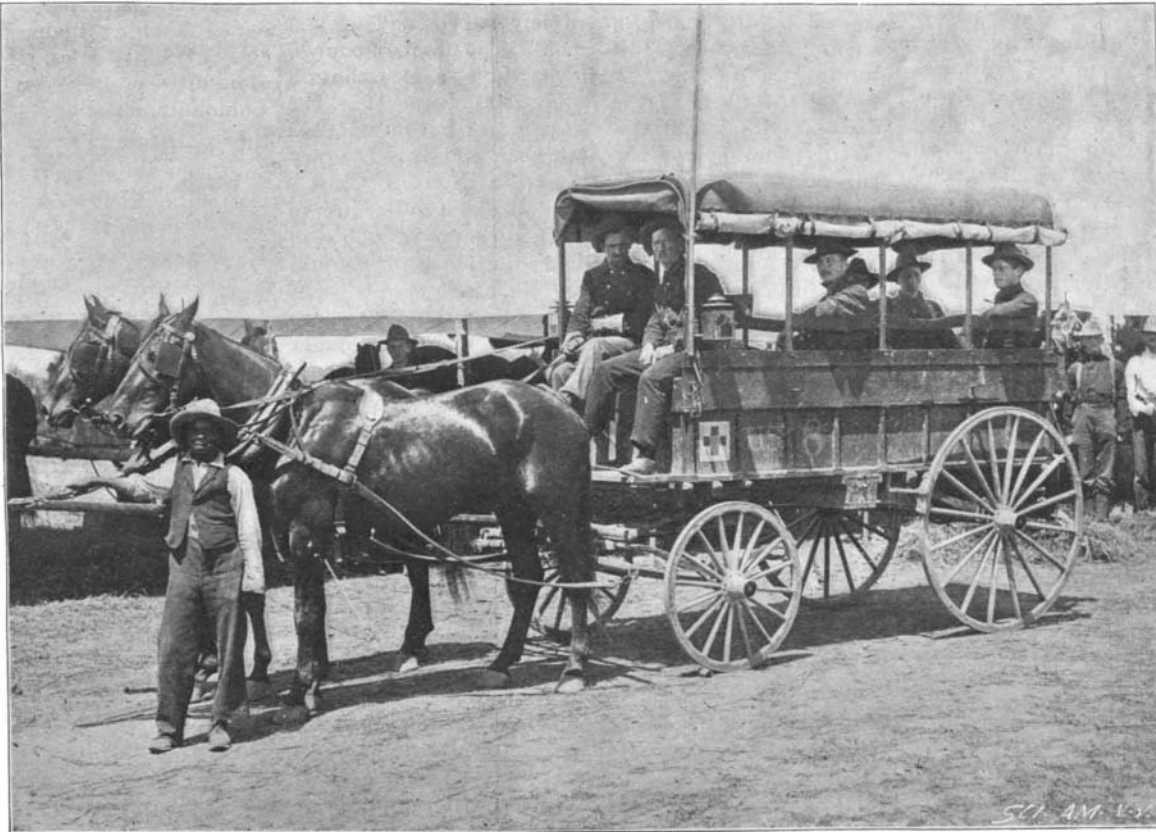
Neither can this confederation be deemed as series of societies existing among different nations, but controlled by one central organization, inasmuch as each society is distinct and independent and governed by its own laws, which are formulated according to the needs and genius of each nationality. With this explanation, it is perhaps hardly necessary to state there are no members, regularly constituted as such.

In the confines of United States authority, the Red Cross Society is at present engaged in a laudable attempt to ameliorate the condition of ill and wounded sailors and soldiers, not alone of this country, but also—in so far as possible—those of the allies and foes which are parties to the existing conflict. It is neither its intent nor purpose to in any way supersede or conflict with the medical staff afloat or ashore, but to afford aid and support to both in a way to admit of greater scope, more prompt action and more ready relief to want and suffering.

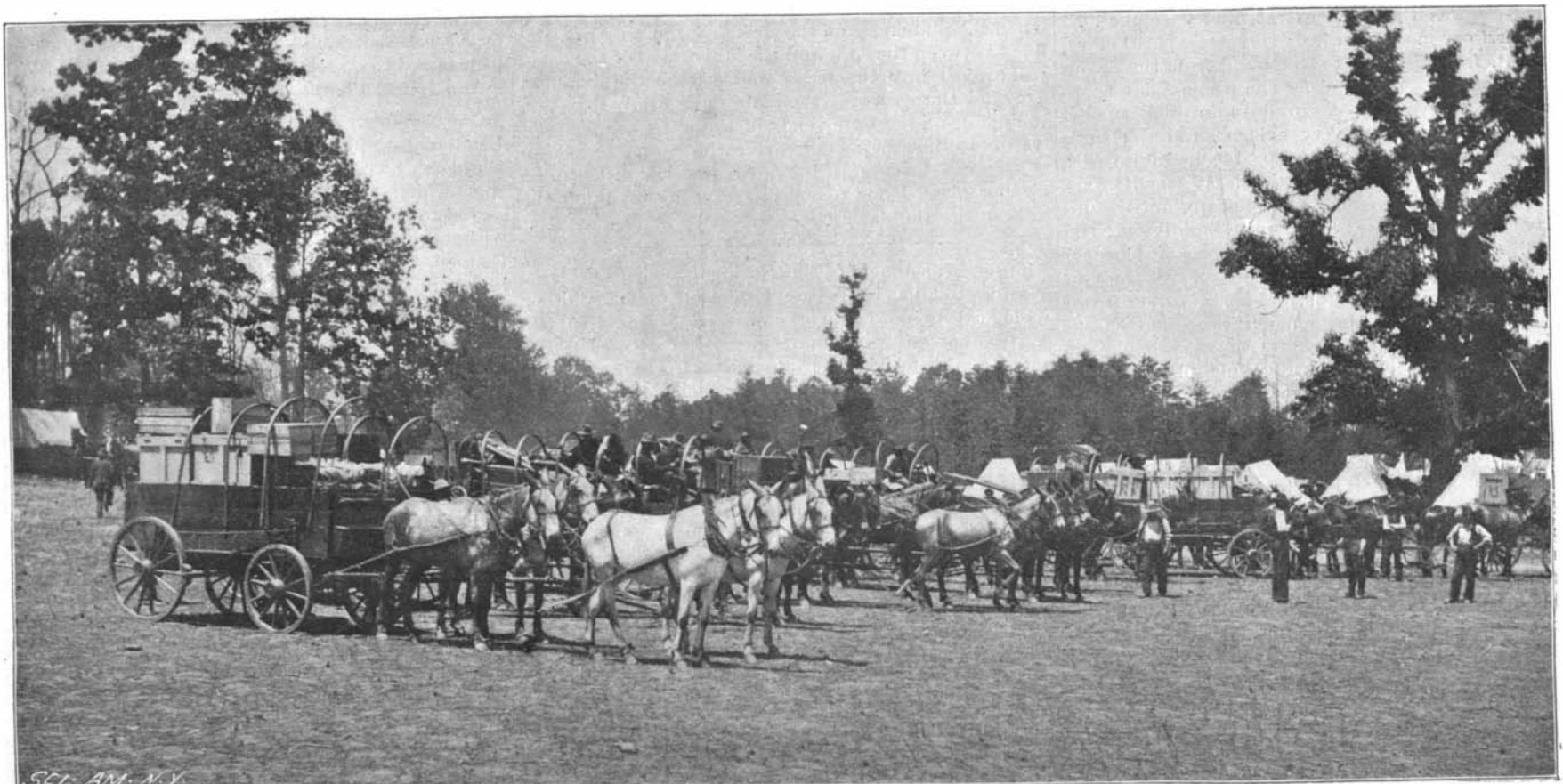
appertaining to each. Its badge is everywhere recognized, and the only requirement is that such shall be properly *viséd* by the Central Commission and one of the belligerents, as a protection against deceit and fraud.

The ambulance, which has now become an essential part of the equipment of every army medical corps, in its wheeled form originated in the United States; but its use as a means of affording initial aid on the field of battle and as a means of immediate transport for the wounded and invalid, so far as foreign countries are concerned, is due to the practical exhibition of its value in the hands of the Red Cross Society. Further, in all services, ambulance corps are now existent, made up of surgeons, nurses, bearers, attendants, and drivers, all well drilled experts in their individual duties; so that the wounded are no longer left, as formerly was the case, to the tender mercies of comrades, or the oftentimes ill-directed efforts of the drum corps and other non-combatants.

In the United States the meager proportions of the regular army rendered its medical corps inadequate to the emergencies of an extended campaign, or the care



A UNITED STATES ARMY AMBULANCE.



ARRIVAL OF QUARTERMASTER'S TRAIN OF 34th MICHIGAN AT CAMP ALGER.



of large bodies of troops, which has necessitated, with the hurried organization of the volunteer service, retaining the old regimental medical staff; but, with the present availability of Red Cross aids, it is believed most of the defects inherent thereto will be obviated.

The United States army ambulance is a model in its way, consisting of a body 48 x 90 inches, protected by a canopy top and movable leather curtains, mounted on four wheels by platform springs. With the seats in, it carries eight persons; with seats stowed, it admits two litters, side by side, the handles of which rest on and are secured to brackets; or one litter can be entered, and yet space reserved for four persons in sitting posture. Lockers at the sides and under the box seat afford storage for supplies and the appliances essential to "first aid," while beneath the box are two water tanks. Formerly a two-wheeled ambulance also received official sanction, of the same capacity as regards litters, but admitting of but four passengers in sitting posture. For the campaign in Cuba, it is understood mule litters have been provided for use in such localities as cannot be reached by wheeled vehicles, and the French cacolet—two chairs, resting pannier fashion on a mule's back, with a hooded shelter—has been advised.

The Red Cross ambulance, as recently adopted, differs slightly from that of the United States army. Constructed in much the same way, it admits of a second pair of stretchers being inserted half way between the first and the canopy top: and the water tanks, beneath the driver's seat, are arranged to be surrounded by ice: the top and curtains, moreover, are of canvas instead of leather; but leather padded litters replace the canvas stretchers of the army department.

No hard and fast rules can obtain, however, to any ambulance service. Both the character of the vehicles and the scope of their usefulness are necessarily modified by conditions and surroundings, and to meet the demands of military operations. Undoubtedly the present conflict will lead to many changes in medical military service and in medical organization, and such may entail a material modification of the ambulance and field hospital system. One of the great steps in advance, dictated by the exigencies of the present war, is the establishment of the hospital ships, such as the government steamer "Solace" and the Red Cross steamers "Relief" and "Red Cross."

One notable feature of Red Cross work brought out by the present war is the number of societies that have sprung into existence as auxiliaries. Every city and almost every town or village of considerable size possesses at least a "branch." Some of these, too, have greatly lightened the work of the Central Committee, by taking upon themselves certain lines of work. One of the greatest drawbacks, usually, to work of this character is the miscellaneous assortment of supplies forwarded, the useful often being neglected for the æsthetic, the amount in one line being greatly in excess of demand on one hand, on another equally deficient. Thus, one organization devotes all its energies to supplying a hospital launch, another to the procuring of hospital clothing, another to the forwarding of hospital delicacies, another to the furnishing ambulances, etc. Consequently, the supplies that reach the wounded and the hospitals are suitable to, and in consonance with, the demand. Far from being a charity, miscellaneous in its garnerings and applications, the Red Cross has assumed the character of a self-imposed, cheerful, definite taxation.

**Waterproof Placards.**

Mix glue water with zinc-white, chalk or barium sulphate and paint the paper with this liquid. As soon as dry, apply another layer of soda water-glass with a little magnesia, and finally expose the paper for some days to a temperature of 25° C. The sheets thus prepared may remain under water or be

exposed to dampness for a long time without any part of the writing or drawing becoming blurred.—Die Werkstatt.

**A RAILROAD ATTACHMENT FOR BICYCLES.**

The invention which forms the subject of the accompanying engraving seeks to provide a simple attachment by which an ordinary bicycle can be used upon a railroad track, the bicycle running upon one rail, means being provided whereby it is held in position.



**A RAILROAD ATTACHMENT FOR BICYCLES.**

Below the front wheel of the bicycle, a frame is suspended from a forked brace fastened to the bicycle frame and from a bar running from the axis of the front wheel. On the lower portion of this suspended frame rollers are journaled to engage the track and the adjacent portion of the tire. At the rear of the wheel, about midway of its height, two additional rollers are journaled in the forked brace already mentioned, and engage the bicycle tire for the purpose of relieving the lower rollers of undue strains. The axes of these latter rollers are perpendicular to the periphery of the bicycle-wheel.

Beneath the rear wheel of the bicycle, a somewhat similar arrangement is employed. In this case the frame carries but a single roller and is suspended in position by a supporting brace attached to the bicycle frame and by a bar running from the bearing of the rear wheel. As in the device used on the front wheel, so here, the roller engages the inner side of the rail and the adjacent portion of the wheel.

In order to keep the bicycle in position on its track, a lateral frame is fastened to the lower brace and is provided at its outer end with a flanged wheel running upon the rail opposite that upon which the bicycle is mounted. The flange of this wheel is opposed to the flange devices on the bicycle, so as to keep the latter in position on the track.

The attachment in itself is lightly constructed. It can be removed from a bicycle and easily applied, and,

moreover, can be packed in a case carried on the bicycle. A rider is thus enabled to use his wheel not only on ordinary roads, but also on railway tracks.

The attachment is the invention of Henry J. Otto and Arthur E. Wielsch, of Butte, Montana.

**RECOVERY OF GOLD FROM LOW GRADE ORES.**

In the southern part of California mining is a familiar topic of the day among all classes. The wealthy are turning to this industry as a means of increasing their revenues, and the poor are engaging in it with the hope of becoming rich. The study of mineralogy, with the technicalities of mining, is the most popular of the many branches taken up by the Los Angeles Y. M. C. A. educational course this season. It is the first class of the kind conducted by this organization.

A large proportion of the 3,800 mines in Southern California, which yielded \$1,360,000 in gold last year, are on the great desert lying just west of the Colorado River. The region, as large as several Eastern States put together, is full of resources that are yet unknown to the general public. The most promising mining district in California—the Rand, discovered two years ago—is in the heart of this desert, and already the towns of Randsburg and Johannesburg are thriving and comparatively comfortable places. Life here is infinitely preferable to the conditions on the Klondike, and if gold nuggets are not picked up so freely as in the Arctic region, neither is the search for them so hazardous or costly.

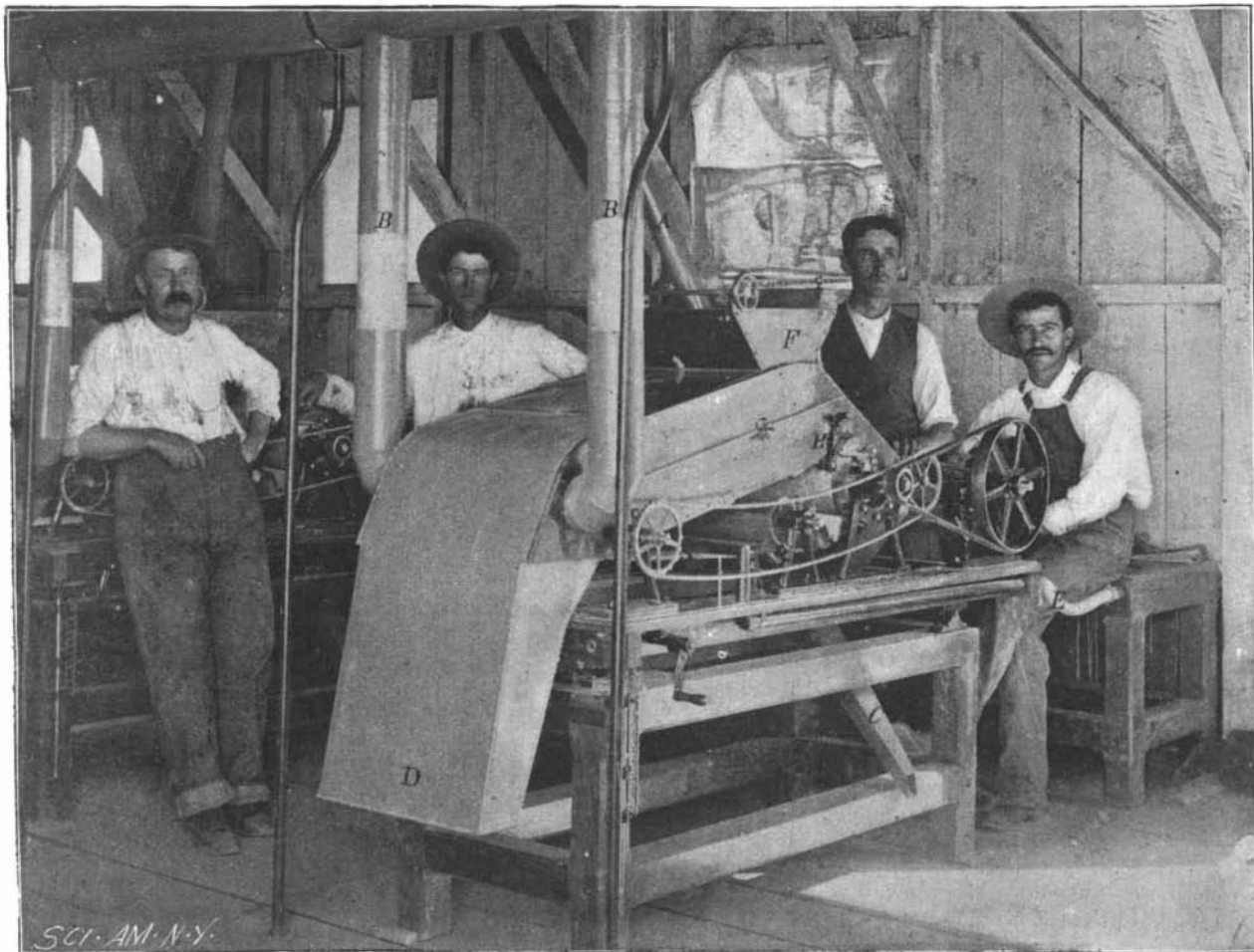
Scarcity of water and fuel, with the cost of transporting ore to mills and smelters remote from the mines, are drawbacks on the desert. More water will ultimately be discovered and developed; meanwhile, a dry process of treating ores would be of great value to this section and to all other arid mineral territories. Especially is some method needed by means of which low grade quartz may be made to yield a percentage of concentrates which will be profitable in bulk.

Such a process has recently been successfully tested in the Rand district, with new concentrating machines invented by an Eastern man, who has been in the habit of spending his winters in California, and was advised, when in Los Angeles last winter, to turn his attention to something which would benefit the mining interests of this section. He saw the difficulty, chiefly resulting from a lack of water, of handling the vast bodies of low grade ore which are found on the desert, and began to experiment with the dry concentrating process.

After the machines were perfected, they were viewed with approval by numerous mining men; and, in September, a plant was erected at Johannesburg, on the Alameda mine, where tests were recently made which gave excellent results.

Rock which had been cast aside, on the Alameda dump, as unprofitable to ship to a stamp mill, was put through a rotary crusher and reduced to what is known as "pulp" in mining parlance. It was then elevated by a conveyor to an inclined screen located in the second story of the mill, directly above the concentrators.

The screen is octagonal in cross section, covered with fine wire, and divided into four mesh spaces running from 100 to 40. It receives the pulp at the upper end, and as it slowly revolves, the crushed rock is thrown from one flat surface to another, gradually reaching the lower end, where all that passes over is returned to the mill to be ground again. The screened pulp is supplied to the concentrators in the room below through pipes, A, which lead down to a hopper, F, on the top of each machine. From the hopper the pulp falls upon an endless traveling screen, the upper half of which is inclosed in a rectangular box as shown in the illustration. Here it encounters two currents of air which are delivered by a rubber tube, E, and are admitted



**NEW METHOD OF CONCENTRATING GOLD BY THE DRY PROCESS.**