

Army Supplies in the Forward Area and the Tumpine System

A First World War Canadian Logistical Innovation

F.R. Phelan

Editor's Note: In *British Logistics on the Western Front, 1914-1919* (Praeger, 1998), Ian M. Brown documents the problems of maintaining an army in the field; throughout that war, supply lines were strained to get food, equipment and ammunition forward. Early problems of adequate supplies were replaced by an inability to get the items from depots to where they were required. Some of these latter problems were blamed on "establishments" and other force-structure problems caused by stripping logistical-support units to meet the manpower needs of the fighting units. The decision to dramatically reduce the size of the BEF divisions in France helped reduce pressures. By stripping a battalion out of each brigade, and using the men freed as replacements, the BEF maintained its paper strength in divisions (though, in fact, the strength went considerably down) and, more importantly, also reduced its overall logistical requirements. But, as Brown writes:

The Canadian Corps successfully resisted this "downsizing," as its commander opposed the reduction vehemently. In fact, he managed to increase the effective size and strength of his divisions by using the manpower from the two [sic] Canadian divisions forming in Britain. This gave Haig a single very strong corps - four overstrength divisions amounting to some one hundred thousand men [forty-eight thousand infantry] - but it also gave his administration a supply problem, since the standard divisional pack could not supply a Canadian division. In spite of this trouble, it did not appear to cause great difficulty on the lines of communication. Indeed, it gets no mention in either the QMG's or AG's diaries(pp. 165-166)

Buried in this passage lay two secrets. The four-battalion brigades perhaps (too simply?) explain the use of the Canadian Corps as Haig's "shock troops." But as Brown notes, how the Canadians maintained these larger formations is not clear from British sources (p. 177). The answer to this secret must be sought elsewhere. One answer is F.R. Phelan's "tumpine."

Some Difficulties of Supply in Trench Warfare

The supply of the Army in the forward area during a war such as we experienced in 1914-1918 is a subject that might profitably be elaborated on until it filled many volumes. In these notes it is not my intention to touch on more than that portion of the subject of supply which seriously involved the question of manpower in the use of carrying parties after delivery of supplies by horse or mechanical transport, including light railways; to set forth the methods adopted in certain formations

during the late war to overcome the difficulties and to make suggestions for consideration during any future campaigns.

To illustrate the difficulties that generally confronted the troops in connection with supply in the forward or trench area I will describe the experiences of the 11th Canadian Infantry Brigade, to which I was attached as Staff Captain, and try and set forth the problems that faced it and the methods adopted to overcome same.

This article was originally published in *Canadian Defence Quarterly*, vol.VI, October 1928, pp.20-33.

One of the first problems that confronted the whole brigade after its arrival at the front was the question of transporting supplies in the forward or trench area after delivery by the light railway or GS wagons at dumps or refilling points.

Rations, water, ammunition, engineering and medical supplies all had to be placed at the disposal of the troops manning the trenches and to accomplish this with the least waste of manpower and material was a problem that had not been properly solved, although two years of war had passed when the 11th Canadian Infantry Brigade arrived in France in August 1916.

During the brigade's tours of the first couple of months in the Ypres Salient, rations and other supplies were brought forward in the usual manner by detailing carrying parties from the battalions in the line or, where large quantities were required, by ordering the battalions in support and reserve to furnish the requisite number of men.

Such a method was most wasteful of both time, manpower and material and was trying on the temper of all concerned.

Guides were often not at the appointed place, or not punctual, causing frequent delays. Supplies were often not at the locations designated or were too plentiful or not sufficient for the size of the party detailed. These, of course, were faults that were due to inaccurate compilation of, or attention to, orders. The very size of the parties and the necessity of keeping together on account of lack of knowledge of the routes and having to depend on guides exposed the party to the chance of heavier casualties.

This subject of carrying parties was one of the most irritating matters with which the Staff of the brigade and the HQ of the battalion had to deal and led to a great deal of bad feeling at times. From the platoon commander to the OC of the battalion, efforts were made to try not to be called upon to supply more than they were compelled to for the various working and carrying parties, as the supplying of these parties, besides tiring the men and making them "grouch," made it very difficult, and often hazardous, to hold the area properly with such a depleted unit. Of course care

was exercised not to call on the line battalions for more men than absolutely necessary, but there were usually big engineering jobs to be done which required men to work and men to carry material, and then there was the regular daily supply of water and rations, not to mention keeping the line dumps of ammunition up to the schedule laid down.

The subject of the large use of manpower for these purposes was one which was being given very serious thought by all concerned when the first intimation came in the late summer of 1916 that the 4th Canadian Division might be sent to the Somme, where heavy fighting had been in progress since July 1st. The brigade after being moved from the St. Eloi Sector, where they had their first trench warfare experience, to in front of Kemmel for a few days, was withdrawn about September 21st to the Nordausque training area for ten days training prior to proceeding to the Somme, where the other Canadian divisions had been fighting so steadily and with such heavy losses for some weeks.

Amongst the lessons that the fighting on the Somme had taught, was the necessity of properly organizing the supply arrangements for the forward area, and this, coming on top of our experience in the comparative quietness of warfare at that date in the Salient, brought the subject very much to our attention.

The Somme in 1916 was the first occasion when Canadian troops had been employed in offensive operations on a big scale and the mud combined with the distances to be covered had proved a serious obstacle to overcome, not only from a fighting, but also maintenance of supply standpoint. It was fortunate indeed for the brigade that information had been given it as to the supply situation, otherwise, green troops that they were, the battalions would have had a more difficult time than they did, as they found that all supplies had to be brought in either by pack animal or man a distance of over 5,000 yards during most of the two months tour, with the most appalling conditions, as far as the routes were concerned, to work under. As I was at that time Staff Captain it devolved upon me to draft any plans for meeting the supply situation that we were going to face.

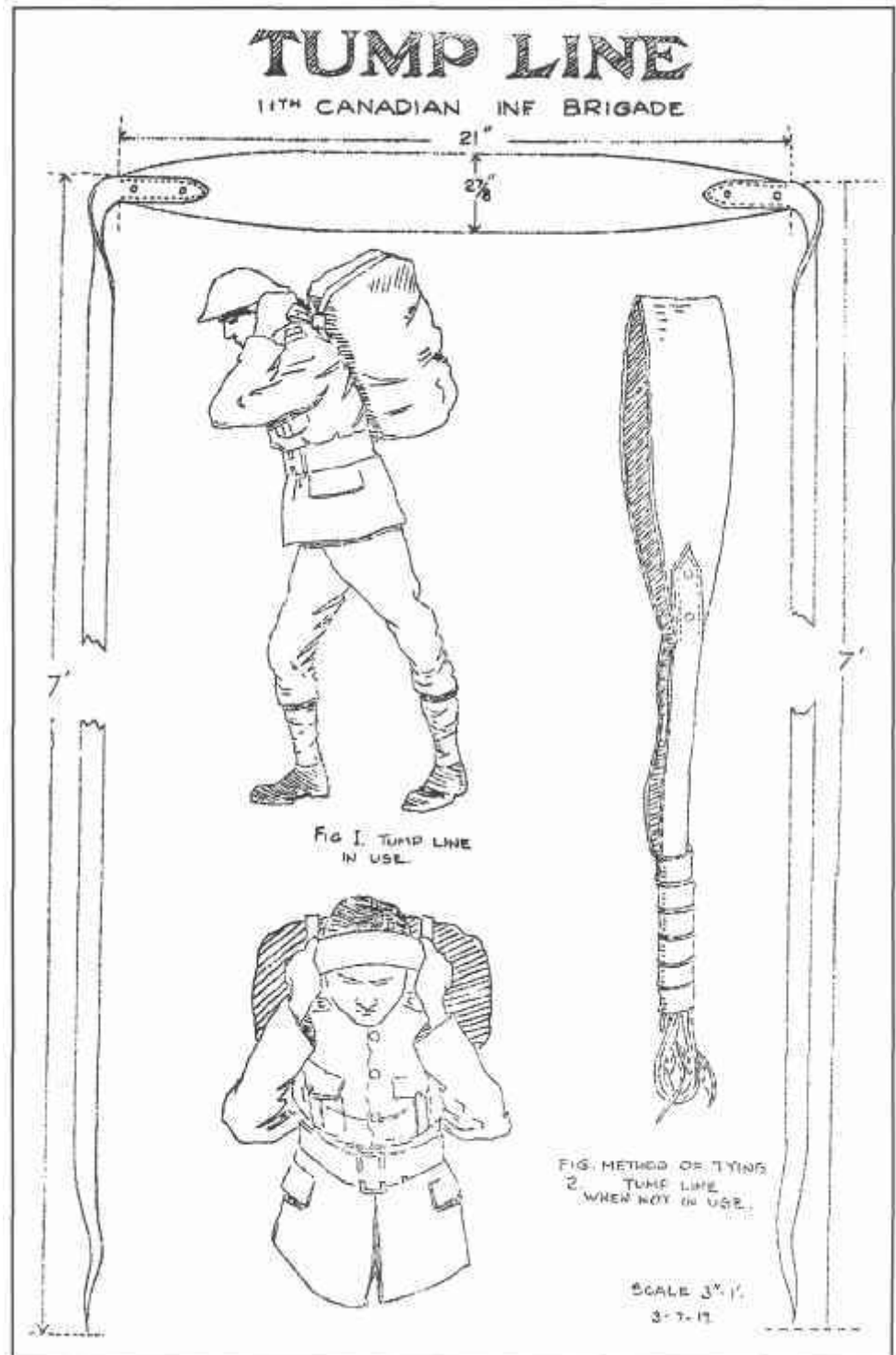
The Tumpline

Prior to the war I had done considerable hunting and fishing in the back woods of Quebec where the difficulties of transportation are very great and continuous movement by water impossible. In surmounting the difficulties of transporting canoes and supplies between lakes, or around bad falls or rapids, a very simple contrivance, called the "Tumpline," was used, without which the difficulties would be almost insurmountable in many cases, as four and five miles over a very rough trail was no unusual distance to carry the outfit. I therefore suggested to the brigade commander that this method of transportation be adopted to meet the difficulties confronting us in forwarding supplies and that a special brigade company be formed for this purpose. He approved of the suggestion and ordered me to draw up the necessary instructions, detail the men for the company and obtain the material to manufacture the tumplines. This was done and demonstration given to the brigade staff and battalion officers, which proved to them the value of the method.

Before proceeding with a brief history of the work of the "Tumpliners," as they were called, it might be well for the sake of those who are not familiar with this method of transportation to give a description of the tumpline, its origin, the method of carrying and the military loads that can be easily transported.

The tumpline is a very simple contrivance, of oiled

leather, for carrying loads. It is made up of three component parts; principal of which is the brow band 21" long by about 3" wide in the central portion and tapering until about 1" wide at each end. To each extremity is sewn a strap seven or more feet long, one inch wide where attached to brow band and tapering gradually until about "" at the free end. In addition to the sewing, rivets are sometimes added, two in each strap, to strengthen the joint. Where it is not possible to





A carrying party from the 11th Canadian Brigade Tumpline Company making their way towards the frontline, September 1917.

obtain straps seven feet long, two pieces can be joined together, although this joint sometimes interferes with the quick tying or untying of the knot. Tumplines made of canvas or web are absolutely useless, as they become soggy, stringy, and wrinkled when they get wet, and difficult to untie under these conditions, and also chafe the head. Good tumplines can be manufactured by any regimental saddler or shoemaker from salvaged surcingles and reins.

It is impossible to give the exact date or the country of origin of the tumpline, or headstrap as it is sometimes called, but forms of it are to be found in countries in every portion of the globe where heavy loads have to be carried any considerable distance. In Canada, it has been used by both Indians and Whites since, and probably before, the days of the French regime, when the Voyageurs, or Coureurs-des-Bois, as the French Canadian trappers were called, had only two methods of transportation, their canoes and their backs, and today, in the north country and backwoods, where other transportation facilities do not exist, nearly all loads have to be carried by the tumpline. It is no unusual thing to see a trapper or a bushman taking his winter supplies in over the trail; these men will often

carry a small barrel of salt pork and a sack of flour in one load, the weight running from 250 to 350 pounds. The general rule, however, is that the load must not exceed the carrier's weight. In the north country, where the rivers are broken by many rapids, the river-men have to unload their scows, bring them through the rapids light, and portage all their goods with the tumpline.

The method of carrying is the same in all countries, the underlying principle being that the weight is borne on the head and the pressure of the weight is in a straight line down the spine, as the spine can support with more ease heavy weights, while carrying them, than any other part of the body. This is well illustrated in the bulky and heavyweights carried on the top of the head by the natives of Africa and the East.

To prepare for carrying with the tumpline, the load of boxes, sacks, etc., is piled up and tied together by passing one long strap round each end of the load and tying either with a timber hitch, or simply a half hitch with the free end as a bow so that same can be undone immediately. When the load consists of a number of small articles the usual method is to roll them in a blanket in conjunction with the tumpline.

The two ends being tied up leaves the wide brow band forming a loop. This loop is passed over the top of the head just above the brow and the load rests high up on the back. The length of the loop is determined by the tumpliner, and depends largely on his height and the position on his back that he prefers to carry his load.

The tumpliner walks slightly bent forward and if he wishes can steady the load by holding the straps about the level of the ears. If the tumpliner is desirous of a change or a rest for the neck, the tumpline can be pulled down in front of the chest, allowing the straps to rest on the shoulders, and by passing the arm through the loop of the browband hold the load in position. By doing this, the weight rests on the shoulders assisted by the arm used to hold it there; this method makes a good change but is seldom resorted to except for very short distances.

In preparing the load care should be taken that no projections are left on the side of the load that rests against the back, as it is impossible in that case to carry a load very far without the back becoming galled.

The loads that are carried depend largely on the nature of the goods that are required to be

moved, the distance to be covered, and the nature of the ground over which the tumpliner has to go-

On the Somme, during the months of October and November 1916, under very adverse weather conditions, the Brigade Tumpline Company carried the following as loads, working nearly every night for 45 consecutive days traversing between 4000 to 5000 yards; this being the distance between the Main and Advanced Dumps.

- 1 to 2 boxes small arms ammunition
- 4 boxes Mills Grenades
- 3 boxes Stokes Shells
- 2 boxes Bully Beef
- 1 case Biscuits
- 1 bale Sandbags
- 2 coils Barbed Wire
- 1 dozen Shovels
- 1 dozen Picks

On one occasion five complete Soyer Stoves and three 50-gallon iron tanks were forwarded the same distance by a party of eight men in one load.

A more detailed list will be found at the end of these notes giving practically all the various articles that are required to be moved in the forward area, showing the size or nature of the load, the weight, the number of men required to

A variety of items are being carried using the tumpline: rolls of wire mesh, rolls of barbed wire and spiral pickets on which to string the barbed wire.





A Canadian soldier makes his way out of the supply depot carrying his load using the tumpline while his companions prepare to get under way. Note the collection of rumjugs in the centre of the photo.

carry the load with and without the tumpline, the percentage of manpower saved by using the tumpline, together with remarks on each class of load.

As a general rule, almost any small article required in the forward area can be carried by the tumpline; under war conditions the weight should not exceed 75-100 lbs for regular work but this is governed largely by the bulk of the load.

The 11th Canadian Brigade Tumpline Company

In organizing for carrying on the work, the Brigade Tumpline Company was formed with an establishment of 1 officer, 4 NCOs and 80 privates, divided into four equal sections; each battalion of the brigade furnishing one complete section, whilst the officer was detailed by the brigade from the battalion that had the fewest officers "on command." Experience proved that this made a very efficient, easily handled and, for most purposes, sufficiently large unit, and the original establishment was adhered to throughout the balance of the war.

After the experience of the Somme, 1916, each battalion formed an additional section composed of 1 NCO and 15 to 20 men, depending on the strength of the battalion, to be used in forwarding the unit's rations and water to the front line, as well as to assist the brigade company in the forwarding of ammunition and

supplies in an emergency or during heavy operations.

This latter development left the brigade company free to fulfill the brigade's responsibilities as far as supply was concerned in the area. This special company was completely segregated from the battalions, and acted as a separate unit under the orders of the brigade Staff Captain.

The battalion sections were generally placed under the orders of the battalion Bombing Officer and were attached to the unit headquarters.

Outside of the regular infantry equipment, each NCO and man was equipped with a tumpline, and, in addition, each battalion section had a number of special sacks, each capable of holding four or five sandbags of rations, which enabled one tumpliner to carry forward 32-40 rations in one load. These sacks were made of waterproof canvas, and of a size that enabled the sandbags to be put in with the long side across the top of the bag being closed up by folding over and tying with two thongs. Two "D" rings were sewn on one side about a quarter of the way down the sack, and fifteen inches from centre to centre, which enabled them to be used to hang on to a pack-saddle, when pack-animals were available and these rings served to attach the tumpline to when being packed by tumpliner.

The men wore their box-respirators at the "alert" and when necessary could don their masks and continue their work (this was done



A corporal helps one of his soldiers to hoist his load while others adjust their tumplines. Leaving aside the question of weight, this photo clearly illustrates that the sheer bulk of the boxes being carried would preclude their easy conveyance without aid of the tumpline.

on many occasions) but the work had then to be necessarily rather slow and tedious at night.

The tumpline does not in any way interfere with the wearing of the steel helmet.

The training of the men was very simple, no previous experience being required, although, of course, very useful. The men were first taught to tie up the load, and, after mastering the simple knots used, they were allowed to carry light loads short distances, with fairly long spells of physical exercises for the neck, back and shoulders, together with demonstrations from the instructor between "carries." For the first two or three days, they were not allowed to do much carrying, the great danger being that the men found the work so simple that they overdid it, thus getting a stiff neck, and were liable to get discouraged. Like every other work or exercise, which requires muscles not in constant use, the muscles have to become accustomed to the work, and with the tumpline this was best accomplished by light loads for the first two or three days, together with physical drill. When these points were observed it was found that in less than a week the men became very efficient in their work.

Some Advantages of the Tumpline

In order to realize the benefits that the brigade secured by using this method of transportation, it is only necessary to consider some of the advantages, for, without attempting to make any extravagant claims for the tumpline, it may safely be said that one man equipped with it can do the work of two men carrying supplies in the ordinary way, do it quicker, and at the end be fresher than the two men would have been.

Some of the advantages of the tumpline over other forms of carriers or methods of carrying, are as follows:-

(a) It weighs but a few ounces and therefore does not add materially to the weight of the load.

(b) It can be very easily adjusted to the load; thus cutting down the time which parties would usually spend around a dump. This feature is especially valuable when loads have to be prepared under shell fire.

(c) When the load has been delivered, the tumpliner throws his tumpline over his shoulder, bandolier fashion, and does not notice its weight

or pressure any more than he would a regular bandolier; in fact not as much. This is not the case with more bulky forms of carriers which, as they are clumsy and have a considerable weight, are often considered a nuisance by the carrier, who is liable to ditch them if an opportunity offers.

(d) If the carrying party comes under heavy shell fire suddenly, and it is advisable to take cover quickly, the load carried by the tumpliner can be dropped instantly, leaving the man free from any encumbrances and able to act with the least possible delay. With other forms of carriers, it is often necessary to have the assistance of one or two other men to remove the load from the back.

(e) When going through a trench, if a stretcher party or others are met, the tumpliner can easily throw his load on the parapet and allow the party to pass him; this cannot be so easily done with other carriers. This is also a big advantage when it is necessary to jump into or over a trench; the load can be dropped on the parapet or tossed across as the case may be, and the tumpliner can then easily jump into the trench or across and take up the load again; with a load strapped to the back, jumping over or into a trench is almost an impossibility; in the first place, the load would be almost sure to catch the edge of the trench and throw the man on his face, and in the second place the weight would in most cases prevent the man from being able to jump at all. If other forms of carriers were to be removed from the back and tossed across the trench, the weight of the load would be very liable to break the framework of the apparatus.

(f) On arrival at destination the tumpliner's load can be instantly put down and untied without delay.

(g) The load does not tire the tumpliner nearly as quickly as loads whose weight is supported by the shoulders. A tumpliner can shift the weight of his load from the brow to the shoulders at any time, or by a slight pressure of the hands can divide it between brow and shoulders.

(h) The tumpline can be quickly made by any regimental shoemaker or saddler, its cost being small compared with other carriers, as salvaged leather can be used to a large extent.

(i) Practically no training is required to teach men to use the tumpline.

(j) When used in muddy or wet weather, the tumpline will not become heavy or soggy from wet or mud, as wood or canvas carriers will.

(k) Wet weather is liable to so shrink the canvas of other carriers, if the laces are not loosened, that the frames will be broken; the tumpline does not have to contend with this.

(l) The amount of ground required at the dump by a large party, equipped with the tumpline, for loading up is very small compared to the way the carriers would have to spread out to load up other forms of packs.

(m) One of the advantages of having a permanent company, is that the men quickly learn the location of dumps, the best routes, spots to be avoided, both on account of bad walking or shell and rifle fire, location of units, etc.

(n) It was a rare thing to find that a tumpliner had ditched any part of his load; this could not be said of ordinary carrying parties.

(o) When not required for forwarding of supplies, the company was advantageously employed in salvage work.

(p) The tumpliner can carry out slightly wounded cases, which, from the nature of their wounds, cannot walk, thus relieving a stretcher party.

(q) That the men themselves like it, and consider the tumpline an easy form of carrying was evident by the fact, that, although they did far more work than they would do in the line, still they considered it a punishment if they were sent back to ordinary regimental duty.

One very distinct advantage was noticed in the forwarding of cans of water. With the ordinary carrying party each man took two cans; these seldom arrived at the forward area more than half full, as it was found that the men were liable to spill some of the water to lighten the load, or, when passing working parties, to give a drink to the workers. It was therefore necessary to have double the quantity of cans and double the

carrying party required for the amount needed for the line.

The turnpliner carried three, and, for short distances, or where the trail was good, four petrol cans full, and thus greatly reduced the party required. If the can was not full, the water swished from side to side, and made the load more difficult to carry, therefore the turnpliner saw to it that he had a set of full cans. For the same reason, and because the cans were tied together, he did not give away his water en route. This again is a valuable fact, inasmuch that it was necessary to have undamaged cans, and, therefore, they were not so liable to become punched to allow the water to run freely, or the stoppers to be lost.

Saving in Manpower

What a tremendous saving in manpower to the British Expeditionary Force and the other Allied Armies would have resulted from the

general use of the tumpline along the lines inaugurated in the 11th Canadian Infantry Brigade can be readily realized by a little calculation.

As, at the very least, all parties were cut down 50 percent, (and in the forwarding of certain supplies the percentage was much higher) by using the tumpline, it requires very little imagination or figuring to see the value of this method of carrying. Basing the calculation on a 50 percent, reduction in manpower and using one tumpline company of 85 per brigade, and one company for divisional troops, the saving in manpower in the BEF would have been well over 20,000 men. In addition, if every infantry battalion had had its own tumpline section, and other units in the division in proportion, there would have been an additional saving of about 10,000 men. This would have meant a total of over 30,000 men saved for other purposes almost every day, and in giving these figures a very conservative estimate is made, as the calculations

are based on a lower number of divisions than we had in the field on the Western Front at the time they were made.

At a time when reinforcements were so difficult to obtain, and the method of transportation in the forward area required so many men, it is unfortunate that the whole army did not have companies along these lines. The First Army was very aggressive on the subject after the method had been brought to the attention of the Staff and due to the energy of the MGGS most of the formations in the Army adopted the tumpline in the latter part of 1917 and early in 1918.

I figured out at one time, from the reports that I had received from the various formations using the tumpline,



*Nature of Load: Vickers Gun
Weight of Load: 93 lbs.
Usual Carrying Party: 2 men*

*Percentage saved in manpower
by use of tumpline: 50 percent*

*Nature of Load: 4 18 -lb shells
Weight of Load: 96 lbs.
Usual Carrying Party: 2 men*

*Percentage saved in manpower
by use of tumpline: 50 percent*



approximately what amount of manpower was at that time being conserved in the limited portion of the Expeditionary Force concerned and my estimate ran well over a brigade's fighting strength.

The Work of the 11th Brigade Tumpline Company

To record the activities, devotion to duty and heroic actions of the members of the Brigade Tumpline Company and the battalion

and were during the preparation for the brigade's first big attack on the Somme in 1916. The men dug themselves in on the slopes of Sausage Valley, and worked from the main brigade dump forward to a new dump that they were ordered to establish in the famous sunken road running by Courcelette. The location chosen was down the slope towards Death Valley where the road forked to Pys and Miraumont; the dump was for supplies for use in the Regina Trench operations of the 21st October.



*Nature of Load: 4 tins of water
Weight of Load: 104 lbs.
Usual Carrying Party: 2 men
Percentage saved in manpower
by use of tumpline: 50 percent*

*Nature of Load: 1 bale of sandbags
Weight of Load: 115 lbs. (dry)
Usual Carrying Party: 4 men
Percentage saved in manpower
by use of tumpline: 75 percent*

sections would require a volume in itself. That it was no bomb proof job was evident from the fact that the proportion of casualties was very high. Yet, despite this fact, the arduous duties performed, combined with the necessity for the unit being always on duty whilst the brigade occupied a sector, giving them practically little or no rest from the trenches, the men liked their work and the only punishment meted out was return to regimental duty. Probably the secret of the popularity of the work was the relief from the monotony of trench life and the realization of something accomplished after each night's duty.

The first experiences of the company were amongst the worst that they had to go through,

A very short period was available in which to complete the work, and night after night these men, assisted by ordinary carrying parties drawn from the battalions, and the Brigade Pack Train, toiled over the 5,000 yards (nearly 3 miles) of that shell torn ground with their heavy loads.

The Sugar Refinery, the cross roads at Courcelette and, above all, the Sunken Road were favourite spots for the Hun to straffe, yet never once did this little company of men fail to deliver their loads at the destination, despite many casualties.

The heartbreaking part of that first task was that a few days before the attack on Regina Trench the Hun located the new dump and

completely destroyed it by shell fire. It was possible to salvage some of the scattered ammunition and engineering material but the hundreds of water tins were riddled with shrapnel, the water all spilt and the tins rendered useless. This salvaging work was tedious and being done in the open in daylight brought a lot of harassing fire, with resultant casualties.

The destruction of this dump was serious as it contained the reserves of ammunition, engineering material, water and rations for the projected attack. Immediate steps had to be taken in the few days remaining to replace it and this required the utmost speed and every ounce of energy that the men had. Fortunately, the rain was not present to turn the ground into the quagmire it later became, or human effort could not have accomplished what those men did. For the last few nights large additional carrying parties were detailed to the work, some coming from other brigades, and we had as many as 500 additional men working at the job.

The picture presented by these parties was a weird one, the nights were pitch dark and it was impossible to see much around one, except when the dim reflection from flares momentarily silhouetted the figures of the toiling men. Very little talking was indulged in except when complimentary remarks were made for the benefit of those who cared to listen when someone stumbled into a shell hole with his load, or stubbed his toe against some obstruction.

The casualties on those last few nights were heavy, one officer Lt. E. Renouf, of the 54th, was killed and several officers wounded, whilst at least 20 percent of the other ranks were killed or wounded.

To assist the Tumpline Company in all big operations, the Brigade Pack Train was called together, composed of riding and light draught horses and their drivers, to the number of 15 from each battalion. Each battalion section was in charge of its own officer and whilst nominally under the charge of the Brigade Transport Officer, usually worked on its own initiative once the tasks were allotted. The Pack Train would usually work from the main dump to an advanced dump, and in every operation did yeoman service and assisted materially in the success of the supply arrangements.

The Tumpline Company's activities did not cease with the completion of the dumps prior to the operation. The next task was to start moving forward the munitions to new positions, selected beforehand on the map, just as soon as the attacks had been successfully launched and the captured ground was being consolidated. This work usually occupied the first few hours of the operation. Then it was called upon to assist in removing the wounded and join the special parties of stretcher bearers that had been detailed for the purpose.

The other operations on the Somme, in 1916, were, in a general way, a repetition of the first tasks but, with the experience gained, many of the troubles encountered in the first instance were avoided.

Vimy Ridge and Passchendaele each presented their particular problems and passed on. During regular tours, between big operations, the work was routine, comparatively simple of accomplishment, and need not be dwelt upon.

The battalion sections, which were a later development of the organization, were most useful, their efficiency naturally depending a good deal on the individual officer in charge of their activities.

The 11th Canadian Infantry Brigade Tumpline Company was the first organization of its kind and made the first serious and consistent use of the tumpline in the war. Various claims have been laid to the credit of having introduced the tumpline on the Western Front; all probably were the first in their particular area; the trouble was that the method was not followed up or an organization formed until the 11th Brigade made it a success, and probably the first official recognition of this method is to be found in the First Army communique and reports issued in July 1917.

Disadvantages of Normal Method of Carrying Supplies

The photographs included herewith show in a very graphic way the tremendous savings in manpower by the use of the tumpline.

dumps, headquarters, etc., in their area., thus cutting out the necessity for guides. The men could be sent out in smaller parties, thus eliminating the crowding which happened with large parties; unwieldy parties caused loss of time and a heavier percentage of casualties. They would also avoid bad spots in the routes, either from the point of bad walking or enemy fire.

(c) An esprit-de-corps would gradually spring up in such an organization which would cause the men to put forth their best efforts thus cutting down manpower required to move certain amounts of supplies.

(d) If this organization were equipped with the tumpline for carrying, the manpower required would be cut down from 50 percent to 75 percent, and over as previously explained.

This organization, to be a definite success, would have to be run entirely separate from the infantry and under its own administration in a similar manner to the Forestry Corps, the light railways, etc.

These special units to be attached to divisions or brigades for work as required.

Suggested Tumpline Organization

The following is a proposed scheme of the establishment and method of work of such an organization:-

(a) There would be four companies formed for each division of the force, each one having a strength of 100 all ranks as per establishment given further on.

(b) These companies to be controlled from a headquarters of the new formation which would detail 4 companies for every divisional sector and these companies, through a group commander or adjutant, would take their orders as to divisions with whom they should work, from the HQ of the Army holding that portion of the line.

(c) The whole organization to come under the direct control of its own headquarters at GHQ.

(d) Divisional sectors to be divided into sub-sectors in accordance with the number of

brigades holding the front and a company allotted to each sub-sector and one company between the artillery and divisional troops, when necessary, or retained as a reserve or for reliefs.

(e) As far as possible the four companies of the divisional sector be retained in one area as long as the situation permits and inter-company reliefs carried on as the nature of the work demands.

(f) When big operations were pending, two companies to be withdrawn from the non-active divisional sectors and moved to the coming battle front early enough to become familiar with the new ground.

(g) These additional companies to be attached to divisional sectors as required.

(h) The headquarters of the formation to run a central school to train reinforcements; 5 percent, of the strength of the total companies should be under training at all times.

Proposed Establishment of a Tumpline Company			
Detail	Officers	Other Ranks	Totals
Captains	1		1
Subalterns	2		2
CSM & CQMS		2	2
Sergeants		4	4
Corporals		4	4
Privates		87 (a)	87
Totals	3	97	100

(a) Includes 2 cooks, 2 stretcher-bearers and 3 batmen.

Note: Company divided into HQ and four sections. HQ composed of three officers, CSM and CQMS, 2 cooks, 2 stretcher bearers and 3 batmen. Section composed of 1 Sergeant, 1 Corporal and 20 Privates. One subaltern in charge of two sections. The four companies for each division comprising the force could be originally drawn from the force, one from each infantry brigade and one from divisional troops and struck off in the same way as LTMB personnel, and reinforcements demanded to replace. Each section and HQ of the company to have a LTMB cart for transport of blankets, cooking utensils, etc.

In addition to this independent formation, every fighting unit in the force should have a section of men trained in the use of the tumpline who could be used in an emergency or as

Tumpline Loads

Load	Weight of Load (in lbs.)	Number of Men Required to Carry		Percentage of manpower saved	Remarks
		With tumpline	Without tumpline		
Vickers's Gun	93	1	2	50%	Gun in case weighs 39 lbs.; Tripod 54 lbs.
4 Belt Boxes	92	1	2	50%	Each box weighs 23 lbs.
2 Boxes Lewis Gun ammunition	94	1	2	50%	
Stokes' Shells, 3 boxes	126	1	1 1/2	33 1/3%	This load only up to 1 mile on good trail. Two boxes of 6 shells ordinary load for long distance. No saving in manpower but shells kept in clean condition. 3 shells in sandbag weigh 33 lbs.
Stokes' 3-in. Gun	108	1	3	66 2/3%	Gun bbl. weighs 49 lbs. Base plate 30 lbs. Bipod 29 lbs.
1000 rounds Small Arms Ammunition	79	1	2	50%	All round easy load for tumpline.
2000 rounds Small Arms Ammunition	158	1	4	75%	Too heavy for regular work; only for short distance in emergency.
3 Boxes Hales' grenades	120	1	3	66 2/3%	Too heavy for regular works; Two boxes much better load.
3 Boxes Mills'	75	1	1 1/2	33 1/3%	Very easy load; could be carried very long distances.
4 Boxes Mills'	100	1	2	50%	Good ordinary load; for emergency can be easily increased to 6 boxes.
2 x 6-in Newtons'	106	1	2	50%	
4 x 18 lb shells	96	1	2	20%	Particularly useful for salvaging; the same ammunition boxed can be carried much more easily.
2 x 4.5-in shells	70	1	2	50%	
20 x 4.5-in charges	116	1	2	50%	
12 Shovels	67	1	2 2/5	58%	Particularly easy load.
12 Picks	78	1	3	66 2/3%	
1 Bale Sandbags	115 lbs dry	1	4	75%	Saves breaking bales.
2 Rolls Barbed Wire	70	1	2	50%	Weight including two stakes. Single roll weighs 33 lbs.
6 sheets Corrugated Iron, heavy	96	1	3	66 2/3%	
10 sheets Corrugated Iron, light	110	1	3 1/3	70%	Very difficult to carry if windy, but this also applies to ordinary carrying.
12 Stakes, short	66	1	1 1/5	16 2/3%	
10 Stakes, medium	70	1	1 1/4	20%	
8 Stakes, long	72	1	1 3/5	37 1/2%	
Roll telephone wire	64	1	2	50%	
Roll telephone wire	160	1	2-4	50-75%	Too heavy for practical work.
Gas projector and cylinder	142	1	3	66 2/3%	Projector 66 lbs. Base plate 16 lbs. Gas drum empty 33 lbs.; full 60 lbs.
4 Tins of Water	104	1	2	50%	In the usual way tins as a rule arrive half empty.
Ration sack (32-40 rations): Meat sent in separate box	70-90 less meat	1	2 - 2 1/2	50% - 60%	Sacks are made of burlap or canvas, and hold 5-6 sandbags
	95-120 full ration	1			
1 case Biscuits	68	1	2	50%	Difficult loads for ordinary carriers.
2 cases Bully Beef	90	1	2	50%	

occasion required when the regular companies were not available.

For an infantry battalion, 10 men under a lance corporal should be sufficient; batteries of artillery and engineering companies should manage with 5 trained men. Machine gun companies should have sufficient trained men in each gun section to care for the gun and belt boxes and to replace casualties during an action; in fact, I would advocate every member of a machine gun company and Lewis gun crews in infantry battalions to be trained in the use of the tumpline, as well as a couple of men in each platoon whose duty it would be to carry in attack a dozen shovels or picks for use in digging in. The resultant increased efficiency in action and the savings in man-power should be apparent to the most casual observer.

Stretcher bearers of battalions and bearer sections of field ambulances should be trained in the carrying of slightly wounded with the tumpline. In this connection we experimented by utilizing the tumpline in carrying the stretcher, but not enough was done to enable me to recommend its use, although I feel that it could be developed along the lines I was working on.

All these men could be trained at the school maintained by the new formation.

In a future campaign, conditions may have changed so that we will have no trench warfare as we knew it during the late war, which would do away with the advantage that would otherwise be in evidence from the men becoming familiar with one particular sector. Under conditions where the battle area was a rapidly changing one,

these trained men would however be in a better position to grasp the situation and handle their work than would troops drawn from the fighting units who had had no special training. In open warfare, the carrying troops would have to work in very close liaison with the units of the division they were allotted to, and some readjustment of the method of command laid down for trench warfare, would have to be made.

On the previous page are given comparative particulars of loads, carried, with and without the tumpline, in the Canadian Corps during the Great War.

There are many other details that could be gone into but the scope of these notes does not require it and enough has been set out to give a general idea of what was accomplished and what might be done in the future.

Frederick Ross Phelan was born in Montreal on 8 August 1885. At the outbreak of the First World War, he joined the Canadian Expeditionary Force. He served in France and in 1917 was appointed Staff Captain, 11th Canadian Infantry Brigade. When war ended, he was Deputy Assistant Quartermaster General at Canadian Corps Headquarters with the rank of Lieutenant-Colonel. During the Second World War, Phelan served in a number of capacities including commander of all Canadian Infantry Reinforcement Units in the United Kingdom, commander of Canadian forces in Newfoundland, and Director General Reserve Army. He retired from the army in 1945 with the rank of major-general.