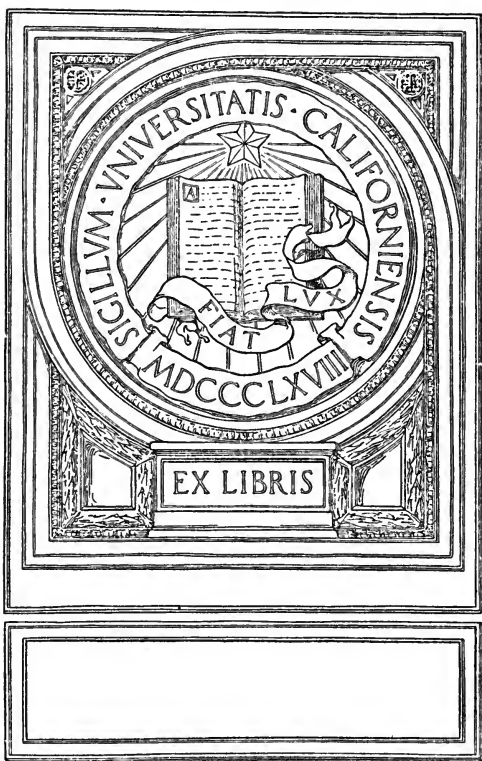
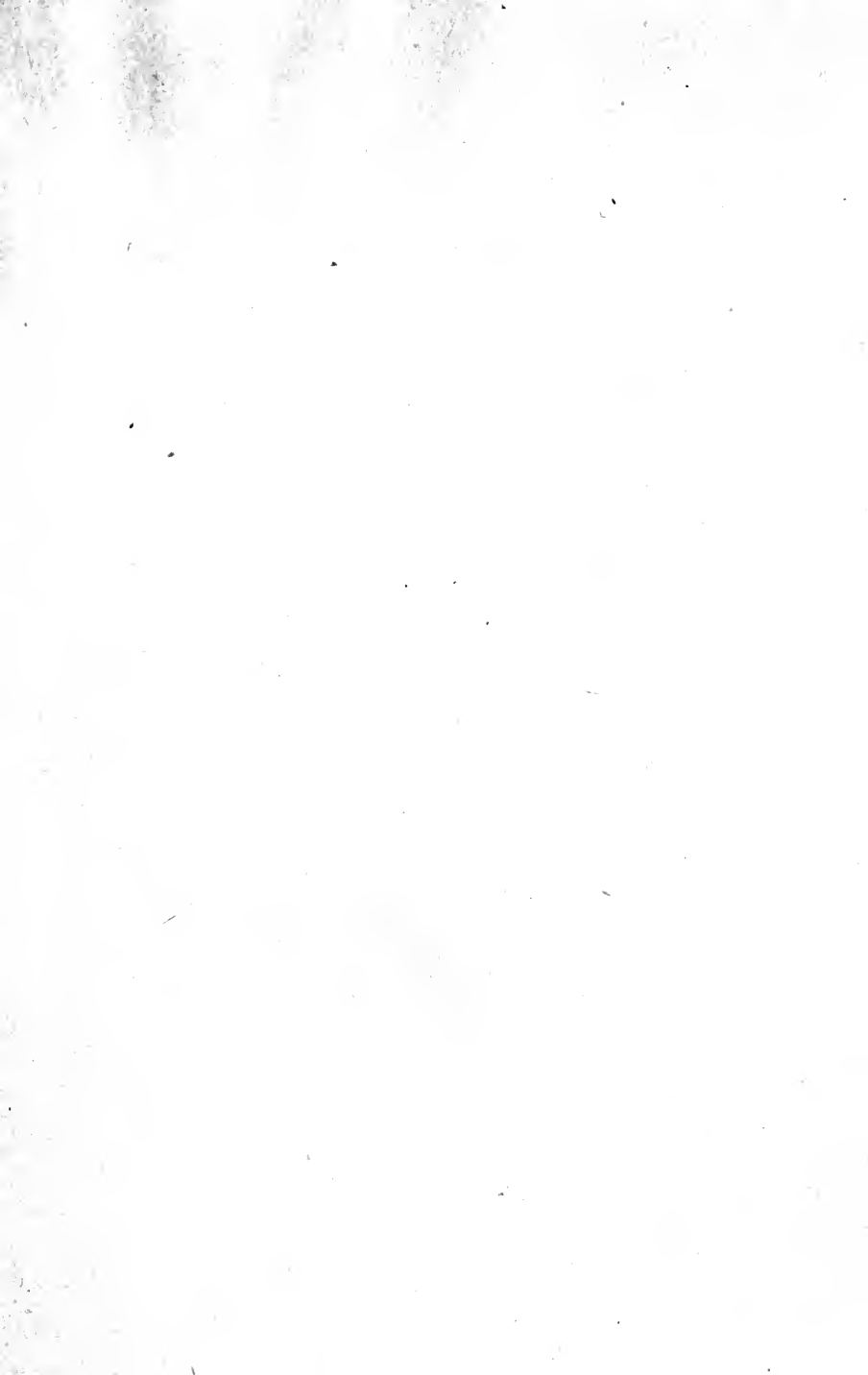


ON THE FRINGE OF THE GREAT FIGHT

BY COLONEL GEORGE G. NASMITH, C.M.G.





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ON THE FRINGE OF THE GREAT FIGHT



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COLONEL GEORGE G. NASMITH, C.M.G.

ON THE FRINGE OF THE GREAT FIGHT

By
COLONEL GEORGE G. NASMITH, C.M.G.

UNIV. OF
CALIFORNIA



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TO
MY WAR BRIDE

M15379



IN FLANDERS FIELDS

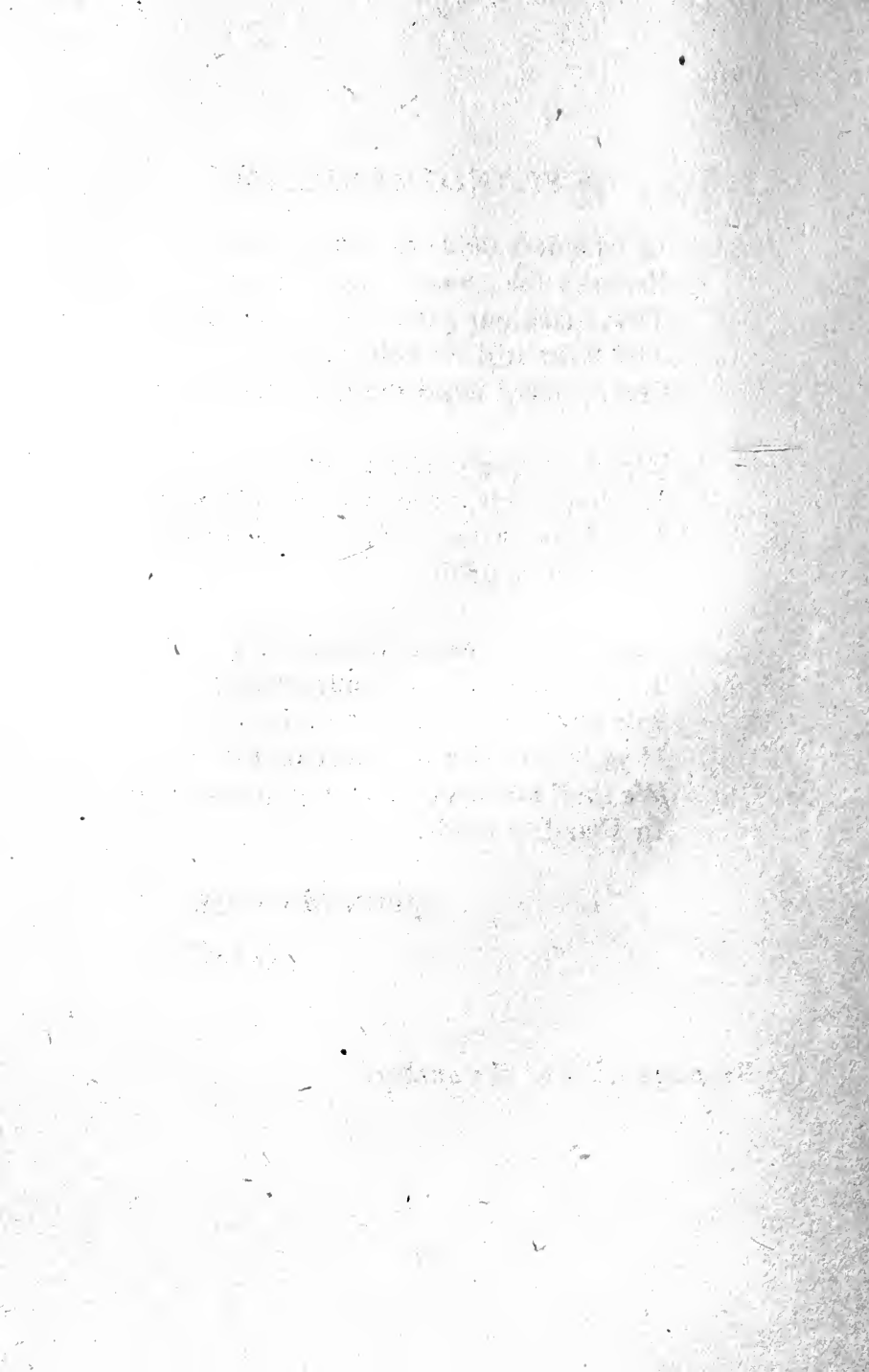
In Flanders fields the poppies grow,
Between the crosses, row on row,
That mark our place, and in the sky
The larks still bravely singing fly,
Scarce heard amid the guns below.

We are the dead, short days ago
We lived, felt dawn, saw sunsets glow,
Loved and were loved, and now we lie
In Flanders fields.

Take up our quarrel with the foe.
To you from failing hands we throw
The torch: be yours to hold it high.
If ye break faith with us who die
We shall not sleep, though poppies blow
In Flanders fields.

JOHN MACCRAE,
(Lt.-Col.)

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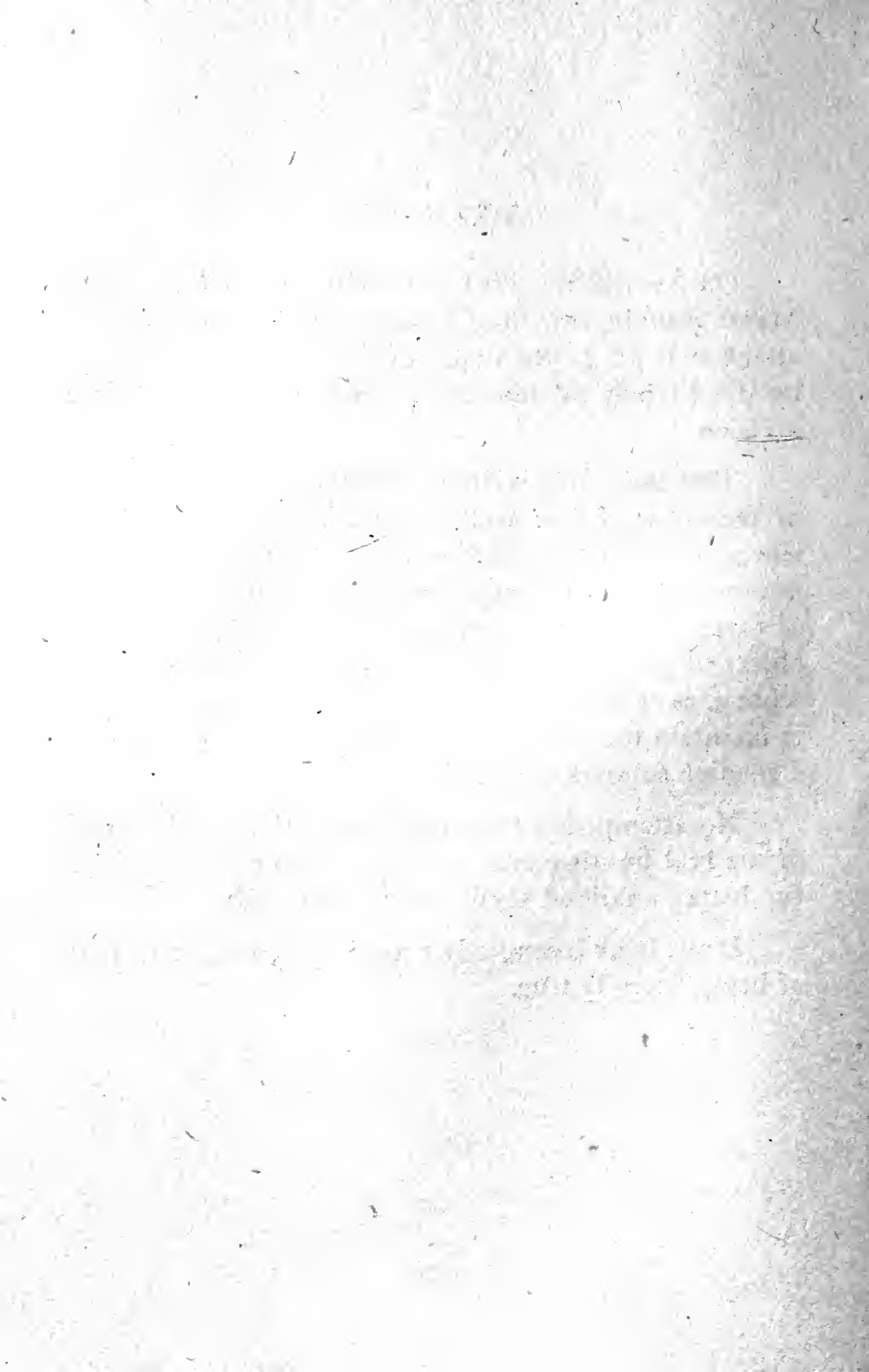
PREFACE

On April 22nd, 1915, the writer, in company with Major Rankin, saw the Germans launch their first gas attack near St. Julien upon the section of the line held by the French colonial troops and the first Canadian division.

This book was written primarily for the purpose of recording this as well as some of the other experiences of the first Canadian division as seen from the unusual angle of a scientist, in the course of 18,000 miles of travel in the front line area. It had the secondary object of giving the average reader some insight into what goes on behind the lines, and the means employed to maintain the health and efficiency of the British and Canadian soldiers in the field.

No attempt has been made to deal with the work of the real fighting men on land and in the air; others far better qualified than I are doing that.

If the book has no other merit, it has, at least, that of being literally true.



ON THE FRINGE OF THE GREAT FIGHT

CHAPTER I.

ON THE ROAD TO A GREAT ADVENTURE.

IT began with a wish. That takes me back to a pleasant day in early August, 1914, and a verandah at Ravenscrag, Muskoka—a broad, cool, verandah overlooking dancing dark waters. A light breeze stirred the leaves and gently wafted to us the smell of the pines and the woods, mingled with the sweet odours of the scented geranium, verbena, and nicotine in the rock-girt garden. But my mind was far removed from the peacefulness of my immediate surroundings: the newspaper I held in my hand was filled with kaleidoscopic descriptions of the great European tumult. Unconsciously I voiced aloud the thought that was uppermost in my mind: "I would gladly give ten years of my life if I could serve my country in this war." "Do not say that," warned my hostess, looking up from her magazine, "for everything comes to you on a wish," and nothing more was said of the matter at the time.

That day was a very quiet one with our little house-party. We made our usual launch trip through the lakes but nobody talked much. Each was busy with his own thoughts, wondering what England could do in the great emergency. Could she, or could she not, save France from the invading hosts of Germany? And deeper in each mind was the unspoken fear, "Perhaps it is already too late to save France—perhaps, even now, the question is 'Can England save herself?'"

ON THE FRINGE OF THE GREAT FIGHT

The great depression in men's minds during those early days of the war when the bottom seemed to have dropped out of life and men strove to grasp at something upon which to reconstruct a new system of thought and life and work, had enveloped us like a chill evening mist.

Those were ghastly days. While France, Russia and England were feverishly mobilizing, the brave little force of Belgians was being steadily rolled up by the perfectly equipped German war machine and the road to France hourly becoming easier. England had commissioned K. of K. to gather together a civilian army of three million men, and Canada had called for one division to be mobilized at Valcartier Camp, a place somewhere in the Laurentian Hills near the city of Quebec. Little did any of us dream how prophetic was to be that apparently chance remark of our hostess. But the first greeting from the maid when we reached home that evening was, "There is a long distance call for you, sir." The Minister of Militia had asked me to report in Ottawa immediately. Next morning I waved my friends, "Au revoir." That return was far from being as speedy as we expected, for my wish very shortly came true.

The greeting of the Minister of Militia, Sir Sam Hughes, as he turned from the desk where he sat in shirt-sleeves, with typewriters on all sides of him, was a cordial handshake and a slap on the back. Would I go down to the new camp at Valcartier and look after the purification of the water supply? I was delighted to get the chance.

ON THE ROAD TO A GREAT ADVENTURE

A short wait at the office gave me a splendid opportunity of seeing a military headquarters office in operation. Officers of all ranks, from Generals to Majors, hurried in one after another to obtain permission to do this or that; prominent men anxious to do anything they might to assist in the great crisis, crowded the office. Telephone conversations, telegrams, cables, interviews, dictation of letters, reading of letters aloud—to watch or listen to the incessant commingling of all these, with the Minister of Militia as the centre of energy, was a unique experience for me. Sir Sam cracked jokes, dictated letters, swore at the telephone operator, and carried on conversation with a number of persons—all at the same time. It was a marvellous demonstration of what a man could do in an emergency, if he happened to be the right man—the man who not only knew what needed to be done but had sufficient force of character and driving power to convert his decisions into practical achievements.

The following night on our return from an inspection of the new camp at Valcartier I stood near the citadel in Quebec watching the moving lights on the St. Lawrence far below. As I looked the flashes of a powerful searchlight swept the river, lighting up the opposite shores and playing upon the craft in the river. This was the first concrete evidence I had that our country was at war; it was also a reminder that there was even a possibility that Quebec might be attacked from the sea.

Of the growth of that wonderful camp, of our experiences there, of the training and equipping of

ON THE FRINGE OF THE GREAT FIGHT

33,000 men, of the struggles for position, and of the numerous disappointments and bitternesses because all could not go, I will not here attempt to speak. There was a great deal to do and to learn and the time passed quickly. It had been decided that I was to accompany the contingent as adviser in sanitation and in charge of the water supply, and, despite all delays and disappointments, the day did finally come when we drove in to Quebec to board our steamer for England.

At midnight, the *Franconia* slipped slowly and silently away from the dock. Only three were there to bid us farewell—a man and two women,—and though they sang with great enthusiasm, “It’s a Long, Long Way to Tipperary,” the effect was melancholy. Imperceptibly the pier and the lights of the city receded and we steamed on down the mighty St. Lawrence to our trysting place on the sea. The second morning afterwards we woke to find ourselves riding quietly at anchor in the sunny harbour of Gaspé, with all the other transports anchored about us, together with four long grey gunboats,—our escort upon the road to our great adventure.

The brilliant afternoon sun of a typical Canadian Autumn day shone down upon Gaspé basin. Idly we lounged about the decks, gazing at the shores with their little white fishermen’s cottages, or at the thirty odd troopships, and the four grey gunboats which studded the harbour. The surface of the water was rippled by a light breeze and all was quiet and peaceful in the shelter of that sunny haven. Even the gulls, gorged with the waste food from the ships, swam lazily about or flapped idly hither and thither.

ON THE ROAD TO A GREAT ADVENTURE

My gaze had fixed itself upon the nearest of the lean, grey gunboats. As I watched, the sleeping greyhound seemed to move; in another moment the seeming illusion gave way to certainty—it *was* moving; gradually its pace accelerated and it slipped quietly out toward the open sea. A second gunboat followed, then a third, all making for the open. Immediately we were all excitement, for the rumour had been current that we might be there for several days. But the rumour was speedily disproved as the rattle of anchor chains became audible from the transports nearest the harbour mouth, and one by one they followed their little grey guides; and so, at three of the clock on October the third, 1914, the First Canadian Contingent with guns, ammunition, horses and equipment, left Gaspé en route to the great war.

Gradually method evolved itself out of apparent chaos. Three gunboats took the lead and the transports fell into line about a thousand yards from one another, so that eventually three lines were formed of about a dozen in each and the whole fleet moved forward into the Atlantic. The shores of Gaspé, dotted with white cottages; yellow stubble fields; hills red and purple with autumnal foliage—these were our last pictures of Canada—truly the last that many of us were ever to see, and we looked upon them, our hearts filled with emotions that these scenes had never given rise to before. Our ruddy Canadian emblem, the maple leaf, gave its characteristic tinge to the receding shores—a colour to be seen often on the field of battle, but never in the foliage of a European landscape.

ON THE FRINGE OF THE GREAT FIGHT

We were making history; the great epoch-making enterprise of our young country was taking place—an undertaking that would go down in the annals of the Empire of Great Britain as a great incident of the period when the young cubs raced to the assistance of the old lion in her hour of need—this we realized. And yet it was hard to realize that we were actually fortunate enough to be taking part in an expedition, the like of which never was before, and probably never will be again. Never before had there been gathered together a fleet of transports of such magnitude—a fleet consisting of 33 transports carrying 33,000 men, 7,000 horses and all the motors, waggons and equipment necessary to place in the field not only a complete infantry division, and a cavalry brigade, but in addition to provide for the necessary reserves.

At night we steamed along like phantom ships. All windows and port holes were carefully screened so that one might walk the deck and see not a single ray of light to reveal the whereabouts of the accompanying vessels.

Off Newfoundland as our three lines of ships were ploughing along, about a mile and a half apart, we picked up H.M.S. "Glory" which took a position about ten miles away on our right. Our ship, the "Franconia," the flagship of the fleet, had the headquarter staff, the 90th Regiment of Winnipeg, and a number of nurses on board, and she held place in the centre of the middle line.

How an orderly fleet could be immediately dis-

ON THE ROAD TO A GREAT ADVENTURE

organized was well demonstrated one morning when our whistle blew sharply several times "Man Overboard." As we slowed down, with throbbing engines reversed churning the ocean into foam, we could see the tiny speck (a man's head) floating by. While our lifeboat was being lowered and the man was being rescued, the three lines of transports buckled and the ships see-sawed to right and left in their efforts to avoid collisions.

The man proved to be a painter who, unobserved, had fallen off the "Royal Edward" in front of us, and but for the vigilance of the lookout on our ship, would undoubtedly have perished.

There seemed to be about a thousand nurses aboard the Franconia—the real number was about a hundred but they multiplied by their ubiquity; they swarmed everywhere; sometimes they filled the lounge so that the poor Major or Colonel could not get in for his afternoon cup of tea. The daily lectures for officers, particularly on subjects like "artillery range finding" had an abnormal fascination for the nurses while subjects like "the Geneva Convention" and "Hygiene" which they might have found useful held little attraction for them. Such is the perversity of the nurse when given the rank of an officer and freed from all hospital restraint. At the concerts few officers could obtain seats and a few of us were mean enough to wish that it would get rough enough to put some of the nurses temporarily down and out. The nurses were in a doubly fortunate position in that they could demand the rights of both

ON THE FRINGE OF THE GREAT FIGHT

officers and women, according to which happened to be advantageous at the moment.

The 90th Regiment "the little black devils" of Winnipeg was a very fine body of men indeed; they were drilled by the hour on the decks, and were given lectures. They entertained themselves in their spare time by getting up boxing bouts and concerts. The antics of a bear cub and a monkey, the battalion mascots, amused the men for many hours at a time.

One night the officers gave a dinner party. The first plan was to invite no nurses at all. Then other counsels prevailed and invitations were to be given to a limited number. As this would have caused all sorts of petty jealousies and heart burnings, a compromise was effected by—asking them all.

The dinner was a great success. An eight-piece band, for which the instruments had been purchased the day before we left Quebec, had been practising assiduously on the upper deck for days with effects of a most weird character, and there made its first public appearance. With the aid of a pipe band it helped to drown the popping of corks and the various other noises due to the consumption of many bottles of champagne and hock. The dinner was followed by a dance and the nurses were allowed to stay up till midnight instead of being chased to bed at the usual hour of ten o'clock.

One of the unique and most interesting occasions of the trip was when the famous battle cruiser, the "Queen Mary" came up about dusk one evening and ran through our lines amid great excitement. This was the battle cruiser that had not long before convert-

ON THE ROAD TO A GREAT ADVENTURE

ed the German cruiser "Emden" into a mass of twisted iron in a few minutes. As she steamed slowly by she presented one of the finest spectacles I have ever seen. Somehow nothing in the world looks as efficient for its particular job as a battle cruiser; it is the personification of power and beauty.

One morning at six o'clock a light was discovered in the distance. Someone said it was the light-house off Land's End. So it proved. By eight o'clock we could make out clearly the coast of Cornwall. As the land grew nearer the famous Eddystone Lighthouse came into view, and, making a great sweep around it, instead of running for Southampton as we all had expected, we headed for Plymouth. A number of torpedo boats, commonly called "Ocean Lice," accompanied us for the last few miles, as a protection against submarines.

The approach to Plymouth was wonderfully soothing. The hills covered with beautiful foliage in shades of brown and olive green were a most restful change from the monotony of the sea. A marked contrast to the peacefulness of the countryside were the fortifications everywhere visible commanding the approach to perhaps the most strongly fortified port in Southern England. With the possible exception of Sydney, Australia, Plymouth is said to be the most beautiful harbour in the Empire. One could well believe it.

Tugs puffed out to meet us, pilots climbed aboard, and we slowly steamed up the long sinuous channel, past Edgecombe to Davenport. All the warships being built or equipped, the forts, the training ships and the

ON THE FRINGE OF THE GREAT FIGHT

docks, indeed every point of vantage was thronged with cheering crowds of people,—civilians, soldiers and sailors. Cheer after cheer from our Canadian soldiers responded to those from our English friends as we slowly made our way up the channel. It seemed as though everybody had gone crazy.

It was a never-to-be-forgotten reception; we felt that we were indeed a part of the Empire in spirit as well as in name. About three o'clock we came to anchor, and during the afternoon ship after ship followed in and anchored alongside. At night we crowded up even closer to give the late-comers room. For the first time on our trip the vessels were all brilliantly illuminated, the bands played, the giddy ones danced, and all were happy to be once again in sight of solid land. At dinner the commandant, Col. Williams, made a speech and called for three cheers for our Captain, and never, I suppose, did any other Captain receive such hearty cheers and such a tremendous "tiger." It was the culmination of a marvellous and historic trip.

The trip to Salisbury by motor next day was a dream—a dream of hedges and great trees meeting overhead; of hills and valleys with little thatched cottages and villages nestling in them, of beautiful estates and sheep, of quaint old English farms, of ancient towns and villages. Through Ivy Bridge and Honiton to Exeter, where we stopped to see the beautiful old Cathedral, so warm and rich in colouring and passing by one long series of beautiful pictures, in perhaps the most charming pastoral landscape in the world, we came to the white-scarred edge of the famous Salisbury Plain.

CHAPTER II.

ON SALISBURY PLAINS.

IT was on the 15th of October that we landed in Plymouth. A few days later the whole of the 33,000 (with the exception of a few errant knights who had gone off on independent pilgrimages) were more or less settled on Salisbury Plain. The force was divided into four distinct camps miles apart. One infantry brigade and the headquarters staff was stationed at Bustard Camp; one section was camped a couple of miles away, at West Down South; a third at West Down North still farther away, and the fourth at Pond Farm about five miles from Bustard. Convenience of water supplies and arrangements for the administration of the forces made these divisions necessary.

The plains of Salisbury, ideal for summer military camps, are rolling, prairie-like lands stretching for miles, broken by a very occasional farm house or by plantations of trees called "spinneys." A thin layer of earth and turf covered the chalk which was hundreds of feet in depth; at any spot a blow with a pick would bring up the white chalk filled with black flints. The hills by which the plains were reached rose sharply from the surface of Wiltshire, so that Salisbury Plain itself could be easily distinguished miles away by the white, water worn rifts in the hillsides.

When we first arrived the plains gave promise of being a fine camping ground. Tents were pitched,

ON THE FRINGE OF THE GREAT FIGHT

canteens opened, work was begun and our boys settled down impatiently to receive the further training necessary before passing over to that Mecca to which one and all looked forward—the battle grounds of Flanders.

For a few days all went well; then it began to rain. About the middle of November it settled down in earnest and rained steadily for a month; sometimes it merely drizzled, at other times it poured; but it never stopped, except for an hour or so. The constant tramp of many feet speedily churned into mud the clay turf overlaying the chalk, and the rain could not percolate through this mixture as it did the unbroken sod. In a few days the mud was one inch—four inches—and even a foot deep. Many a time I waded through mud up to my knees.

The smooth English roads, lacking depth of road-metal, were speedily torn to pieces by the heavy traffic of motors and steam traction engines. Passing cars and lorries sprayed the hedges with a thin mud-emulsion formed from the road binder, and exposed the sharp flints which, like so much broken glass, tore to pieces the tires of the motors.

Cold high winds, saturated with moisture, accompanied the rain and searched one's very marrow. Nothing would exclude these sea breezes but skin or fur coats, and though accustomed to a severe climate, we Canadians felt the cold in England as we never had at home. Sometimes the temperature fell below the freezing point, and occasionally we had sleet, hail or snow for variety. Tents were often blown down by the hundreds, and it was a never-to-be-forgotten sight

ON SALISBURY PLAINS

watching a small army of soldiers trying to hold and pin down some of the large mess tents, while rope after rope snapped under the straining of the flapping canvas. One day the post office tent collapsed, and some of the mail disappeared into the heavens, never to return.

The officers of the headquarter staff were fairly comfortable in comparison to the others. Our tents were pitched in a quadrangle formed by four rows of trees and scrub, which had evidently been planted around the site of a former house and served to break the high winds. Each officer had a tent with a wooden floor. Mine was carpeted with an extra blanket to exclude draughts and make it feel comfortable under one's bare feet in the morning. The tent was heated by an oil stove which was kept burning night and day; and at night I slept snug and warm in the interior of a Jaeger sleeping blanket in a Wolseley kit. My batman, Karner, had made a table from some boxes and boards which he had picked up, I know not where. It is unwise to ask your batman too many foolish questions as to the origin of things,—take what he gives you and be thankful.

This table covered with another blanket, served to support a splendid brass lamp with a green silk shade, for which I had paid a fabulous sum in Salisbury town. It also held some books, brushes, and other necessities. A shelf underneath displayed a little brass kettle and other paraphernalia for making tea, while my other books were arranged in a neat row beneath.

The tents were wet all the time, and the clothes and blankets of the men soon became water soaked and

ON THE FRINGE OF THE GREAT FIGHT

remained so for weeks at a stretch for they had no stoves or other facilities for drying them. But Tommy, the resourceful, learned that he could get warm by the simple process of wrapping himself up in wet blankets and steaming as he would in a Turkish bath,—with himself as the heater. He also discovered that a pair of wet socks, well wrung out and placed next his chest at night would be half dry in the morning. He had to sleep in a bell tent with seven others, radiating like spokes of a wheel from the centre tent pole. He had nothing to give him any comfort whatever.

It was impossible to do any work, even route marching, and, having nothing to do but lie around and think of himself, Tommy began to grouse. Each camp had become a morass with mud a foot deep, and Tommy looked out upon it and behold it was not good, and he cursed both loud and long whoever he thought might be responsible for the conditions, and particularly Emperor Bill the cause of it all. The Canadian contingent had begun a process of mildewing.

One felt sorry for the poor horses. Picketed in the open plain or in the partial shelter of the occasional "spinneys," they stood with ears drooping and tails to the wind, pictures of dejection. No doubt they, too, cursed the Kaiser. Their feet became soft from standing idly in the mud, and in a good many cases had become diseased; in general they went off badly in condition. Standing orders prohibited the cutting down of a bush or tree on Salisbury Plain, but in the night time we could sometimes hear the familiar sound of an axe meeting standing timber, and one could guess that

ON SALISBURY PLAINS

Tommy, in his desire for wood to build a fire, and regardless of rules, had grown desperate. As one of them said to Rudyard Kipling when he was down visiting them, "What were trees for if they were not to be cut down?"

Towards the middle of December, one evening there was a sharp tap on the tent of Capt. Haywood, Medical Officer of the third (Toronto) Battalion.

"Come in" he cried.

The laces were undone and Sergeant Kipple stepped into the tent. The Sergeant was a good man—an old soldier and reliable as the proverbial watch.

"Well, what is it?" said the M. O.

"I want you to give me somethink to buck me up" said the Sergeant in a tearful voice.

"But what is the matter?" said the M. O. "Have you a cold?"

"No, I aint got no cold" he said, "I just wants somethink to buck me up; some qui-nine or somethink."

"But what's the matter?" persisted the M. O. "What do you want it for?"

"Nothing's wrong with me" said the sergeant, "I jist want somethink to buck me up; this rine is getting on me nerves. It rines all day, and me clothes 'aven't been dry for a month—if I go out I get more wet. All day long I 'ave to splash about in the blinkin' mud and rine. At night I cawnt go to sleep. Me clothes are wet; me blankets are soaked. I 'ears the bl—rine coming down on the bl—tent which leaks all over; it makes a 'ell of a noise on the tent and I cawnt sleep. I gets up in the morning and 'ave to do me work and do

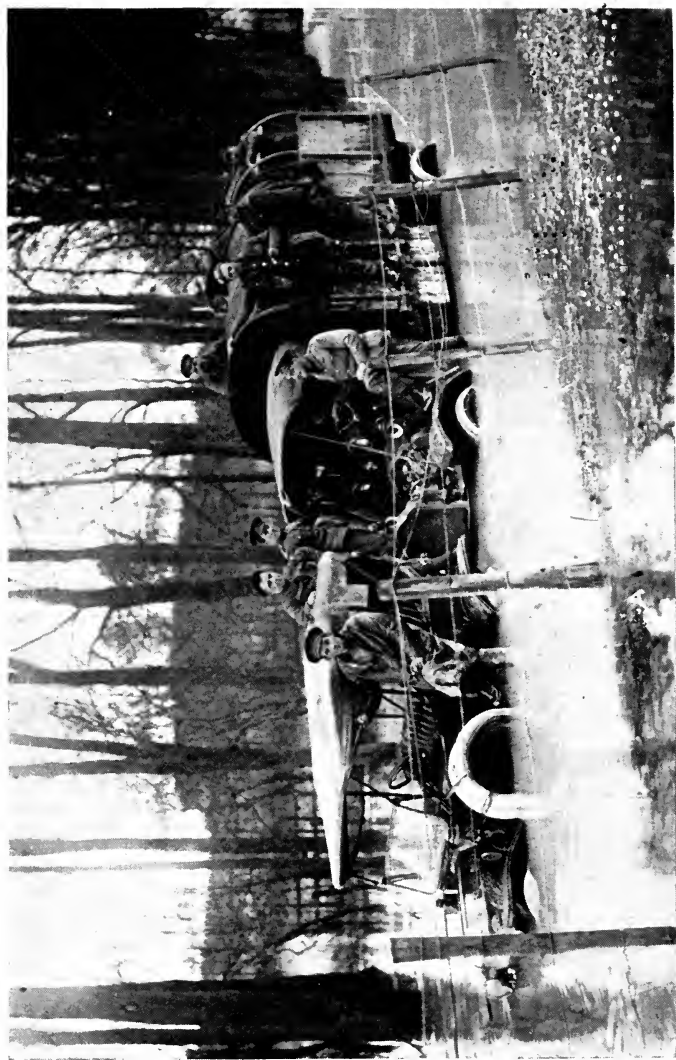
ON THE FRINGE OF THE GREAT FIGHT

me dooty. But Doc, it's gettin' me goat. I feel like cutting me bl— throat. I 'ave 'ad thirteen years in the awmy and 'ave me good conduc stripes. I 'ave a wife and two kids at 'ome. I didn't come over 'ere to drown; I came over to fight. I wants to do me work but I cawnt do it. If you don't give me somethink Doc I am afraid I'll cut me bloody throat and I don't want to die. Cawn't you give me somethink to buck me up, Doc please?"

The Doc did give him something, and between that and a little judicious "jollyng" Kipple was a different man in a few days.

Of course there was trouble. The contingent was going through a rough experience, and to most of us Salisbury Plain was becoming a nightmare. A fairly large number of the men were given leave, and an equally large number took French leave. The latter migrated in large numbers to the little villages around the outskirts of the plain where they settled down to a few days' comfort before they were rounded up by the military police.

Some went to London, and, worshipping at the shrines of Venus and Bacchus, forgot about the war, and tarried in the fascinating metropolis. Others sought a few hours' respite and forgetfulness in the town of Salisbury, where they hobnobbed with their British confreres and treated them to various drinks. At times the British Tommy, stung at the flaunting of pound notes where he had only shillings, smote his colonial brother, and bloody battles resulted in consequence thereof.



MECHANICAL TRANSPORTS IN SALISBURY FLOODS.

ON SALISBURY PLAINS

It was a curious fact that it was the Englishman who had gone out to Canada a few years before and now returned as a Canadian, who was the chief offender in this respect. He had gained a new airiness and sense of freedom which he was proud of, and it brought him into trouble. My own chauffeur, an Englishman, was the invariable champion of all American cars as compared with English cars, which he delighted in saying were from three to four years behind the times. This same man four years before had been working on automobiles in London, where he was born.

At one stage it looked as if the force was undergoing a process of decomposition, and would disintegrate. The morale of the men under the very depressing conditions which existed, had almost gone and they did not care what happened them. Privates, perhaps college men or wealthy business men in Canada, frankly said when arrested, that they were quite willing to pay the price, but that they had determined to get warm and dry once more before they were drowned in the mud. It is an easy matter to handle a few cases of this sort, but when you get hundreds of them little can be done, and threats, fines and punishments were of little avail in correcting the existing state of affairs.

As a matter of fact, under the conditions the military authorities were hard put to it to control the situation. Each night the motor lorries returned loaded with men under arrest, and each day an equally large number left the camp to undergo the same experience.

All the time the wastage went on. One soldier fell off a cart and fractured his skull; another had his

ON THE FRINGE OF THE GREAT FIGHT

legs amputated by a lorry; a third was accidentally shot, and another committed suicide. It is astonishing how many accidents can occur among 30,000 men.

New huts were being built at Larkhill, near the ancient Phœnician remains called Stonehenge, but the progress made was so slow that finally our men were put on the job, and the huts began to go up like mushrooms. Hundreds of Canadians, belonging to Highland and other regiments, built roads, huts, and other works, in a country apparently filled with labouring men with no intention of ever going to war, and who, in fact, often did not believe that there was a war. We all felt somewhat relieved one night when we heard that the German fleet was bombarding the English coast, hoping that it would shake the country out of its feeling of smug self-complacency and lethargy.

On November 20th, there were 150 men in our hospital at Bulford Manor; three weeks later there were 780. It had rained every day in the interval, and there was a great deal of influenza and bronchial troubles, which made splendid foundation for attacks of other diseases.

Towards the end of the year the men began to move into the new huts at Larkhill. We had already officially forecasted in black and white, that the huts, being raised from the ground, would be colder to sleep in, and whereas there had been only eight men in the tent to be infected should one man become ill with a communicable disease, there would now be forty in each hut; and that in consequence we should expect a great increase in illness from such diseases. And there was.

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It began to increase as soon as the men got into the huts. These huts were heated with stoves, and fuel was provided. Consequently the men, before going to bed, got the stoves red hot, closed and sealed the windows with paper, contrary to standing orders, and went to bed with the huts overheated. When the stoves went out the huts cooled down and the usual story one heard was of the men waking at three or four in the morning cold and shivering. The heat also served to shrink the floor boards so that the draughts came through and made matters worse.

Then the scare came. Prior to this the report of an odd case of cerebro-spinal meningitis had not occasioned any concern. Under these menacing conditions cases of the disease became more numerous and when Col. Strange died of it uneasiness culminated in real alarm.

My proposed trip to Scotland for Christmas was postponed and instead I was sent up to London to get an expert bacteriologist on the disease and arrange to start a laboratory. The object was to see what could be done in locating "carriers" of the disease germ, and thereby keep the disease from spreading. Accordingly, on the day before Christmas, I arranged with the Director of the Lister Institute for the loan of Dr. Arkwright of his staff and for the necessary apparatus to equip a laboratory at Bulford Cottage Hospital. It was a forlorn hope, but it was the only thing that could be done to try to get this elusive disease under control. I spent Christmas day in camp, and it was a melancholy day indeed. The men were all well looked after, and for

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those in the hospitals the day was made as bright as possible. It seemed years since we had left Canada.

When we brought down the bacteriological apparatus by passenger train a few days later we paid excess baggage on 780 pounds but we got it through. It took five men to shove the trucks containing the boxes, and we held the connecting train for five minutes at Salisbury Junction until we made the transfer. This saved time, for the London people would not guarantee delivery for five weeks.

The epidemic of cerebro-spinal meningitis proved to be a blessing in disguise, for it educated both combatant officers and men as to the necessity of observing certain simple precautions to prevent the spread of any contagious disease; and it also showed them that when disease once got out of hand it would be possible to put whole battalions *hors de combat*. Col. Mercer kept his brigade moving about on the sod in tents all winter, and as a result, there was very much less sickness in his brigade than in the other brigades housed in huts.

Then nature came to our rescue, and took a hand in the game. The rains grew less frequent; the sun put in an occasional appearance; training was begun once more, and a rapid improvement was immediately apparent in the men. Again the sound of singing was heard in the tents at night and on route marches; and again one began to see smiling faces. With the improvement in weather conditions, training went briskly on, and the division began to rapidly round into shape.

Meanwhile the artillery and cavalry had gone into

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billets in the surrounding villages, and were behaving splendidly. The people took to them very kindly, and the men themselves looked so clean and happy that it was difficult to realize that they were the same unkempt, dirty individuals who had been seen not so long before wading through the mud and filth of the plains.

All sorts of rumours were current. A favorite one was that we were to go to Egypt to finish our training there. Another one whispered among the staff was that we would shortly leave for France. The men worked hard at their training, anxious to make good and get to the Front. They had the old Viking spirit of adventure in their blood, and wanted to get to the battle ground. We all knew that many of us would be killed, but we all felt that it would be the other fellow—not ourselves.

After the laboratory had been started, the force had to a large extent been reassured thereby that everything possible was being done that could be done. When, with better weather, the sickness began to abate, I obtained permission from our Surgeon-General to try to get the rest of our men inoculated against typhoid fever. We had arrived in England with 65 per cent. of the men inoculated, and it was my ambition to get them all done before the division left for France.

Accordingly I settled down in the Bear Hotel in the little Wiltshire town of Devizes, the head-quarters of the artillery brigade, and began my educational campaign.

The old Bear Hotel was one of the famous old coaching houses of former days; it had seen much life

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in ye olden times when it had been the chief stopping place of the bloods of London en route to the famous City of Bath and the historic Pump Room. It was a homey-looking old place, with the usual appearance of comfort pertaining to an English Inn, and the maximum amount of discomfort as judged by our modern standards. The food was good, and the fire places looked bright and cheery, like the bar maid behind the polished bar. It was mostly in looks. No wonder that the British people fortify themselves with copious draughts of stimulants to help keep out the cold. There were some magnificent pieces of old furniture and Sheffield plate in the halls—pieces that many a collector had tried in vain to purchase. My room lit by two candles in earthenware candlesticks; and with a fire in a corner grate—at a shilling a day extra—looked cozy enough but the bedroom furniture was ancient and uncomfortable.

The officers of the Artillery Headquarters lived at the hotel, and I took my meals with them. Col. Burstall, the officer commanding, gave me every assistance and issued orders to his officers to aid in every possible way in the campaign.

My object was to educate all the artillery and cavalry units on the danger of using impure water, on typhus fever and how it was conveyed by lice, and on the value and necessity of anti-typhoid inoculation.

The following day I gave my first talk in a large shed in the town, to about 700 artillery men of the first artillery brigade. It was a unique experience, standing on a great stack of boxes of loaded ammunition beside

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Colonel Morrison and the medical officer Lt.-Col. McCrae, talking to the brigade drawn up at attention around us. It was an attentive audience; the men had to listen, though as a matter of fact, they really seemed interested. When paraded next day 370 uninoculated were discovered and given the treatment; the few who refused were sent to the base depot and replaced by others.

The campaign begun so successfully was carried on from day to day. Arrangements were made by telephone or wire with the O. C.'s of the various units, to have their men paraded for my lectures. The weather was frequently wet, and the talks were given in farm yards, village squares, churches, schools, hay-lofts, and open fields. In some instances the units, broken up into small sections, were scattered about the country so that I would have to talk to 50 men at once instead of several hundred.

One of the most unique occasions was the Sunday when I addressed the 3rd Artillery brigade, after church parade in the market square of Market Lavingdon. We arrived early and sat and listened while, from the little stone church high up on the hill above us, drifted the sound of soldiers singing. It was unutterably sad to me to hear the full mellow soldier chorus swelling out on "Onward Christian Soldiers, Marching as to War." One felt that the words must have had to all of them a meaning that they never had had before.

Then the brigade formed up and was played by the village band to the market place where they were drawn up into a square with some gun carriages in the centre.

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When all was ready I mounted a gun carriage and gave my talk with all the earnestness I could muster, while the villagers congregated at one side, stood and gaped, and wondered what it was all about.

My talk had settled down into a 20-minute discourse, and I gave variations of it as often as four times in an afternoon at places 10 miles apart. In this way one saw a good deal of the Wiltshire scenery in the late winter season. It was a never-failing source of wonder and pleasure to me to see the ivy covered banks, the ivy clad trees and the rhododendrons and holly trees in green leaf in the middle of the winter. In the garden at the back of the famous old Elizabethan house in Potterne—a perfect example of the old Tudor timbered style of architecture—cowslips and pansies were in full blossom, and I was told the wild violets were in flower in the woods. The trim, well kept gardens, hedges and fields of the country side and village were a continual delight to a native of Canada where everything in comparison looks so unfinished and in need of trimming. The winter wheat was as green as the new grass of spring time, and many of the meadows also were fairly green. Some shrubs, and in particular an unknown yellow-flowered, leafless vine, were in blossom. I heard afterwards that it was the Jasmine.

During those January days when the sun shone fitfully, some wonderful atmospheric effects were to be seen at times on the plains. For the painter who wanted atmosphere and light and vivid contrasts, that was the place to be, for never did I see elsewhere such wonder-

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ful pastel effects; never such vivid-colored banks of spray and fog.

The little straw-thatched farm houses with their small paned windows frequently filled with flowers in bloom, nestling in gardens and shrubberies and orchards, had a more or less comfortable and homey look during the day time; but at dusk when the light was failing and the lamp light shone through the windows, these farm houses took on a wonderfully attractive and romantic appearance. It made you feel like going to the door and asking for a glass of new milk or a cup of cider; and you had visions of blazing fires in the great fireplace, and brass utensils, hanging from the walls; comfy ingle nooks, old beam ceilings and ancient oak furniture; hams suspended from the kitchen ceilings, and old blue willow pattern plates on the walls. That nothing can give a house such a homelike appearance as a thatched roof and leaded panes, I am perfectly convinced.

To a Canadian the bird-life of the plain was marvellous. There were birds by the tens of thousands. You would see crows settling on a spring wheat field on the open plain by hundreds; you would see starlings in great flocks following the plough, and gulls sometimes literally covered acres of newly ploughed ground.

One day as we approached a hamlet near Netheravon, I fancied I was witnessing an optical illusion: the whole surface of a field was covered with black and white, vibrating as though waves were passing over it. When we came nearer we saw that the field was covered so thick with gulls that the ground was hidden. The gull was a small white variety about the

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size of a pigeon, with a black ruff around its neck. The wave-like motion was made by the birds digging away in the newly turned earth for worms and larvæ; judging by the way they worked, they must have cleaned up millions of them.

Then there were robins, thrushes, magpies, and scores of other birds which were unfamiliar to us, while later on the larks spiralled with delirious songs into the sky. The pheasants were so tame they would scarcely get out of the way of a passing car.

Salisbury Plain had evidently been the site of many an armed camp and had probably seen many a battle since the time of the Romans. The archæologists in charge of the unearthing of "Old Sarum," perhaps the most ancient remains of a city in Great Britain, have, during the last ten years, found many wonderful things. Old Sarum is situated about two miles from the present city of Salisbury on the plain. It was built on the top of an enormous circular mound of earth several hundred yards in diameter, and was supposed to have been surrounded by the usual fosse and ditch. Roman, Saxon and Norman remains have been, and are still being, found, as the stonework of walls and buildings is being uncovered. It is supposed that much of the original stone was used in the 12th century to build the present cathedral of Salisbury.

One day at the opposite side of the plain toward Tinhead, Colonel (now General) Panet, of the horse artillery, took me out to see the enormous white horse cut in the chalk in the face of the hill ascending to Salisbury Plain. The figure, representing King Al-

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fred's famous white charger is supposed to have been carved in King Alfred's time, to celebrate a famous victory in the neighborhood. The natives have kept the figure ever since carved white on the hillside by the simple process of digging away the surface earth and sod, and leaving the underlying chalk exposed.

Stonehenge, situated in the middle of the plain, is one of the weirdest and most interesting sights of England. It consists of two series of colossal stone columns arranged in circles with the lower ends stuck in the ground, and the upper ends supporting huge slabs of stone placed across them. A few of the stones have fallen, and lie prone upon the ground. Perhaps no relics in the world have caused more wonder and evoked more speculation in the lay and scientific mind than these curious stones standing in the middle of the plain, miles from any town. Books have been written about them. They are supposed to be of Phœnician origin. Each stone weighing many tons, must have been brought a great distance, and suggest the use of powerful means of transport not known to-day. Hundreds of thousands of people have travelled to Stonehenge and have gone away but little wiser than when they came. What the stones were for no man knows; he can only speculate and wonder.

All over the plain, too, are gently rising circular mounds called "barrows" supposed to be Roman burial places. It is against the law to dig into them or damage them in any way, just as it is unlawful to harm one of the rabbits or hares, which abound on the plains. England has laws to cover all contingencies.

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In about two weeks I had completed my campaign, and returned to Bustard Camp where I rounded out my course by lecturing to the officers of the various infantry brigades with the exception of the Highlanders. In this way, though the returns were not quite completed before the division left for France, it was estimated that 97 per cent. of the men had been inoculated against typhoid fever.

During that winter the difficulties of the medical service were very great. At the beginning of December the manor house at Bulford was obtained as a nucleus for a hospital and was equipped and manned by number one general hospital. Across the way from the manor was a field which was utilized as a tent hospital for venereal diseases. Then some new cottages just being completed about 200 yards away were obtained and equipped; two other houses at different places about two miles apart were requisitioned and finally the riding school at Netheravon was taken over as well as some shacks for hospital purposes.

The hospital, therefore, consisted of six distinct units spread over a five-mile area, and all operated by the same hospital staff. It was very difficult from the standpoint of administration, though it was excellent training for the personnel of the hospital. At the beginning it was difficult to obtain drugs. The transportation of sick men from Pond Farm camp to Netheravon a distance of about 16 miles over very rough roads in rain and cold can be better imagined than described. And yet it was the best that could be done under the circumstances. Salisbury Plain is a great rolling field without

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town or village and the places chosen were the nearest and in fact the only places, that could be found reasonably close to the camp suitable for hospital purposes.

We had been reviewed by Lord Roberts and the King early after our arrival, and now it was rumoured that the King would review us again. Inspections of various sorts became a daily occurrence; inspectors from the War Office came down and condemned nearly everything we had including motor and horse transport, harness and other equipment. Later on we realized that it had been very wise to sacrifice a few score thousands of dollars worth of equipment in England in order that standard parts and replacements of equipment could be obtained at any time in the field and the efficiency of the force thereby maintained at all times. The authorities were much wiser than we knew.

Of course it rained on the morning of the day that the King came down to review the Division; at breakfast the rain hammered the tin roof of our mess room at Bustard Camp like so many hailstones and the outlook was most gloomy. Later on it cleared, and when the guns boomed out the royal salute announcing the arrival of His Majesty, the rain had entirely ceased.

A review by the King in war time is a pretty sure indication that the division will move shortly. I had an excellent point of vantage on a little hill opposite the saluting base where the King and Lord Kitchener stood. That review was the real thing. It lacked, perhaps, something of the wildness of the review that took place on the sandy plains of Valcartier, but it had a dignity that was very inspiring.

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Only the division that was actually going across was reviewed. One felt that it was the last review that many of the men were ever destined to see and it seemed to be peculiarly fitting that before they left for the field of battle they should see that figure,—the head of the Empire—that stood for freedom and that intangible something that had made them come thousands of miles to fight and, perhaps, to die.

A young officer—Captain Klotz of the third battalion—of German descent and a very fine boy,—sat with me and chatted for a while as we watched the division march past. Although he was orderly officer of his battalion he had not been able to resist the temptation to slip away for the day to see a little of the march past. Poor chap! He was killed at the second battle of Ypres three months afterwards. The first Canadian division as it swung past was certainly a magnificent spectacle and I was quite willing to agree with a General who told me later in the day that though he had been at reviews for many years he had never seen such a fine body of men in the whole of his career. The King and Lord Kitchener both seemed to be greatly impressed with the division.

Finally the time did arrive for the division to leave and one night it disappeared—for Southampton everybody thought—though an officer who had been left behind sick was unable to find any trace of it later on in the day when he arrived at that port. Certainly the British do not tell all they know.

The impedimenta left behind in camp was something to marvel at, and included pianos, a Ford car,

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gramophones, bayonets, rifles and many other things. Why a man should leave behind his rifle, and how he managed to do so without getting caught, will probably always remain a mystery. The first Canadian Division had passed on to the great adventure in Flanders.

CHAPTER III

EARLY WAR DAYS IN LONDON.

IN the early part of our sojourn in England I was sent to London on duty. On the surface the city looked about as usual, except that the taxi-cabs, buildings and squares, were plastered with recruiting posters, the chief ones reading "Your King and Country need you" and "Enlist to-day." After you had read them a couple of thousand times they met your eyes with no more significance than do the bricks in a wall or the people in a crowd.

London at night, however, was much different, because the city was in darkness. The system of darkening adopted was rather amusing, as all the squares and circuses, which in other times were most brilliantly illuminated, now were darker than the streets, the contrast making them, to an aviator, as distinguishable as before. Later on more judgment was used in the control of lighting, as well as many other things in England.

Soldiers were plentiful on the streets and in the theatres, hotels and restaurants,—soldiers on leave from the various camps. But we were more inclined to notice the tens of thousands of physically fit men walking about in civilian clothes. Nobody seemed particularly disturbed about the war. Kitchener was raising his army, and "the Navy, thank God! was in excellent shape. Just wait till the Spring, and Emperor Bill

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would get his bumps. We are willing to go if they need us but not till they do. Why worry?"

In Clubland the difference was very marked—it had been deserted by the younger men, and the clubs sheltered only a few of the older men who had nowhere else to go. For, be it said to the eternal glory of the man-about-town,—the wealthy knut who knew little more perhaps than to run an expensive car, give expensive dinners and get into trouble—the upper class drone—that he was among the first to volunteer and get into active service. Perhaps all he could do was drive a car; if so he did it—drove a London bus out at the front, or a wagon; or did anything else at which he would be useful. Many of the idle rich young men, and the majority of the young titled men of England, rose to the occasion and went out and fought and died, and many now lie buried in Flanders for the sake of Old England—for the freedom of the world.

These posters shouting for recruits somehow did not look like England; they were too hysterical; they were not effective: London, with more posters per head of population than any other city in the Empire, recruited men less swiftly than any other place.

Thousands of sight-seers crowded to the football matches while the newspapers vainly lashed themselves into fury. It was only when Lloyd George asked for more men, and gave convincing reasons that they were needed, that the country responded. Day by day the newspapers made the best of bad news from the front, and day by day did the readers thereof conclude that England was doing well, and they "supposed that she

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would bungle through." No man of prophetic foresight had yet risen to say "This is a life and death struggle for us; we need every man in the country, and every shilling to win the war." The common talk was that we had stepped in to keep our treaty with France and to assist poor Belgium, whose neutrality had been violated. Englishmen did not feel that England's fall was first and last the object of Germany's ambition. They did not realize that Germany saw in England the nation which was always thwarting her and frustrating her desire for "a place in the sun."

Should the theatres be kept open? should German waiters be still allowed in the hotels? should German music be played at Queen's Hall? should horse racing be continued?—these were the questions whose discussion occupied a considerable amount of space in the newspapers. Of course the theatres kept open, German music was played, and horse racing continued: A large section of the public had to be amused, and the livelihood of the actors and actresses and their relatives depended upon it; if all German music were eliminated there would be little left to choose from; and the important racing horse industry could not be allowed to languish on account of a mere vulgar war.

So everything went on as before war-time except that gradually the German waiters disappeared. "Business as usual" was the slogan, for the ordinary business man rather fancied that he belonged to a nation great enough to carry on war as a side issue without seriously altering its daily routine.

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For a while the big hotels and restaurants had a bad time of it, and the management of the Cecil and Savoy thought of closing down. At this trying juncture Sir Sam Hughes, Minister of Militia for Canada, arrived in London and put up at the Savoy; other officers came to see him and stayed there also. Temporary offices were opened; men looking for contracts frequented the place and the Savoy quickly became the Canadian headquarters in London.

Special rates for rooms were given Canadian officers and it was possible to obtain a magnificently furnished, steam-heated room for no more than was paid at other hotels for much inferior accommodation. The Savoy Hotel, warm, comfortable and American like, located at the heart of things, close to the theatre district and the War Office, had a "homey" appeal to us, and it speedily became the centre of all things Canadian in London; and the patronage of the Canadians tided it over a bad financial period.

If you knew that one of your Canadian friends was in London, all you had to do was to sit in the rotunda of the Savoy and watch the door. You would be sure to see him come through those revolving doors some time during the day. In that rotunda I met men whom I went to school with, men who lived in my own city, but whom I had not seen for 20 years; others whom I met there had travelled all over creation since I had last seen them. It soon got to be quite the natural thing to meet old friends in this way.

In theatre land the problem play had disappeared as if by magic. Several attempts to revive former suc-

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cesses of this type proved absolute failures and the plays were quickly withdrawn; now there were real tragedies to think about, and the old threadbare, domestic triangle disappeared from the boards. Revues and musical comedies succeeded, and "The Man Who Stayed at Home" a war spy play was a tremendous success, as were the comedies "When Knights Were Bold" and "Potash and Perlmutter." To be a success a play had to have the merit of real comedy, or touch some national sensibility of the moment.

No new great literature had appeared, nor had the tragedy of the world yet brought forth any great poetry. Monographs on special phases of German character, thought and culture, were plentiful in the bookstalls, and translations of Bernhardi and Treitschke sold in vast numbers.

The love of music, so strong in England, was shown by the crowded attendances at the Queen's Hall and the Albert Hall concerts. A good deal of Russian music was heard, the Russian National Anthem being played on every possible occasion. At the Christmas season not a seat was empty at any of the presentations of the Messiah at Albert Hall. Yet curiously enough England had banished her military bands, one of the most effective aids to recruiting, and it was only after a violent newspaper controversy on the subject had taken place that she used them again.

Down in the city in Cheapside scarcely a uniform was to be seen; the heart of ancient London seemed to beat as usual. In the theatre district at night, particularly on the Strand, Leicester Square and Piccadilly

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Circus, crowds of women promenaded as usual, like spiders hunting for their prey. And the prey was there too, wanting to be hunted.

This is one of the great tragedies of London,—the terrible maelstrom of fallen humanity which is allowed to circulate there year after year, sweeping into its vortex tens and hundreds of thousands of boys and girls, who, but for it, might and probably would escape. In war time when soldiers were involved, it was more terrible than ever, for the results, as the medical men saw them, were disastrous from the military standpoint alone.

From this great ulcer in the heart of London a deadly poison passes far and wide into the national organism. The ulcer is there still for the knife of some strong man to excise, for there is little doubt that though restrictions will not prevent vice, it is equally true that making vice open, enticing and easy, increases it.

During that first winter, tickets for the theatre were sold at half price to men in uniform. On the other hand, an officer's uniform seemed to be the signal for increased prices in the shops, particularly in the smaller ones. A London physician, an officer, told me that when he went shopping he always dressed in civilian clothes because it was so much more economical to shop as a civilian.

The badge "Canada" of course, had been the badge for high prices from the day we landed in Plymouth. It was "Canada, our emblem dear" in very truth. It was well known that the Canadian Tommy received a dollar and ten cents a day, whereas the Bri-

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tish Tommy received only 25 cents, and it was assumed that officers were correspondingly better paid than the British officer, while as a matter of fact, we received less, rank for rank. The question of overcharging Canadians became such a scandal that later on it was brought up in the House of Commons in an endeavour to fix prices for certain commodities in the Canadian Shorncliffe area.

The story is told of a Canadian going into a store and asking the youngster in charge the price of some article. The youngster called up stairs and the answer came back 1s. 10d. "But it is a Canadian" said the child; "Oh, 2s. 6d." came back the answer.

The war in France was but faintly felt in England in those early days. There had been no invasion of English soil such as had galvanized France into a united endeavour to repel the invader. No Zeppelins had yet dropped bombs on England. Great Britain had sent an expedition to France,—“An Expeditionary Force” it was called. The very name did not seem even to suggest a nation in arms. And yet away down underneath it all England was uneasy. Well-informed people whose sons were at the front knew the seriousness of the whole business. Casualties had returned in large numbers, and the rolls of honour published showed the terrible hammering England’s wonderful little army was being subjected to on the continent. Those despised Germans had made great headway, and there were doubts as to whether the French were sufficiently well equipped to stand the tremendous pressure put upon them.

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The battle off Chili had only been wiped out by Sturdee's victory, and the exploits of certain raiders and submarines made the Briton realize that the control of the oceans of the earth was a big undertaking. The rallying of the colonies to his assistance touched him greatly, and made him feel proud; on the other hand, strikes for higher pay in munition factories and ship yards angered and disgusted him.

There was no great leadership anywhere, and the Englishman in his heart of hearts knew it. Lloyd George, whom he acknowledged to be the only genius in the Government, he either idolized or cursed, according to whether he approved of his socialistic ideas or not. Englishmen I talked to, even in France later on, fairly foamed at the mouth when the little Welshman's name was mentioned, and refused to read the "Times" which they said was run by "that traitor Northcliffe." It was all very interesting to us, who hoped against hope that the man who to our perspective was the one great man of vision would be given the opportunity to become the man of action.

It was when one reached the heart of things, the War Office, that one began to realize the undercurrents which were being set up in the national life as a result of the war. In the court yard of the War Office, which was carefully guarded by policemen, were large numbers of women, young and old, waiting for news of son or husband, wounded or killed. The looks on their faces were sufficient evidence of tragedies which were increasing from day to day, and which would eventually waken England. Inside the door was a reception room where

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those who had business of any sort showed their credentials, signed the necessary form, and were sent on to the various departments to charge of a boy scout. Cots in the corridors, and specially walled-off offices indicated the expansion going on in the various departments.

The war office authorities were going at the problem in hand in a most unbusiness like way as far as the enlisting of recruits was concerned but already had 800,000 men in training in England. Those in training were not even equipped with rifles and uniforms.

After all the fault-finding in Canada before we left about the slowness in getting us away it was interesting to learn that our contingent had probably been more quickly outfitted and prepared for the field than any other territorial or militia unit in the Empire.

In the course of my stay I dined at many of the famous London restaurants, but the larger ones were usually empty and depressing. One had to eat somewhere and one might as well take every possible opportunity of seeing this phase of life in London in war time. One night at the "Carlton" there were not twenty others present; even the waiters seemed to be dejected, probably at the falling off of their revenue from tips, and we left as soon as possible and went over to the Royal Automobile Club in search of something brighter. There we found a cheery log fire and sat in front of it until early morning, talking of the war.

One heard the Russian and French national anthems very frequently, not only in the streets, but in the theatres and public performances, such as those in

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Queen's Hall. The finest playing of any national anthem that I have ever listened to was the London Symphony Orchestra's rendering of The Russian National Anthem one Monday night with Safanoff conducting; it was sublime. I had heard the same number on the preceding day in the same hall by another orchestra and the difference was remarkable;—the first one sounding like an amateur organization in comparison. No orchestra ever impressed me as did the London Symphony Orchestra, with the possible exception of the Boston Symphony Orchestra.

To be in London, not sixty miles from the firing line, in a city firmly convinced of coming Zeppelin raids and prepared for naval raids, and find the press discussing the plays and the music of the day seemed strange indeed. It must have made the men in the trenches nearly mad to realize that while they were fighting under the most adverse conditions day by day and being killed in the defence of their homeland, there were 30,000 slackers at one football match at home.

England is a strange country. We felt that perhaps if a force of 50,000 or 100,000 Germans would land in England she would waken from the long sleep she had slept since her shores had been invaded by William the Conqueror. 30,000 men could watch a football match at the very moment the British line in Flanders was actually so thin that if the Germans had tried to advance there was nothing to stop them. Fortunately, for the moment, the enemy, too, was exhausted and before he could recuperate our reinforcements had arrived.

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The dying session of parliament was worth going to see; Bonar Law, Beresford, McKenna, and Winston Churchill spoke. The latter made his defence of the Navy which was as famous and as reassuring to the country as Kitchener's statement in the house of Lords the day before had been in regard to the Army. Mr. Bonar Law was the smoothest of the speakers; Churchill gave one the impression of having much force of character, despite his stuttering, but Bonar Law was the man you felt could be trusted to look upon any proposition with coolness and play the safe game for his country.

When the House was adjourned until February 2nd, there were very few members left. This closing of the House of Parliament after a three weeks' session in war time and after the raising of billions of dollars of war loan by public subscription was remarkable for its simplicity. There was no fuss or feathers, no music or formality. The members just strolled out—those that happened to be there.

From the great window of the Savoy Hotel, I watched the funeral of Lord Roberts, the national hero. The Thames embankment could be seen, but, though a garden of not fifty yards in width separated the building from the embankment, the fog was thick enough to make the people as indistinct as though they had been half a mile away. Beyond the embankment the grey wall of fog shut out everything but an occasional gull which flitted out for a moment and disappeared again.

The embankment road was lined with Highland

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soldiers in khaki greatcoats and Scotch caps, drawn up in quarter companies, while on either side of the road stood a solid black wall of humanity—waiting, some with umbrellas up to protect them from the fine drizzle. Not a hundred yards away Cleopatra's needle stood like a tall sentinel in the mist, and one wondered what tales of battle and heroic deeds it could tell, if it could speak. One could imagine that during the long ages it must have witnessed other magnificent funerals of kings and heroes, and smiled, perhaps, at the brevity of human life.

The silence was broken by the long roll of kettledrums, and the strains of Chopin's funeral march floated to us through the heavy air; sadder than ever before they seemed to me, and yet, too, more dignified than ever before. Then along the embankment, past Cleopatra's needle, the head of the procession burst up through the fog as though coming out of the ground.

The band came first, followed by the London Scottish with arms reversed, the brass butts of the guns visible before the soldiers themselves, making a curious reflection in the fog.

Then followed other regiments of infantry, squadrons of horses, Indian troops with strangely-laden mules, guns; then, more cavalry. The horses sent out great spurts of steam from their nostrils into the cold raw air.

Then a space, and the funeral car drawn by six horses with riders approached. The coffin, covered with a Union Jack, looked very small, and a big lump came into my throat as I realized that this was all that

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remained of the great little soldier, whose motor car not three weeks before at Salisbury Plain had stopped beside mine, and whose deeply seamed and furrowed face I had studied with the greatest interest, remarking then that he looked very, very old.

After the car, the General's horse, with boots reversed in the stirrups, was led,—riderless.

Next came a dozen or more coaches bearing the mourners, including the King, and the pall-bearers, one of whom was Lord Kitchener. Squadron after squadron of cavalry filed past two and two, until one felt the procession was never going to end. The fog thinned somewhat, and a tug and scow whirled past down the river on the rapidly flowing tide, disappearing again into the mist.

As the last horses disappeared, the crowd began to move; motor cars appeared; and the cortege of one of the greatest British generals passed on to St. Paul's, the last resting place of the great soldiers and sailors of the Empire.

One felt that Lord Roberts was greater than all those soldiers who had gone before him, for his life had been without blemish. Seldom—indeed, never before—had any British soldier or statesman the opportunity to say to the nation "I told you so." For ten years without avail, Lord Roberts had been warning the nation about the great need of being prepared for a war that was bound to come; he had tried by every possible means to wake it from its sleep and had failed; and when the great war came as he said it would, he offered no word in the way of reproach or self glorification,

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but bent all his energies to help his Empire to his utmost in the hour of her greatest need. And although he "passed over" before victory had come to us, he had seen enough to know that the ultimate result would bring security to the Empire and freedom to the human race.

CHAPTER IV.

DAYS WHEN THINGS WENT WRONG.

ONE day things went wrong; they are always going wrong in the army,—that is part of the game. It takes a considerable portion of an officer's time correcting mistakes of brother officers; otherwise there wouldn't be much to do in peace times.

Well, as I was saying, things went wrong. We had been on the *qui vive* for two weeks, expecting a telegram from the war office to leave for France. We had everything ready to pack aboard the motor truck in one hour. Then, by diligent enquiry, we discovered that our truck was to go to France when a spare convoy of trucks went over.

The Colonel in charge at Bulford Camp said it would not be this week—there might possibly be a convoy going over the next week or the week after—or next month—he could not really say when. He had a letter from the war office on his desk about the matter and would notify us at the earliest possible moment.

We went away tearing our hair out, and we have no superfluous hair to lose. We held a council of war. We leaped into our trusty car and sped swiftly into Salisbury. The Canadian General, the object of our quest, had just left for Shorncliff and would be back, perhaps, in two or three days. We hunted for the A.A. & Q.M.G. of the 2nd Canadian Division. After searching the register of three hotels we ran across an

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officer who said that the A.A. & Q.M.G. had also gone to Shorncliff. We had arrived too late to obtain assistance from this quarter.

As it was now after 7 o'clock we had to have dinner. This was on ordeal for we hated the Salisbury hotels; they had been so crowded that winter with Canadian officers and their wives that the proprietors had lost their heads. They didn't care whether they served you or not. One of them even paid a "boots" to stand at the door and insult possible guests, the idea being to turn as many away as possible. The hotel keepers must have heaped up untold wealth that winter, and the abundance of custom had ruined their sense of hospitality.

So we discarded the idea of a hotel dinner. We referred to our chauffeur, who was "some chauffeur, believe me." "What about that little chop house ('The Silver Grill') which he had frequently lauded with fulsome praise?" He did not now wax enthusiastic—a point we noted, and of which we found the explanation—but he drove us there.

The Silver Grill was a curious old place, with winding stair-case, ancient beamed ceilings in the smoking-room, and a general appearance indicating that it had seen service at least two hundred years. Climbing to the attic, we entered a little dining room, perhaps twenty feet long, with room for about sixteen diners. The tables were occupied chiefly by officers, and we took the settee next the wall and ordered the chef d'œuvre—a steak smothered in onions, and French fried potatoes.

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Norah, the one serving maid, a pretty little thing, was evidently a great favorite with the habitués of the place. The wife of the proprietor was a handsome big woman dressed in a close fitting black frock, with the figure of a Venus de Milo. She hovered about talking to the men and acting "mother" to them all. One officer was plainly "overseas". The landlady watched him like a sister, got him to put his hat and coat on properly and steered him past the smoking-room and bar to the front door, and she was careful to explain to us two, knowing we were Canadians, "I have never seen Captain X like that before. You know we have become very fond of the Canadians. Poor Lt.—who was killed last week came to wish me good-bye." And, dropping into a chair beside us, she talked of this and that Canadian officer; of how nearly all the medical men and veterinary officers had dined at the Grill; she told us also about her three children, including the baby which was now eight months old and could talk.

By this time all the diners had gone except one, a civilian, sitting in the farthest corner of the room. The land-lady had again begun to talk about the Canadians, when the civilian suddenly interrupted sneeringly "The Canadians! what good are they? An expense to the country. What have they done? If I had my way I'd hang every one of them."

For a moment we were petrified with anger. "What do you mean?" I finally managed to demand.

"Oh! you know" he sneered.

"No I don't" I returned; "that is strange talk; you will have to explain yourself."

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"I don't need to explain anything" he said.

"Then allow me to tell you that you are a d—liar" put in Captain E— glaring at the man ferociously; "I say you are a d—liar" repeated the Captain with greater emphasis and deliberation.

But the cad was very thick-skinned; he made not the slightest show of resentment at the opprobrious epithet. So we got up and walked over to him.

"You miserable shrimp" said Captain E— as he stood over the fellow with hands a-twitching to take hold of him. "You mean, skulking coward, to talk like that of men who have come over to fight in the place of wretched gutter-snipes and quitters like you."

"Three of us here are Canadians" I added, "and if you will be so accomodating as to step outside, any one of us will be delighted to give you the darndest licking you ever got in your life."

The skulker didn't even move. Captain E— got worked up to the point of explosion as he watched the fellow unconcernedly keep on eating. "You snivelling cur "I've a good mind to rub your face in that gravy, by G— I will rub it in that gravy!" exploded the Captain, and in the instant he seized the dinner-plate in one hand and the fellow's head in the other and brought them quickly together, rubbing the man's chin and nose briskly round and round in the mixture of congealing gravy and potatoes.

"Be very careful what you are about" sputtered the creature, looking up when Captain E— had desisted, and wiping the streaming grease from his face with his pocket-handkerchief.

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It was tremendously ludicrous; the utter spinelessness of the creature so at variance with the boastful scorn of his previous words and tone so obviously showed him to be a coward that all we could do was laugh and turn away. You could no more think of striking that weak, backboneless poltroon than of hitting a six months' old baby.

We tendered the landlady a sovereign in payment for our dinner, but she only kept eying with intense anger and disgust and shame this wretched specimen of a fellow-countryman who had wantonly insulted two of her colonial guests in her house and in her presence. During the gravy-rubbing performance she had run downstairs to tell her husband in case there should be a "scene," and he had retailed the story to the crowd of "select patrons" gathered in the little smoking-room. Again we called the lady's attention to the proffered coin, but in her agitation, it took her at least five minutes to total our bill correctly.

We offered our apologies for our forcible language, but she considered no apology necessary. "You were insulted in my house" she said, "and I admire you for the stand you took. That man will never enter this place again." Following us downstairs she begged us to step into the smoking-room "just a minute, to see that all our customers are not like that one" and when she thought we were not going to accede to her request she laid a hand on my arm and almost beseeched me to come back and have a cup of coffee or something to drink.

Her husband, a fine looking, tall, curly-headed

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Englishman, seconded her invitation, and we went back to the smoking-room. As we entered, every man stood up and bowed, and several made room for us. They had heard the story, and, by their reception of us they tried to show that they strongly disapproved of their countryman's insult to the colonials.

A few minutes afterwards, the clock struck nine, and the doors were closed upon all but Captain Ellis and myself. Nothing was too good for us, and to the accompaniment of numerous cups of coffee, brought by Norah, we talked away till ten o'clock. Both the landlord and his wife walked out to our car with us, and continued to offer their regrets for the treatment which we had received.

By the time we got "home" we were fairly cooled off, and we went to bed that night with the proud feeling that we had saved the name of Canada.

Another time "things went wrong" was one Saturday afternoon when we took a half-day off. It was not that we needed the holiday from overwork, because, for two weeks, three of the four of us had been doing nothing. The fourth man, a captain of Highland descent, had, unlike the rest of us, really been working hard. Yet we all needed the holiday, for loafing anywhere is usually the hardest work in the world; but loafing on the edge of Salisbury Plain with little to see was work even harder than the hardest. Napoleon is said to have remarked that "war is made up of short periods of intense activity followed by much longer periods of enforced idleness" or something to that effect. Of the "intense activity" of war we as yet had had no

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experience but with "enforced idleness," we were all too distressingly familiar. In civilian life we had been very busy men; and here we had been plunged into a world where for months at a time there was almost nothing to do—and what was worse, there was no place to go to and forget about it.

So, after a hard two-week's work doing nothing, we studied the map and decided that the sea was within easy range of our four-cylinder thirty. Accordingly we struck out for the sea, followed the track of the little river Avon, which flows past Salisbury Plain, through Amesbury and the ancient city of Salisbury and empties into the British channel at Christchurch.

It was a glorious March afternoon, with intervals of brilliant sunshine; the roads were good, and we rolled along through the little English villages with their thatched-roofs, at a speed which quickly brought us to the New Forest. All of a sudden a strange, familiar tang in the air thrilled us. Every man sat instantly erect and gulped down, in wonderment at his own action, a succession of great, deep satisfying breaths: And then the explanation broke from two of us at the same moment, "Canada!" It was the familiar Canadian smell of the autumn forest fires that had for the moment penetrated from the outward senses to the inmost soul of each and it left us for the moment just the least bit homesick.

Less than an hour and a half brought us to the prosperous city of Bournemouth, filled with the omnipresent "Tommy." The sea looked mighty good to us, for we hadn't seen it since our landing in October,

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though we had seen plenty of water—rain water—since. We raced our car along the beach, got out and snapshotted one another, admired the views, and cut up generally like a gang of boys let loose from school. Then somebody said “tea,” and we drove to a little rather suspicious looking “Pub” on the beach.

There we got tea and toast but we didn’t stay long, for out of the window we could see the chauffeur undercross-fire of a policeman, and in England that always means trouble.

An itinerant dog fancier had two diminutive “Norwegian truffle ’unters” which he was anxious to part with, but we couldn’t wait to talk to him. Nor had we time to ask him whether truffle growing was an industry in Norway, or whether the substituting of dogs for pigs in hunting truffles was a recent innovation.

The Cop had been watching for us from across the way, and we were hardly out when he was already upon us.” “Excuse me, sir, but you ’aven’t a hidentification number on your car” said the Cop.

“We have not” I replied, “what is the sense of having a number?”

“To hidentify the car, sir,” said the Cop.

“Can’t you identify the car with that label on” I queried, pointing to the bonnet upon which was a label reading: *Canadian Government*; the car also had three O.H.M.S. signs upon it.

“Our orders is, sir, to see that all cars on ’is Majesty’s service ’ave Hidentification numbers” persisted the Cop.

“We are very sorry,” I replied, “that we had our

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identification all printed out so that you could read it, instead of getting a number; it was stupid of us."

"Orders is orders" said the Cop.

"You people make me sick" suddenly broke in Mac. "We came over here to fight for you and all you do for us is make it as damned disagreeable as possible; you are a miserable people."

"Pardon me, sir" said the Cop softly, "I thought I was speaking to a gentleman." During the controversy we had got into our car and without ceremony we drove off, leaving behind us a discomfited policeman. Fortunately Mac had not heard the parting remark of the policeman. Had he done so it is doubtful if we would have left Bournemouth that night, for heaven only knows what would have happened to that policeman. When I chaffed him by repeating the policeman's sally when we were a mile away, Mac was for a moment knocked speechless with anger, then he begged us to go back and help him find the policeman.

Having escaped the arm of the law we went for a little drive about town, with its wonderful shops: the shops of Bournemouth are the best I have seen in England, and are rivalled only by those of Glasgow. Then we drew up at the best hotel in town—"The Royal Bath Hotel," which, with its long low facade and its lack of upper stories looked more like a luxurious club house than a modern hotel.

The main lounge was something to marvel at. Apparently it had been given over to a band of decorators and furnishers gone delirious, for the evidence of their delirium was to be seen on every side. The walls

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were all broken up: One wall was covered with hangings; two parts of the remainder had an upper border of hand-painted men in battle array; a glass wall through which the dining-room could be seen made a third; and the fourth was occupied by a balcony from which one descended scarlet carpeted stairways into the room.

The woodwork was a hideous golden-oak. The ceiling was broken by a series of beams radiating unevenly from one annular space, in all directions, and with no apparent design. The furniture was rattan and plush, upholstered and plain, and was crowded together with a few writing tables scattered here and there. It was a discordant orgie of decorative effects and the result was unutterably depressing.

We sank into chairs and gazed about us in awe. No hotel had ever affected any of us like this before. At first we talked in whispers; then as our courage revived, we became critical. Then somebody thought of having a "Scoot"; tremulously he pressed the button for the waiter. The waiter came and they had two "Scoots" each. Then somebody made a funny remark and one of us laughed out loud. Suddenly the laughter stopped and said, "I feel as if I ought not to laugh; I feel that nobody ever laughed in this place before."

Dinner time approached. Old ladies in wonderful dresses began to appear, followed by old English gentlemen in dress clothes. The dining-room began to fill up. We decided to wait till the room was nearly full before going in so that we could get an idea of the fashionable watering place people of England. Somebody thought

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that it would be as well to reserve a table, and Captain R— was deputed to do so. In fifteen minutes he came back twisting his black moustache and looking depressed.

"Nothing doing," he reported in disappointment.

"What!" we cried.

"Nothing doing" he repeated mechanically. "We may possibly get a table after 8.30."

"Do you mean to say" cried Mac, jumping from his chair in a rage, "that we can't get anything to eat?" Captain R— nodded. "Let's leave this d— morgue; I hate it anyway" stormed Mac, and we filed sadly out.

In the hall we had a try with the head clerk, and another with the head waiter, but it was no use. "Guests must be served first" was the only argument; pointing out that there were a dozen tables yet unset made no difference. Our chauffeur had gone, so we left our address for him, ordered a taxi, and drove to the Burlington Hotel two miles away. Before dismissing the taxi we took the precaution of seeing that we could get dinner, and finding that the hotel authorities agreed to furnish us with a meal we clambered out; after divesting ourselves of our overcoats we were ushered into a dining room crowded with beautiful women and, mostly, ugly men. There were some hummers among the women.

The relief at the change from the dismal, deliriously-decorated hotel to this bright, cheery room, was so great that we suddenly grew exceedingly gay and enjoyed ourselves hugely. A little concert afterwards add-

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ed to the enjoyment, which was only slightly marred by a bill for forty-two shillings.

Our homeward journey was through little villages all asleep, and silent as the adjacent churchyards; and as we two tumbled into our cots at midnight we voted that we had spent "a fine day" in spite of the mischievous tendency of things "to go wrong."

Another of these "days" came later. We had been waiting at Bulford Cottage for three weeks for orders from the war office to leave for France, and we were growing decidedly fidgety. The fine weather feeling of Spring in the air may have had something to do with our restlessness. The buds were swelling on the great trees near by, and the leaves had actually broken from their bonds on some of the hedges. The air was full of bird songs; the lark in particular seemed to be mad with the joy of springtime. At Bulford Manor I had picked the first wall-flowers in bloom in the open garden; Roman Hyacinths, Daffodils, Snowdrops, English daisies, and another little unfamiliar white flower were in blossom, and even the Japonica was bursting into scarlet against the sunny walls.

It was a pleasant time for loafing and under any other circumstances we would have enjoyed it; but this was war time. Already our Canadian Division had been at the front for four weeks and here were we doing nothing, when we might have been making ourselves useful at the front. The war office was advertising for "one hundred sanitary officers who would be of vital service to the force in the field" and here were two of us, with long experience in practical sanitation and

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eager to make use of that experience, idling in the valley of the Avon on Salisbury Plain.

Our chief was in France, and in our impatience we concluded that something had gone wrong at the war office in regard to our little unit. The only way to find out was to go to London; so we set out,—the Medical Officer of Health of Ottawa, Captain Lomer; the provincial bacteriologist of Alberta, Captain Rankin; and myself. We left Bulford at eleven o'clock, or to be precise, at five minutes to eleven. We stopped twenty minutes at Andover to send a cablegram, and were held up at a level crossing for five minutes. At one thirty we passed the official centre of London, Hyde Park corner, and were having our dinner in the Marguereta Restaurant in Oxford Street at a quarter to two. We therefore had covered the distance of ninety-eight miles in two hours and fifteen minutes actual travelling time, or at an average speed of nearly forty-four miles an hour. At one time our indicator registered sixty-five miles an hour and for quite a number of miles we travelled steadily at fifty-six miles an hour. Of course this was in England, where roads are as smooth as asphalt and where raised or sunken culverts, the curse of motorists, are unknown.

We did enjoy that Bohemian dinner. We had all the things that one does not have in a military mess on Salisbury Plain. Hors d'œuvres, salad, fish, duck, and so forth. We were just finishing, and had lit our cigarettes while waiting for coffee, when the door porter came in and whispered to Captain Rankin that a policeman had our chauffeur in charge and wanted to see one

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of us. The doughty Captain went out, and came back in a minute to say that the cop wanted him to go to the police station and explain why we did not have a number on our motor. He also added that there was a number of people around the car. "What did you tell him?" I asked. "I said I would go after I had finished my dinner," said the Captain, which seemed to me quite Canadian and reasonable.

He had not raised his cup to his lips when the same porter tapped him a second time on the shoulder, with "Beg pardon, sir, but the officer says he can't wait." We were grieved, and looked it.

"It's very unreasonable," said the Captain, "to disturb us at dinner like this."

"If we don't go now I guess it will take a good deal longer to get the car away from the police station," I said. "Besides, supposing Rad has cheeked them and they lock him up, we won't be able to get back till tomorrow. None of us can run the car well enough to get out of London without getting into a smash up." So saying, I put on my coat and sallied forth.

Before I got to the front door I could tell there was something doing, for the restaurant windows were filled with diners standing on chairs. Through a vacant space I could see a great crowd and two policemen's helmets standing up above the middle of the throng. They considerately opened a passage up for me to the two policemen who were standing beside the car with Rad at the wheel looking quite unconcerned.

"What is the matter?" I demanded.

"Your car has no number on it," said a policeman.

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It was so similar to our experience the week before at Bournemouth that I smiled inwardly, and went through the same formula.

"Why should a government car have a number?" I asked.

"To identify it, sir, those are our orders, sir."

"Can't you identify that car?" I asked. "It says, written in big letters on the front, 'Canadian Government, Divisional Headquarters,' in case you can't read! The car belongs to the Canadian Government. We are waiting to go to France; we came into London less than an hour ago on business to the War Office. Is there anything more you want?"

"We would like the chauffeur's name," said the cub policeman, who had caused the trouble. I spelled it out to him three times; it sounded very German, but he said nothing."

Then in turn I took out my note book and took the numbers of the policemen. The crowd had listened with great interest, and were evidently against the policemen. A boy looked under a policeman's arm and grinned; I winked at him covertly, and he went into a paroxysm of laughter. Then with dignity I got into the car and we drove off to the bank, leaving behind the discomfited policemen and a crowd of several hundred people.

"Where did the cop get hold of you, Rad?" I enquired.

"Over on Bond Street," he said, "he insisted on my going to the police station with him. 'All right,' I said, 'jump in, and he did so. I knew where the police

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station was in a street off Oxford Street, but when we got to the street I passed it. The officer called out, but I didn't hear him. At the next corner he yelled again, but I got in front of a convenient bus."

"Why didn't you turn there," he said.

"Then you would have had a real charge against me," I said, "for breaking the rules of traffic."

Finally he asked "Are you going to turn or not?" and I said "I guess we will turn here and turned around, stopping in front of the Marguereta Restaurant."

"What are you stopping for?" he asked.

"The officers who are in charge of the car are in there at their dinner," I said, "you had better speak to them. Gee, he was mad."

All the rest of the afternoon I chuckled with delight at the picture of the anger of that cub six foot two policeman as he was being whirled along Oxford Street against his will, to a restaurant he did not want to go to, to meet people he didn't want to see.

CHAPTER V.

THE LOST CANADIAN LABORATORY.

AT the War Office in London, in the autumn of 1914, I met Captain Sydney Rowland of the staff of the Lister Institute. He was a man who had made a reputation in the scientific world and had just been authorized by the British War Office to purchase a huge motor caravan to be equipped as a mobile laboratory. The caravan had been built originally by a wealthy automobile manufacturer at a cost of 5,000 pounds, and had been completely equipped for living in while touring the country. It even had a little kitchen, and the whole affair was lined with aluminium. Tiring of it, the builder had sold it to a bookmaker who used it for less legitimate purposes.

Captain Rowland had heard of this machine and finally located and purchased it. All the expensive interior was torn out and replaced with work benches and sinks, while shelves and racks were provided for glassware and apparatus. It was a beautifully equipped, compact machine, and he was justly proud of it.

When he took it over to France he drove it up to the army area himself, and told me that as he approached the front through villages and towns at the rate of twenty-five miles an hour he had an absolutely unimpeded road. After one look at this huge affair, which was about the size of one of our large moving vans, bearing down on them like a runaway house,

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people fled or took to the side roads. Captain Rowland described with great glee the sensation it had caused, and his enjoyment of that drive.

That was the first mobile laboratory, the beginning of the field laboratories and the model upon which all others were constructed. The list of equipment prepared and used by Captain Rowland was also used as the basis for the requirements for all mobile laboratories subsequently equipped. A second bacteriological laboratory and two hygiene laboratories were sent out before permission was obtained from the Director of the Canadian Medical Service, to send out a Canadian laboratory. For some unexplained reason the Canadian Government refused the necessary funds for the chassis so that we were compelled to pack our equipment in twenty-four numbered cases, all of which could be carried on a three-ton motor lorry. I had discovered that the officers in charge of these laboratories at the front had already found them too small to work in comfortably, and had removed and placed the equipment in some convenient house, using the lorry merely to carry their equipment. We were able to carry twice as complete an equipment, costing altogether less than \$2,000 in a borrowed lorry, and saved the cost of \$10,000 for the motor chassis.

When the first Canadian Division went to France, No. 1 Canadian General Hospital had been left behind on Salisbury Plain, to take care of the sick. It had been decided that I was to go to France in command of the Canadian Mobile Laboratory, and that I should take with me two officers and several men from

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the staff of that hospital. The Lozier car which had been given me by the Canadian Government was also to go as part of the equipment. After working in the office of the Director of Medical Services for a couple of weeks straightening out the records in regard to typhoid inoculation, and cerebro-spinal meningitis, and in purchasing the necessary equipment, I received word that the laboratory was to go to the front immediately. The Surgeon-General accordingly made all the necessary arrangements, and left for France, while I went down to Bulford to wait for the expected telegram which was to speed us on our way.

We waited over three weeks for the message, growing more and more desperate every day. Finally we went up to London and found that somebody had made a mistake and that we were supposed to be in France long ago. We were instructed to leave on the second day following.

The men were all greatly excited at the good news. We had a farewell dinner that night at the mess, which assumed a somewhat convivial character, and when I left to drive two visitors into Salisbury, the hospital dentist was making a rambling, tearful plea to a few hilarious auditors, on behalf of Ireland, while the great majority were paying no more attention to him than if he did not exist.

Next morning with our equipment, men and car, we set out for Southampton, amid the envious farewells of our brother officers, whose call had not yet come. Everything was loaded on board the transport



MAJOR-GENERAL M. S. MERCER, C.B.
Former Officer Commanding Third Canadian Division.
Killed in action, June, 1916.

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at noon, and late in the afternoon we left for Havre, accompanied by two torpedo boat destroyers.

After some delay at the Havre docks for petrol, we got away and reported our arrival at one of the rest camps on the outskirts of the city. Our elation at having finally arrived in France was marred only by the news that we would probably be detained at the base for two or three days. Having been informed that the Hotel Tortoni was the liveliest place in town to stay, and not to go there on any account, we went and concluded that we had been the victims of a practical joke, for we had not seen anything so dull in all our lives; it was as dull and as good as a hotel at Chautauqua. There was more "life" to be seen in an English hotel in a minute than one could see in the Hotel Tortoni in a month.

As there were no theatres or concerts to go to and nothing else to do, we went to bed in the chilliest bedrooms that I had ever been in up to that time. I soon learned that French hotel bedrooms in winter have the same cold, clammy feeling as the interior of refrigerator cars in summer. This accounts, perhaps, for the French being a hot-blooded people.

Of all the cities of the world that it has been my privilege to visit, the city of Havre is the dirtiest, the ugliest, and the least interesting. We could find no public buildings with even the slightest pretence to beauty, and the rest of the city was as dull and commercial as it is possible for a seaport town to be; one can say little more than that, in consideration of any city. With the exception of the docks and the casino there is

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nothing of interest, and even the casino, like all the casinos in France, had been converted into a hospital.

After two days of killing time, our orders came through to leave for the front, two of us to go by motor and the rest by train. Our experience with the British officer at the base had certainly been pleasant and proved to be a happy augury of our future relationships with them. The British officer in France is quite a different man from the same officer in England, and does not impress you with the fact that the war is being carried on by his individual efforts.

At the base we learned for the first time that we had been a great source of anxiety to some of the officials of the British army three weeks before, when the war office had announced our departure from England. When we had failed to report our arrival at Havre the authorities had assumed that we, being Canadians and more or less independent, had gone off on a little trip of our own into the interior of France. In their efforts to locate us they had telegraphed far and wide; consequently when we did arrive everybody knew of us as "The Lost Canadian Laboratory" and seemed to be quite pleased that we had been found. When anything goes astray in the army it causes a tremendous amount of consternation and trouble until it is located; the easiest thing to lose is a soldier in hospital but as he can talk this matter usually rights itself sooner or later.

The morning on which we set out on our first day's "march" to the front was misty and raw, and motoring was very cold. Even this early in the season—mid March, 1915—the fields were being ploughed, but the

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ploughing and harrowing was being done by women, old men and boys. Hardly one able-bodied man was to be seen, the contrast with England in this respect at that time being very marked. A crowd of schoolboys pleading for souvenirs were made to earn them and amuse us by running races while we had a tire replaced.

The banks on the roadside were yellow with the first primroses, and patches of golden daffodils could be seen in the woods, though spring seemed to be far enough away that chilly day. It was characteristic of one's experience in France that, as we sat down to dinner that evening in an Abbeville hotel I had beside me an officer in the British army who had been in Canada for a number of years and who had, during that time, been a frequent caller at my home in Toronto. The spontaneous manner in which the two of us rose and rushed at each other with outstretched arms would have done credit to native born Frenchmen.

As we approached the front, the long straight French roads gave way to winding narrow ways, frequently paved with cobble stones called pavé. The country became flat, and the roadside ditches were filled to the brim with water. That we were within the sphere of military operations became more and more evident. Motor cars carrying officers passed frequently; motor transports carrying food and fodder rumbled along the roads or were parked in the outskirts of villages or in village squares; motor ambulance convoys were drawn up in front of hospitals, and, in general, we felt that we were nearing the real seat of operations, the front line.

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It was a drive of a hundred miles to the little town which was to be our headquarters for nine long months, and I remember the thrill that I had when we first saw the effects of shell fire—a hole about two feet in diameter in the bricks above the door of the Hotel de Ville. As we later discovered, the village authorities had decided not to repair that hole but to leave it as a memorial of the day when the Germans had been driven from the town and had fired some shells back into it, killing a dozen of the inhabitants.

After reporting to the corps headquarters in town, we were instructed to attach ourselves to No. 7 Clearing Hospital, where we were made most welcome by the commanding officer and his staff. Colonel Wear found billets for us in the town, and a splendid room for a laboratory in the Hotel De Ville. This room, 22 x 36 feet, had been the banquet hall and band room, and was well lighted by windows and gas. When equipped as a laboratory it presented a most imposing appearance, and from it we had a fine view of the village square, commonly called the Grande Place. As everything going through the town had to pass by our windows in order to cross the bridges over the canals, we could view a continuous panorama of never-failing interest whenever we had the leisure to look down upon it.

Captain Rankin found his billet at the top of a house on the opposite side of the square from the laboratory; Captain Ellis found his in a house in the corner of the square, and mine proved to be a little room over a grocery shop on another corner of the square. My room was reached by passing through the shop, up

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a very steep staircase, and through a storeroom filled with boxes of soap, biscuits, bundles of brooms, and other staples. The room itself was clean but without heat, and I usually fell asleep after a couple of hours of shivering in the depths of a damp, cold, feather mattress. Eleven crucifixes and two glass cases of artificial flowers, together with portraits of the pope and local curé, constituted the decorations of the room, and was typical of the region, for this part of France was thoroughly Catholic.

Our equipment did not arrive for three days, so that we had some opportunity to look around and get our bearings in the area in which we were to work. The Director of Medical Services of the army had called just after we arrived, and had given us instructions. Like all the British officers we met in the field, he treated us with the greatest kindness and consideration. Faultless in dress, precise in manner, with monocle and carefully trimmed hair and moustache, he gave one the impression of just having stepped from his dressing room after a bath. And yet his knowledge of the military game as it applied to the medical service was just as accurate, precise and complete as his external appearance indicated. He was a tremendous worker and efficient to the last degree, as his record since has demonstrated.

CHAPTER VI.

THE DAYS BEFORE YPRES.

THE following day we drove over to Estaires, five miles away, to see the first Canadian division coming back into rest after a month in the trenches. As we passed the infantry on the road it was pleasant to see broad smiles spreading over the faces of the men who recognized us as having been with them at Valcartier and Salisbury Plain. Fit and rugged they looked as they swung along with the confident air which newly arrived troops often seem to possess. Their officers were pleased with them, and were satisfied that the division needed only an opportunity to make good. The division had been on the left at the battle of Neuve Chapelle, and had had no real fighting as yet; but it had received an excellent month's training in trench warfare, and was now well broken into the new game.

The division remained for a week in that neighborhood resting, and we had several opportunities of visiting our friends. On Sunday three of us called on my old friend General Mercer of the first brigade, and had tea with him and Majors Van Straubenzie and Hayter of his staff. General Mercer expressed himself as being delighted with the men and as having the highest confidence in them.

We also had dinner with Colonel (now General) Rennie and our old friends of the third (Toronto) battalion who were located in a little peasant cottage

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in Neuf Berquin. In a room adjoining Captain Haywood, the medical officer of the battalion, lay on a pile of straw with symptoms of appendicitis. He was not too sick to give some extremely graphic descriptions of his first experiences in the trenches, while we all sat around and smoked. The room was lighted by a single stable lantern which also smoked and we sat on boxes; I have seldom passed a more pleasant evening in my life than that spent in the little peasant cottage with my soldier friends, Captains George Ryerson, Muntz, Wickens, Major Allan (all since dead), Major Kirkpatrick (now a prisoner in Germany), Captains Hutchison, Bart Rogers, George, Lyne-Evans, Robertson, (of the first battalion) and others. Some of these chaps I knew well in Canada and we talked of home and the old times, all the while realizing that some of us would never again get back. The feeling was now fast settling down upon us that we were actually at war, and that soon some of the men we had grown to admire and love would have to pay the price.

During the evening two stocky little French girls came in and sang "Eet's a longa, longa wye to Teeper-aree" in English for the "seek Capitan."

The Canadian division was in rest during those early April days when the cold, long-drawn out spring became almost imperceptibly warmer and the buds were beginning to swell on the trees and bushes.

On the first day of April, Bismarck's birthplace, we were expecting something unusual along the front and were not disappointed. While driving up to the Clearing Station to breakfast, we noticed a couple of Hun

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aeroplanes being shelled by our "Archibalds." When we returned to the town half an hour later we found that the place had been bombed.

One bomb had gone right through Rankin's billet, exploded in the workshop on the ground floor and blown out all the windows; another had fallen in the square about twenty yards in front of my billet and had failed to explode, while six others had fallen in different parts of the town, half of which were "duds." Nobody was hurt and no other damage was done.

Bittleson, Captain Rankin's batman, who happened to be looking out of the top window at the time, swore that the bomb which went through the roof beside him had grazed his forehead.

The bomb which had failed to explode in the square was taken possession of by our staff sergeant and placed on my laboratory table as a souvenir. A staff officer from headquarters, fortunately, came along before we returned and bore it off to his chief after promising to return it. Needless to relate it never came back, much to my relief and to the disgust of the staff sergeant who on several occasions referred to the iniquity of this high handed action.

On Easter Sunday we were invited to some sports by the divisional cavalry. As we drove up to the orchard specified in the invitation a crowd of typical big western cowboys with their broad brimmed Stetson hats came streaming up the road from a nearby farm where they had been foregathering.

A clear stretch of turf was selected, a ring formed by the crowd and the first event was announced—a cock

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fight between Von Kluck and Joffre. Cock fighting is the native sport of the countryside in that region where nearly every farmer keeps a couple of game cocks and fights them on Sunday afternoons, incidentally betting on the results.

After everybody had been warned not to move, the two birds were placed gently on the ground on opposite sides of the circle. Carelessly, and without apparently having noticed one another, the roosters walked about picking at the grass but gradually getting nearer to one another. When they got within a yard of each other they became more wary, though still feigning carelessness, until one seeing an opportunity, sprang into the air and struck at the head of the other with the curved wire nails attached to his legs in place of spurs. The other dodged and counter attacked and the action became general.

Using beak, wings and spurs they jumped, flew and struck at one another as opportunity afforded, until Joffre got a strangle hold on Von Kluck and buried his spurs again and again into the prostrate body until he finally struck a vital spot and the combat was over. Then, stretching himself, the victor flapped his wings once or twice as if to say "bring on the next" and went on picking at the grass as before.

It was the first time that I had ever seen a cock fight and I hope it will be the last. The concentration on the faces of those men as they watched the cruel "sport" and the play of expression passing over them was intensely interesting to me; you could almost tell what some of them were saying within their minds and

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it was pleasant to know that to the great majority of them the game was as repulsive as it was to us. It was obviously unsuited to the taste of our new country and men who might themselves be dead in the course of a week or two.

One other cock fight was put on and then we turned to a game much more suited to our men—a wrestling bout on horseback. Four men on each side mounted on horses, without saddles or bridles, were drawn up at opposite sides of the field. The men were dressed in trousers and shirts only; the horses were guided solely by a halter.

At a given signal the two parties approached one another at a trot, each man selecting as his antagonist the one opposite him. In the first crash a couple were dismounted almost instantly, and the battle resolved itself into several separate encounters.

The horses seemed to enter into the spirit of the thing and backed up, wheeled, side-stepped and did their best to help their owners win.

Meanwhile the riders, grasping one another by body, arm or leg, did their utmost to tear one another off their horses. When it became three against two, the two would tackle one opponent and it was the task of the single man to try to keep the two others on the same side so that they could not grasp him on both sides at once. It was exciting enough to see one man being pulled by one arm from one side, while another man was trying to throw his opposite leg over the horse. Even when they succeeded in accomplishing this he clung to the horse's neck and it was only with the greatest difficulty

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that his feet were made to touch the ground and he was thereby put out of the game.

One or two obstreperous animals who objected to the game ran away with their riders and tried to brush them off on the apple trees. The contestants were all as hard as nails and could stand any amount of rough usage such as they received in this gladiator-like contest.

After the games were over we adjourned to the Colonel's billet for afternoon tea and music. The Colonel was exceedingly fond of his gramophone, and, being troubled somewhat with insomnia, would sometimes rise in the middle of the night and put on a few of his favorite records, much to the annoyance of the rest of the staff billeted in the same house. Knowing this, one did not think it so strange as it might otherwise have seemed, that, during the course of a move of the division, the gramophone fell from a wagon and was run over by six other wagons. What did seem mysterious was the fact that none of the drivers had seen the gramophone in the road until it had been crushed as flat as a board.

When I visited the divisional cavalry a few months later the Colonel was still carrying forty dollars' worth of records with him but had not yet ordered a new gramophone.

Gradually the Canadian division moved on. One night we found them in the neighborhood of Winni-zeele and Oudezeele, hamlets near the Belgian border. In searching for a battalion headquarters we asked one soldier sitting in front of a barn what village this was and received the not uncommon answer "I don't know."

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It was astonishing how frequently that answer was given. Apparently some men were quite content to be moved about like pawns in a game of chess without question as long as they were fed and clothed; they seemingly had adopted the attitude of the Mohammedan, "It is the will of Allah."

We had dinner with Colonel Rennie and his staff that night, and a pleasant dinner it was. I remember yet how envious we were of Major Kirkpatrick who took us up to his room and there opened up a box just received from his wife in England—a box containing cigarettes, chocolates, taffy, gum, magazines and other things so greatly appreciated by the soldier in the field, and so liberally shared by them with less fortunate ones. Some men were very lucky in having wives who seemed to spend a great deal of thought—and money—in things that would be appreciated by their husbands in France. The Major was taken a prisoner a fortnight later and I sincerely hope that he was as lucky in having his boxes come through to him in Germany.

After dinner we accompanied some of the younger officers to a mysterious place called "The Club"—an Estaminet in the village, operated by a French woman and recently "out of bounds" for several days because of failure to observe the early closing law.

The scene in that little French "Pub" that evening might have been from a comedy written of the period of one hundred years ago. In the common room were a number of officers playing cards at little tables. The air was blue with smoke and numerous bottles of wine stood on the tables.

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A young French woman sat over in a corner chatting confidentially in French to a Canadian officer who thought he was replying in the same language. Neither understood a word that the other said, though both were obviously delighted at their success in making themselves understood, so what was the difference?

The scene, which grew more and more interesting as the evening advanced, was brought to a sudden conclusion by the entrance of a Lieutenant, who announced that nine o'clock had struck; in a moment the room was emptied, lights were out and we were all wending our ways homeward.

The first impressions of a soldier at the front are invariably the most vivid. A week after we had settled down to routine work we had occasion to visit one of the advanced dressing stations in our area. Leaving our little town by motor we crossed the canal by the lift-bridge after waiting to allow three Dutch barges to pass through. These lift bridges are hinged about one third of the way from one end and are raised by means of stout cables hitched to the other end and passing back to towers. They are so balanced that little effort is required to raise or lower them.

Turning to the left we struck into a pavé road which led for some distance along the canal bank. Pavé is not a bad road when kept in good repair as this one was, and when you get used to the vibration of the car bouncing from one cobble stone to another; when, however, it is not kept in repair, depressions form which rapidly increase as cart and motor wheels fall into them and hammer them deeper and deeper.

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A little grey tug boat, painted the regulation battle-ship grey, slipped quietly along through the canal towing several barges loaded with road metal and lumber.

A buzz like a huge bee approaching us across the fields attracted our attention, and we looked up to see an aeroplane, like a gigantic dragon fly bearing directly down upon us. A hundred yards away it left the ground and passed over our heads climbing steadily in a great spiral into the sky. Another aeroplane, and another followed till there were five circling above us, getting smaller and smaller as they soared into the heaven, looking like herons in flight among the clouds. They then made off towards different parts of the German lines to their daily task of reconnaissance.

The women, old men and children, were busy on the farms ploughing, harrowing and putting in the seed. Though the men were away there was no dearth of labour on the farms and everything was going on as it should. The silly-looking, heavily-built, three-wheeled carts, empty or loaded with manure, bumped along behind the broad-backed Flemish horses, guided solely by a frail looking piece of string. The driver, seated crosswise on a projecting tongue of wood, guides the horse by mysterious signals conveyed through jerks of the piece of string, and steers the cart by leaning over and shoving the small front steering wheel to the right or left by hand. The Flemish horses are very placid and are never startled by motors, gun fire, or anything else.

Away to the right we could see the spires of a church in a little village nestling among the trees. Our

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road took its tortuous course through fields as flat as a board. Tall trees flanked the roadside which was separated from the fields by ditches three or four feet wide, serving to drain both road and fields and ultimately emptying into some canal or creek. In this particular part of Flanders hedges were not in universal use for fences. In one place we execrated the Germans for having cut down dozens of the roadside trees, only to discover later that the British themselves had cut them down in order to clear the course for aeroplanes ascending and descending to the aerodrome close by.

We overhauled a trotting dog team dragging a heavy little milk cart and driven by a boy who ran alongside. At the sound of the motor horn the dogs turned sharply to the right without waiting for orders from the boy, ran over his foot, and nearly upset the cart. One judged that they had had some previous and possibly not pleasant experiences with motor cars, and were taking no chances. What the boy said to them was shameful, judged even by our limited knowledge of French and the short time we were within hearing of him.

Coming into the little town of La Gorgue we could see to our right a chateau in quite pretentious gardens—a chateau in which the German Crown Prince is said to have been staying when a British shell crashed through the roof and made him move on the double quick. This town like our own was intersected by a canal which was used both as a sewer and source of water supply for washing purposes. The streets in this town are dirty and ill kept; the stores uninteresting, and

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the houses squalid; it ran into the next town of Estaires by the continuation of the main street.

Canadian soldiers were everywhere in evidence, wandering along the roads in the manner so characteristic of them. Canadians have never been over fond of saluting officers, and have never quite accepted the statement that it is the uniform of the representative of the King they are called upon to salute—not the man.

The first story I heard was about a chauffeur I had had in Valcartier. He had been standing at the doorway of a store trying to talk to a French girl when a couple of British officers passed. The man did not see them till they were just going by and drew himself up to a sort of a half attention. The officers passed, halted, and came back.

"Why didn't you salute?" queried one officer.

"I didn't see you," replied the man.

"Oh, yes, you did; you came to a kind of sloppy attention as we passed," said the officer.

"Yes," said the man. "I did as you were almost past; but anyway we don't salute much in our army."

"What?" said the officer, "are you a Canadian?"

"Yes, sir," said the chauffeur proudly, and the British officers went on laughing heartily.

The officers we came to see were out and we seized the opportunity to run over for a look at the shell-shattered town of Laventie—the first battered town we had seen. To us, at that time, it was an awe-inspiring spectacle, though nowadays it would be considered a comparatively undamaged town.

The houses on the outskirts were quite intact, but

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as we approached the centre of the town, shattered windows, pitted walls, and scarred woodwork indicated that the town had been heavily shelled. Near the church the buildings were wrecked; roofs were lifted off, windows blown out, and walls were frequently half down or had great holes in them, while the block right around the church was a heap of rubbish.

The church itself had been hit scores of times, and the walls though still standing were perforated like a sieve. The stones in the foundation of the church were fractured by the force of the exploding shells into tiny fragments, still pressed together with the weight of the material above them. So crushed were they that if removed, a tap with a hammer would make them fall into thousands of splinters.

The houses round about the church had been completely razed to the ground. Those adjacent were partly unroofed, with perhaps a wall blown out showing an upstairs with a stairway swinging from the floor, beams from the roof fallen over the iron bedstead, sheets of wall paper dangling from the walls, and every other imaginable combination of wreckage. And yet a few doors away down the street where the houses had not been very badly damaged they were occupied by civilians who tried to eke out an existence by selling candy and foodstuffs.

It is a never-failing source of wonder to see people in such places which were being shelled daily, hanging on desperately to the old homes, not knowing when a shell might come through the roof and kill them all. That was brought home to me later on when, as I

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passed through a village one afternoon, I saw three women being dug out of the cellar of a house in which a shell had exploded a minute before. On another occasion in a village close by a mother with her babe at her breast, three children of various ages, the husband and the grandmother, were all killed in one room by a German shell, the walls, ceiling and floor being splattered with blood and brains. And so it goes on day after day among the civilians in the shelled area in France. Most of them escape but many of them pay the price.

CHAPTER VII.

THE SECOND BATTLE OF YPRES.

IT was a glorious spring day on Saturday, April 17th, 1915, when I motored to Ypres. The first Canadian Contingent had gone into the salient several days before, and had now settled down to business in the trenches. Our laboratory had been given permission to keep a check on the purity of the water supply of the Canadians; hence this trip from our laboratory, located twenty miles away in another part of the line.

The cobble stone or pavé road between Poperinge and Ypres was like a moving picture to our, as yet, unsatiated eyes. Here a small party of soldiers marched along quickly; there three blue-coated French officers, with smartly-trimmed moustaches, cantered by on horse-back; a pair of goggled-despatch riders on throbbing motor cycles dashed along at terrific speed, leaving long trails of dust behind them; a string of transport waggons with hay and other fodder, crept along leisurely; a motor ambulance convoy sped past with back curtains up, showing the boots of the recumbent wounded, or the peering faces of the sitting cases with heads and arms bound in white linen; some old women arrayed in their best dresses, and with baskets on arms, were coming from market gossiping volubly; boys and girls garbed in the universal one-piece black overdress of the country, played games on the roadside; an armoured-motor machine gun halted beside the children to make some

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adjustment; great three-ton lorries lumbered along; officers in touring cars, sometimes with red and gold staff hats, flew by, taking salutes with easy nonchalance, while we, with ears and eyes wide open, bowled along towards the famous city of Ypres.

It was war,—apparently an easy going, leisurely sort of game. Everybody seemed to be going about as if they had been at this sort of thing all their lives; as if, in fact, they couldn't do anything else.

Every vehicle and every person that went into the salient had to travel on that broad highway, flanked with tall trees, and paved with cobble stone. Wire entanglements and trenches traversed the roads at intervals, and shell holes filled with water in the adjacent fields showed the road to be within range of the German guns.

As we approached Ypres we could see that, like all the towns of northern France and Belgium, it was sharply separated from the adjacent fields; there were no extensive suburbs such as are found around the modern British or American city causing them to merge gradually into the surrounding country. When we passed the first houses we were practically in a solid compact town.

According to the custom in Flanders, the houses and stores of Ypres were built close together, right on the sidewalk, without gardens or spaces between them. Many were white, and the effect of the white stucco and red brick gave the city a clean and sanitary appearance. It was a town with a population of less than 20,000, a mere reminiscence of that ancient city of Ypres of the

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12th century which had had a population of 200,000 inhabitants and which had been the most powerful city in Flanders and one of the richest in the world,—a city larger and more powerful than London. Ypres was famous for its cloth in the 13th century, when it had 4,000 looms in use. Through wars and religious persecutions the population of Ypres had dwindled at one time to 5,000 people. Her fortifications had long ago been dismantled, and with the exception of a few magnificent buildings, her ancient glory had departed.

As our car slowly passed through the town evidences of shell fire were abundantly apparent. Here was a house with its roof blown off; another with the windows blown out, the woodwork splintered and the walls pitted with shrapnel; while another had been completely gutted. We turned to the right and came upon the famous church of St. Martin's. Great piles of stone and debris lay in front of it, the roof was gone and the windows had disappeared, but the tower was still intact; the houses in the neighborhood had been blown to atoms.

Our hearts beat faster when we came upon the building adjacent to it, facing the Grande Place,—the glorious cloth hall of Ypres, beautiful even in its ruin. Few such wonderfully majestic specimens of architecture as this ancient monument of the weavers of Ypres have come down to us through the ages. On the great square in the heart of the city it stood, nearly 500 feet long and half as wide. The walls were yet fairly intact, also the main square tower in the centre and the graceful pointed turrets at each corner. Most of the roof was

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gone, but enough remained to show that it had been very high-pitched, and that the proportions of the building must have been perfect. The interior was a mass of rubble; here and there direct hits had blown holes in the wonderfully carved walls, and some of the statues of the famous men of the ancient city had been tumbled from their niches between the third tier of windows. None of the woodwork of the famous painted panels of the interior remained; it had all been destroyed by fire from the incendiary shells of the apostles of culture.

I stood and gazed, quite carried away by the beauty of even the fragments of the magnificent bit of Gothic architecture, and with indignation at its destruction. The warm spring sun of midday played about its columns, making heavy shadows under the windows and ruined arches; soldiers crossed the square and stood about as if they were a thousand miles from the German lines. Several officers could be seen wandering about studying the ruins; two of them I knew and they came over to shake hands. I asked where I could get some dinner, and was directed to the only decent restaurant left in the town, located just beyond the Cloth Hall on the square.

As we stopped at the door of the estaminet Lt.-Col. (Canon) Frederick Scott, one of our Canadian poets, came by and stopped for a chat. I had not seen him since the memorable days of Salisbury Plain, and he was full of his experiences as a regimental chaplain. He drew from his pocket the manuscript of a newly-

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written poem and, oblivious of his surroundings, stood by the car and recited it to me.

The little restaurant was well filled with officers even at this late lunching hour of two o'clock. It had been a millinery store, but latterly there had been little sale for millinery and there had been a great demand for food; the three pretty Flemish sisters who owned the shop had therefore accommodated themselves to the situation and now served most excellent food daintily on clean tables, though not with great despatch. At any rate, my omelette, cheese, toast and coffee tasted very good to me that day, while I chatted to two engineers who had countermined and blown up a German mine at St. Eloi a few days before.

After lunch we hunted out No. 3 Field Ambulance, whose personnel came largely from Toronto. Colonel McPherson of Toronto, the officer commanding, seemed glad to see me, as he always did, and showed me over the ambulance and billets where the officers were quartered. I took water samples for examination of their drinking water supply, which was not above suspicion. The garden at the rear of their temporary home was vibrant with sunshine; the pears, trained against the walls in the rectangular manner so much in vogue in France, and the peach trees, were already bursting into clusters of pink and white blossoms. I picked some beautiful blue pansies to press in my pocket book and send home as souvenirs of my first visit to Ypres.

Upon leaving the ambulance we passed over the river by the bridge, where soldiers were filling water

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carts by means of hand pumps; passed the ancient ramparts on the river's edge and through the hamlet of St. Jean to Wieltze, where the advanced dressing station of the ambulance was located. Here I saw my friend Captain Brown and collected water samples for examination. Returning to Ypres we went out to Brielen to see the A.D.M.S. of the Canadian Division and there found some letters from home waiting me.

While in the office a sudden commotion among a group of soldiers outside and the raising of glasses skyward drew us forth to watch an aerial battle in progress. With the aid of borrowed glasses I could see six machines in the sky manœuvring for position. Two in particular seemed to be closely engaged when the German suddenly turned tail and fled. A white puff of smoke beside him indicated that the Archibalds had been watching the combat closely. A second, third and fourth followed in rapid succession until suddenly at the fifteenth burst the Taube began to drop and flutter down, like a leaf falling from a forest tree on a quiet October day. Five minutes later, far out in the salient, we saw a second driven down in a straight nose dive, making the third for that day in the vicinity of Ypres. One might watch for months, as I afterwards did, without seeing another aeroplane brought down.

When we were on our way back from Ypres on our return, a horse ridden by an officer suddenly curvetted across the road in front of us. Rad pulled up the car to a full stop, and the officer pulled in his horse at the same time. The horse reared, his front feet caught in the fender, he pawed the air wildly for a moment and,

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losing his balance, he fell over backward rolling on the officer. Soldiers quickly caught the horse and pulled him to one side, and greatly to our relief the officer was able to get up and walk. It was characteristic of the British officer that he had no feeling towards us on account of his accident; on the contrary, bruised and aching as he must have been though he would not admit it, he came over to the car and apologized for having caused us inconvenience. It is the British way of doing things.

As we traversed Ypres on our homeward route, a little girl held up bouquets of spring flowers and we stopped while I bought a large bunch of daffodils for the equivalent of two pennies. Crossing the railway tracks by the shell-shattered station we struck into the Dickiebush—Bailleul Road, and drove slowly homeward over the rough pavé.

Near Dickiebush the fields were pitted with numerous shell holes, and the rails of a light railway at one place pointed heavenward where a shell had exploded between them.

A pup, evidently unused to motor traffic on this bad bit of road, took a chance and tried to dash across in front of the car but miscalculated his distance and was bowled into the ditch.

It was curious to see one field ploughed with shells and full of holes, and the next field with prominently placed new signs bearing the inscription, "It is forbidden to walk over the growing grain." As we passed through the rolling land of Belgium under the brow of "The Scherpenberg," with Mount

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Kemmel over to the right honeycombed with dugouts, it was difficult to believe that, locked in a death grapple, not three miles away, were thousands of soldiers living underground like moles, and that at any moment the air might be filled with shells carrying death and destruction.

At the end of a peaceful day we reached our little French home town, glad to have seen our friends in their new area by the famous old city of the Flemish weavers.

Springtime had come in truth; the hedges of Northern France were beginning to bloom white, and the wild flowers were quite thick in the forest of Nieppe near Merville. It was the time in Canada when the spring feeling suddenly got into the blood, when one threw work to the winds and took to the woods in search of the first violets.

On the twenty-second day of April the very essence of spring was in the air; I felt as if I had to go out into the open and watch the birds and bees, loll in the sun, and do nothing. We struggled along until noon with our routine work, and having completed it Captain Rankin and I left for Ypres. A soldier had been transferred to us, and as we did not need him we decided to register a formal protest and see if he could not be kept with his present unit. Our road lay through Dickiebush and we made good time, again reaching Ypres about two o'clock.

It was quite evident to me as I retraversed the streets of Ypres that it had been heavily shelled since I had been there a few days before. Many more houses

THE SECOND BATTLE OF YPRES

had been smashed, and unmended shell holes were seen in the roads. As we crossed the Grande Place there was scarcely a soldier visible. The Cloth Hall, which the Captain had not seen before, showed further evidences of shell fire. After viewing the ruins we drove to the little restaurant kept by the pretty milliners, only to find that the place had completely disappeared—literally blown to atoms. Later on we found that a fifteen-inch shell had landed in the building next door and both houses had simultaneously vanished. A well known officer, Captain Trumbull Warren of the 48th Highlanders, Toronto, coming out of a store on the opposite side of the square had been killed by a flying fragment of the same shell.

We wondered whether the milliners had escaped, and somewhat depressed, drove along in search of another restaurant. A sign "Chocolat" on a door in a side street made us inquire, and, curiously enough, we found this also to be a little restaurant kept by two other milliners. They informed us that the first three milliners had escaped when the bombardment began, and before their restaurant had been blown up. One's interest in a place or in a battle is often in direct proportion to the number of one's friends or acquaintances there.

After lunch we drove to Brielen, but found that the A.D.M.S., whom we were in search of, and his deputy were both out. We were shown maps of the salient, and had the area pointed out to us where the French joined up with the second and third brigades of Canadians, and where the British troops joined up with the

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Canadians. When about to leave, a friend, Major Mac-laren of the 10th Infantry battalion, riding a mettlesome horse, rode up and I got out of the car and held the bridle while we had a long talk about the experiences of the Canadians since we had left Salisbury Plain.

We then drove back to the Ypres water pool, which was the largest supply of drinking water in the area. There were at least thirty-five water carts in line waiting their turn to fill up at this presumably good supply. We were told that it was safe because twice a week a couple of pounds of chloride of lime were chucked into the middle of the pool. We took samples of the water and passed on to Wieltze, intending to walk into the salient to see what "No man's Land" was like. Men had told us that, unlike the rest of the front near the trenches, there were no growing crops, and no birds sang in that desolate, dreary, shell-shattered area, and we wanted to see it for ourselves.

We were surprised and delighted to find Captain Scrimger, whom we had left convalescing at Bulford, England, in charge of the Advanced Dressing Station. He had just arrived that afternoon, and was in hopes of getting his old battalion again, explaining that on account of his illness in England he had been temporarily replaced as regimental medical officer by Captain Boyd. We talked with him in the little estaminet in which the dressing station was located, while the old woman who kept the place and two peasants chatted quietly together in a corner and drank beer. I wondered at the time whether they were spies. Captain

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Scrimger walked with us up to the edge of the village and then returned to his charge.

At the outskirts of the village we noticed a peasant planting seeds in the little garden in front of his house. The earth had all been dug and raked smooth by a boy and a couple of children. To our "Bon jour" he replied, and added "Il fait bon temps n'est ce pas?" looking up at the sun with evident satisfaction.

No motor transport was allowed to pass Wieltze because the road beyond was exceedingly rough, and it would only have been inviting disaster from breakdowns and German shells to have proceeded farther.

As we tramped along towards St. Julien our attention was attracted to a greenish yellow smoke ascending from the part of the line occupied by the French. We wondered what the smoke was coming from. Half a mile up the road we seated ourselves on a disused trench and lit cigarettes, while I began to read a home letter which I had found at Brielen.

An aeroplane flying low overhead dropped some fire-balls. Immediately a violent artillery cannonade began. Looking towards the French line we saw this yellowish green cloud rising on a front of at least three miles and drifting at a height of perhaps a hundred feet towards us.

"That must be the poison gas that we have heard vague rumours about," I remarked to the Captain. The gas rose in great clouds as if it had been poured from nozzles, expanding as it ascended; here and there brown clouds seemed to be mixed with the general yellowish

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green ones. "It looks like chlorine," I said, "and I bet it is." The Captain agreed that it probably was.

The cannonade increased in intensity. About five minutes after it began a hoarse whistle, increasing to a roar like that of a railroad train, passed overhead. "For Ypres," we ejaculated, and looking back we saw a cloud as big as a church rise up from that ill-fated city, followed by the sound of the explosion of a fifteen-inch shell. Thereafter these great shells succeeded one another at regular intervals, each one followed by the great black cloud in Ypres.

The bombardment grew in intensity. Over in a field not two hundred yards away numerous coal boxes exploded, throwing up columns of mud and water like so many geysers. General Alderson and General Burstall of the Canadian Division came hurrying up the road and paused for a moment to shake hands, and to remark that the Germans appeared to be making a heavy attack upon the French. We wondered whether they would get back to their headquarters or not.

Shells of various calibres, whistling and screaming, flew over our heads from German batteries as well as from our own batteries replying to them. The air seemed to be full of shells flying in all directions. The gas cloud gradually grew less dense, but the bombardment redoubled in violence as battery after battery joined in the angry chorus.

Across the fields we could see guns drawn by galloping horses taking up new positions. One such gun had taken a position not three hundred yards away from us when a German shell lit apparently not twenty feet

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away from it; that gun was moved with despatch into another position.

Occasionally we imagined that we could hear heavy rifle and machine gun fire, but the din was too great to distinguish much detail. The common expression used on the front, "Hell let loose," was the only term at all descriptive of the scene.

Streaking across the fields towards us came a dog. On closer view he appeared to be a nondescript sort of dog of no particular family or breeding. But he was bent on one purpose, and that seemed to be to put as great a distance as possible between himself and the Germans. He had been gassed, and had evidently been the first to get out of the trenches. Loping along at a gait that he could, if necessary, maintain for hours, he fled by with tail between his legs, tongue hanging out and ears well back. And as he passed he gave us a look which plainly said, "Silly fools to stand there when you could get out; just wait there and you will get yours." And on he went, doubtless galloping into the German lines on the opposite side of the salient.

By this time our eyes had begun to run water, and became bloodshot. The fumes of the gas which had reached us irritated our throats and lungs, and made us cough. We decided that this gas was chiefly chlorine, with perhaps an admixture of bromine, but that there was probably something else present responsible for the irritation of our eyes.

A lull in the cannonading made it possible to distinguish the heavy rattle of rifle and machine gun fire, and it seemed to me to be decidedly closer.

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The Canadian artillery evidently received a message to support, and down to our right the crash of our field guns, and their rhythmical red flashes squirting from the hedgerows, focussed our attention and added to the din.

Up the road from St. Julien came a small party of Zouaves with their baggy trousers and red Fez caps. We stepped out to speak to them, and found that they belonged to the French Red Cross. They had been driven out of their dressing station by the poisonous gas, and complained bitterly of the effect of it on their lungs.

Shortly afterwards the first wounded Canadian appeared—a Highlander,—sitting on a little cart drawn by a donkey which was led by a peasant. His face and head were swathed in white bandages, and he looked as proud as a peacock.

Soon after, another Canadian Highlander came trudging up the road, with rifle on shoulder and face black with powder. He stated that his platoon had been gassed, and that the Germans had got in behind them about a mile away, in such a manner that they had been forced to fight them on front and rear. Finally the order had been passed, "Every man for himself," and he had managed to get out; he was now on his way back to report to headquarters.

Then came a sight that we could scarcely credit. Across the fields coming towards us, we saw men running, dropping flat on their faces, getting up and running again, dodging into disused trenches, and keeping every possible bit of shelter between themselves and the enemy while they ran. As they came closer we could

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see that they were French Moroccan troops, and evidently badly scared. Near us some of them lay down in a trench and lit cigarettes for a moment or two, only to start up in terror and run on again. Some of them even threw away their equipment after they had passed, and they all looked at us with the same expression that the dog had, evidently considering us to be madmen to stay where we were. It was quite apparent that the Moroccan troops had given way under the gas attack, and that a break, doubtless a large one, had been made in the French front line.

Then our hearts swelled with a pride that comes but seldom in a man's life—the pride of race. Up the road from Ypres came a platoon of soldiers marching rapidly; they were Canadians, and we knew that our reserve brigade was even now on the way to make the attempt to block the German road to Calais.

Bullets began to come near. Neither of us said a word for a while as we saw spurt after spurt of dust kicked up a few yards in front of us.

"I think we had better move, Colonel," said Captain Rankin at last. As he spoke, a bullet split a brick in the road about three feet away from me, and slid across the road leaving a trail of dust.

"I think we had," I said as I walked over, picked up the spent bullet and dropped it in my pocket. Another bullet pinged over head and another spat up the road dust in front of us. "Those are aimed bullets," I said. "The Germans cannot be far away; it's time to move." It was then about 6.30 and we walked back to

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Wieltze, near which we met our anxious chauffeur coming out to meet me.

Canadian soldiers with boxes of cartridges on their shoulders ran up the road towards the trenches; others carrying movable barb-wire entanglements followed them. A company of Canadians took to the fields on leaving Wieltze, and began advancing in short rushes in skirmishing order towards the German front, while their officer walked on ahead swinging his bamboo cane in the most approved fashion. Another company was just leaving the village, loading their rifles as they hurried along. I overheard one chap say, as he thrust a cartridge clip into place, "Good Old Ross."

As we approached Wieltze we could see ammunition wagons galloping up the other road which forks at Wieltze and runs to Langemarck. Turning into the fields they would wheel sharply, deposit their loads, and gallop wildly off again for more ammunition, while the crashes and flashes of the guns showed that they were being served with redoubled vigor.

At the edge of the village the peasant, whom we had seen preparing his little garden and sowing seeds earlier in the afternoon, came down to the gate and asked rather apologetically if we thought that the Germans would be there to-night; "in any case did monsieur not think it would be wise for the women and children to leave?"

Behind him, standing about the door steps, were the members of his family, each with a bundle suited to their respective ages. The smallest, a girl about six years of age, had a tiny bundle in a handkerchief; the

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next, a boy about eight, had a larger one. All were dressed in their best Sunday clothes, and carried umbrellas—a wise precaution in the climate of Flanders. We agreed with him that it was wise to move away, because it would be possible to return, if the Germans were driven back, whereas if they stayed they might be killed.

As we talked to the father, the eldest, a boy of eighteen, came down to the gate with his grandmother, a little old lady perhaps eighty years of age, and weighing about as many pounds. The boy stooped down to pick her up in his arms, but she shook her head in indignant protest. Accordingly he crouched down, she put her arms around his neck, he took her feet under his arms, and set off down the road towards Ypres with the rest of the family trailing behind him. About ten o'clock that night my friend, Captain Eddie Robertson, standing with his regiment on the roadside ten miles nearer Poperinge, waiting for orders to advance, noticed a youth with a little old lady on his back, trudging by in the stream of fleeing refugees.

Wieltze was a picture; the kind of moving picture that the movie man would pay thousands for, but never can obtain. The old adage held that you always see the best shots when you have no gun. Small detachments of Canadian troops moved rapidly through the streets. Around the Canadian Advanced Dressing Station was a crowd of wounded Turcos and Canadians waiting their turn to have their wounds dressed. All the civilians were loading their donkey or dog carts

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with household goods and setting out towards Ypres, sometimes driving their cows before them.

As we climbed into the car, which had been placed for shelter behind the strongest looking wall in the town, and slowly started for Ypres, a section of the 10th Canadian Battalion came along with our friend, Major Mac-laren, whom I had talked to at Brielen earlier in the afternoon, at its head. I waved my hand to him and called "good luck." He waved his hand in answer with a cheery smile. A couple of hours later he was wounded and was sent back in the little battalion Ford car, with another officer, to the ambulance in Vlamertinge. While passing through Ypres a shell blew both officers' heads off.

At the fork of the roads, Lt.-Col. Mitchell of Toronto, of the headquarters staff, who was directing traffic, came over and asked us if we had seen certain Canadian battalions pass by. We told him we had and we shook hands as we wished each other "good luck," not knowing whether we should ever meet again. We picked up a load of wounded Turcos and took them into the ambulance at Ypres. Fresh shell holes pitted the road and dead horses lay at the side of it. One corner in particular near Ypres had been shelled very heavily, and broken stone, pavé and bricks lay scattered about everywhere.

All the while the roar of guns and the whistle of flying shells had increased. We reached the ambulance in Ypres between dusk and dark; it was light enough to see that the front of the building, which had been intact earlier in the afternoon, had been already

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scarred with pieces of flying shells. The shutters which had been closed were torn and splintered, and the brick work was pitted with shrapnel. We forced our Turcos to descend and enter the ambulance, though from their protests I judged they would have much preferred a continuous passage to the country beyond Ypres.

As we entered the door Major Hardy (now Colonel Hardy, D.S.O.) was found operating on one of his own men; the man had been blown off a water cart down the street and his leg and side filled with shrapnel. It was rather weird to see this surgeon coolly operating as if he was in a hospital in Canada, and to hear the shells screaming overhead and exploding not far away, any one of which might at any moment blow building, operator and patient to pieces. That is one of the beauties of the army system; each one in the army "carries on" and does his own particular bit under all circumstances.

A terrific bang in the street outside, followed by the rattling and crash of glass and falling of bricks, caused Rad to remark "there goes the good old Lozier car." At the same time the piercing shrieks of a woman rang out down the street, shrieks as from a woman who might have had her child killed. We went to the door and looked out; the Lozier was still intact, though later on we found the rounded corner of the metal body of the car bent as though a piece of pavé or metal of several pounds weight had struck it, and the floor of the car was covered with bits of broken glass and brick.

Major Hardy asked us to take his patient on to Vlamertinge as it was doubtful when a motor ambu-

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lance would return, and we were glad to do so. After being given the usual dose of anti-tetanic serum, he was wrapped in blankets and made comfortable in the back seat. We shook hands with the Major and started off for Vlamertinge.

It was too risky to go through the centre of the town on account of falling walls, chimneys, and the swiftly descending fragments of houses blown skyward. So we skirted the town and tried to get down a side road to Vlamertinge. It was choked with refugees and transport, and the military traffic policeman strongly advised us to take the main road from Ypres. As there was no alternative we drove back to the water tower in the city. This road was clear, for nobody was going into Ypres at that time by that particular intersecting road.

We made all possible speed to get through the town and into the main Ypres-Vlamertinge road. There wagons began to pass us going the opposite way, the horses whipped into a gallop as they made haste to get through the town to the bridge-head on the far side. Motor transport lorries also drove at full speed to get by this danger point as quickly as possible. As we cleared the town again, the traffic became heavier, and we gradually worked into and formed part of a great human stream with various eddies and back currents.

It was now dark, and but for the feeble light of a young moon, which sometimes broke through the clouds and faintly illuminated the road, nothing could be seen. All headlights were out, and not even the light of a hand lantern or flashlight was permitted. Yet one's eyes be-

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came accustomed to the dark, and when the pale moonlight came through we could dimly see over on our right a line of French Turcos moving like ghosts along towards Vlamertinge. Next them were the fleeing refugees with their bundles, wagons and push carts, and their cows being driven before them. If there was a cart, the old man or old lady would invariably be seated on the top of the load, sometimes holding the baby.

In the centre of the road we groped our way along with infinite care. A shadow would sometimes bear down on the car, and suddenly swerve to one side as a horseman trotted by. A motor lorry would approach within a few feet of us before the driver would see, and stop before we crashed into each other. On the left were troops standing by all along the roadside, and we felt very proud as we realized that they were Canadians, and that they were the only troops at hand to plug the gap made by the German poison gases.

At one time the road became jammed, and we had visions of staying all night in the midst of a road block. Gradually, with the aid of mounted gendarmes and our military police, the mass, composed of cows, wagons, horses, dogcarts, refugee men, women and children, with hand wagons and baby carriages; motor lorries, horse transport, lumber wagons, motor cycles, touring cars, and mounted horsemen, was dissolved, and slowly began again to flow in both directions. Looking backward we could see the red glow of fires burning in different parts of Ypres and the bright flashes of shells as they burst over that much German-hated city. All around the salient star shells flared into the sky and re-

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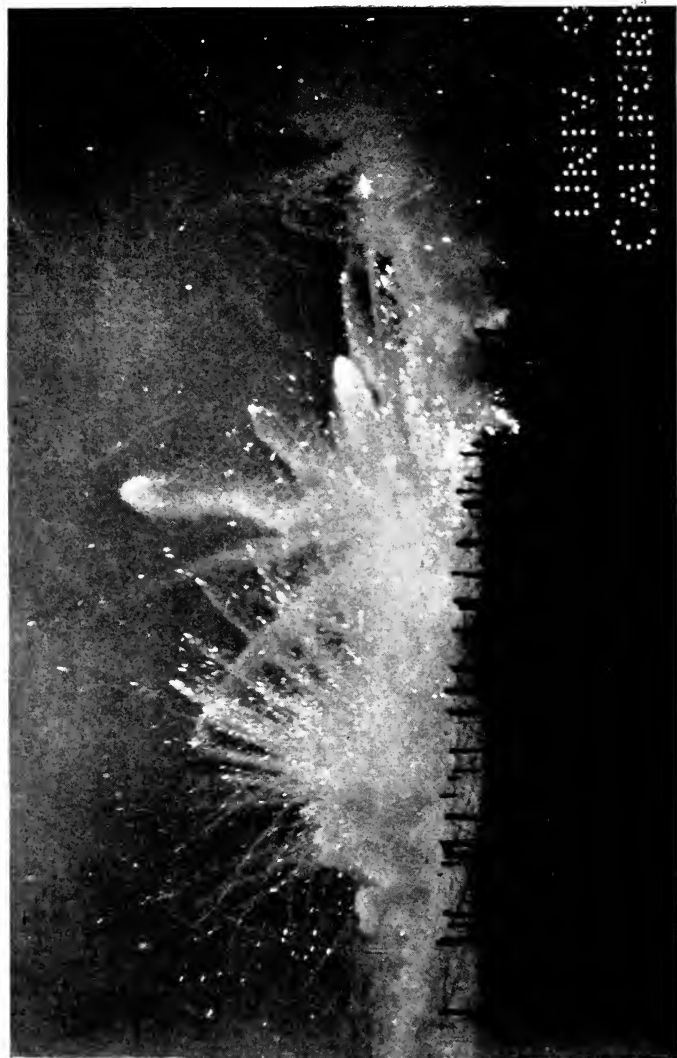
mained suspended for a few minutes as they threw a white glare over the surrounding country, silhouetting the trees against the skylike ghosts before they died away and fell to earth.

At last we reached Vlamertinge and turned into the yard occupied by No. 3 Field Ambulance. Our car was known, and several officers came forward to see if we had any authentic news. Our patient, whom they recognized as belonging at one time to themselves, was carried into shelter, and we also entered the building. Lying on the floors were scores of soldiers with faces blue or ghastly green in colour choking, vomiting and gasping for air, in their struggles with death, while a faint odour of chlorine hung about the place.

These were some of our own Canadians who had been gassed, and I felt, as I stood and watched them, that the nation who had planned in cold blood, the use of such a foul method of warfare, should not be allowed to exist as a nation but should be taken and choked until it, too, cried for mercy.

We could not help smiling as we shook hands with Captain Boyd, who had been shot in the calf of the leg and was now getting the wound dressed, particularly when he heard that Captain Scrimger had already been ordered to replace him. Captain Scrimger won the V.C. the following day).

We offered our car to the Colonel of the ambulance for the night, but he had to stay at his work, and the car was not very suitable for evacuating wounded. As we could not be of use, we reluctantly passed on out



GERMAN BARRAGE FIRE AT NIGHT.

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of the fighting zone toward home, and the refugees being not so numerous we could travel faster.

Near the entrance to Poperinge a British Major came over to our car as we were showing our passes to a military policeman. "Are you Canadian officers?" he said.

"We are," I answered.

"Then would you mind telling your Canadian transport drivers to stop going up and down this road; they insist on doing it, and I can't stop them."

"There is a big battle up in the salient," I said. "Shells and many other things are needed; our men have been sent for them and know what they want; I wouldn't interfere with them if I were you."

He looked at us as though we were hopeless idiots, and we drove on. The motor ambulance convoy, which we had been asked to have sent forward, had already gone, and our last errand was done. Putting on our headlights and opening the throttle, we tore homeward, reaching Merville at eleven o'clock.

When we arrived at the Mess, Captain Ellis, who had been anxiously waiting, said that we looked grey, drawn and ghastly, partly perhaps from the effects of the poisonous gas. We had an intensely interested listener as we recounted our experiences and drew plans of the line as we thought it probably existed at the moment. Whether the Germans could get through or not was the dominant question. Nothing lay between them and Calais but the Canadian Division, and whether the Canadians could hang on long enough in face of this new terror of poison gas until new troops arrived,

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no one could even venture to guess. We felt that they would do all that men could do under the circumstances, but without means of combating the poison it was doubtful what any troops could do. Supposing the Germans just kept on discharging gas? Nothing under heaven apparently could stop them from walking over the dead bodies of our soldiers, choked to death like drowned men. We could not decide the question that time alone could answer, and we went to bed to spend a long sleepless night longing for the day, when we would get news of the battle.

The next afternoon I was sent for by General Sir Henry Rawlinson, commanding the corps in our area. He had heard that I had seen the gas discharged the day before and wanted to know what the gas was, what the effect had been, how it could be combated and, in fact, all about it. When I had finished my narrative he placed a large map in front of me and asked me to sketch out the part of the line where the gas had been discharged, and how I thought the line should be at the present moment. I did my best, tyro as I was. It was one of the satisfactory moments of my life when the General drew the map to one side and showed me a map of the line as it really was, given him by General Foch that very morning. The maps were identical, and the General smiled a smile of appreciation as he thanked me for the assistance that our laboratory had given in helping to diagnose and combat this new mode of warfare, and I left his office feeling that we had been of some real use in the war even if we never did anything else.

CHAPTER VIII.

THE AFTERMATH OF THE GAS.

THE day after the gas attack I reported to headquarters, that in my opinion the gas used was chlorine with possibly an admixture of bromine, and that a mask with a solution of "Hypo" to cover the nose and mouth would probably absorb the gas and destroy its effectiveness. I also suggested that the battle area be searched for masks which the Germans were sure to have had prepared as a protection for their own men. (Most of the morning I had spent in bed with an attack of bronchitis suffering from the effects of the gas.)

Later I learned that German prisoners had given the information that the gas was contained in cylinders but would not admit that they knew what kind of gas it was. They also said that the men who operated the tanks wore protective masks and gloves.

All that day the Indians of the Lahore division from our area were passing through our town on the way to Ypres.

On Sunday afternoon Captain Ellis and I left for Vlamertinge to find out just what had happened. The suspense had become terrible and we felt like quitters because we were not in the salient fighting with our fellows. At Poperinge we saw a cart on the road beside a house which had been recently blown down by a shell. As we drove slowly by, a wounded old woman was carried out and laid beside the bodies of two other

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white-haired women who had just been dug out of the ruins. Though fatally injured, they were still living, and I shall never forget the pitiful looks on those ashy gray faces as they looked up into my face with eyes like those of sheep about to be slaughtered.

At No. 3 Canadian Field Ambulance we found that 2,600 Canadian casualties had already passed through during the three days since the gas attack. We heard there that Major Mothersill, Medical officer of the Eighth Battalion, had been lying out in front of the lines for two days, unable to move and apparently paralyzed. It was one of those personal experiences which brings the war home to us with startling reality, for I had made a tour of his area with him just a few days before. You hear of the loss of a thousand men and it affects you very little, but if you know personally a single one of the thousand, the news of his death may give you the blues for days. The loss of a million unknown Russians does not really mean as much to one as the loss of a single friend.

On our return trip we passed a large number of London busses loaded with wounded; they were all sitting-up cases and were a very happy looking lot. It was an odd sight to see bus after bus tearing down that long, straight road, with the tall trees on either hand, each bus with rows of soldiers seated on the upper deck, with heads and arms bandaged, looking about at everything with the greatest interest,—like tourists rather than men who had just come from the very gates of hell. They waved hearty greetings to the

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French artillery which was then pouring up the side roads.

As the French 75's bumped along the roads, drawn by rat-tailed, wiry horses, they looked like pale blue, painted wooden guns, instead of what they were—the deadliest weapon that the war had till then produced. An officer who watched them the following day gallop onto the field, unlimber and start firing, told me that the way their fire covered that front was an absolutely uncanny sight. With mathematical precision the shells would begin to drop at one end of a field and cut out a belt across it from side to side, the belt growing as each explosion threw up a splash of dust from the showers of shrapnel; having completed the belt they would begin another a few yards farther back until the whole field had been covered and not a soldier hiding anywhere in it left alive.

On the day of the first gas attack there were soldiers everywhere back of the line; that day as we drove home there was not a single one to be seen. They had all gone forward toward the front where they could be of the greatest use.

When the French people of the little villages through which we passed saw the name "Canadian" on our car they nudged each other and repeated the word "Canadien." It was the name in everybody's mouth those days, for it was now general knowledge that the Canadian division had thrown itself into the gap and stemmed the German rush to Calais. The whole world was ringing with the story of how the colonial troops had barred the road to the channel to a force many times

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its size in men and guns, and armed with poison gas, the most terrible device of warfare that had yet been invented.

And well may it be said that the 22nd of April, 1915, was, to the allies, one of the two most vital days since the beginning of the war. The Germans had planned to break through and seize the French coast along the narrowest portion of the channel. Once established there they would have attempted to cover the channel with their long range naval guns, while they would have established for their submarines harbours which could be protected by the same guns. Under such circumstances, cross channel traffic and the maintenance of our lines of communication would have proved to be a very difficult matter indeed, for the subs would then, at any time, have easy access to our channel path.

The importance of the Canadian fight during that first twenty-four hours was out of all ratio to the size of our forces. The whole success of the battle hinged on the attack by two battalions on the morning of the 23rd of April. These two battalions were sent up into the centre of the gap left in the line by the retreat of the French colonials. Supported by four field guns, they advanced steadily under a terrific fire from the enemy. As General Mercer said to me afterwards, it was, according to the book, probably as crazy a bit of military tactics as could possibly have been tried, but the very daring of the attempt proved its success. The Germans, believing that such a counter attack must be backed up by much stronger forces, hesitated to come on

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and the day was saved, for while they hesitated and made sure of their ground, troops were hurried up from other parts of the line and the Huns had missed their chance. That first night if the Germans had simply walked ahead they would have found nothing to stop them, but they were too much dazed with their own success to realize the situation and take advantage of it.

Naturally we were thrilled with pride at the success of the division; we had been present at its birth; we had watched it through the various vicissitudes of its eventful career; and now its great opportunity had come. Now its name had been indelibly written on the scroll of fame. It had saved the situation in one of the most critical happenings of the whole war.

The next day the General of the fourth corps, accompanied by his staff, paid a visit to our laboratory, and the General told us that the Germans had tried their gases on the Belgians the very day after they had gassed the French and Canadian colonial troops. But the Belgians breathed through wet handkerchiefs till the gas had passed over, and when the Germans came on, full of confidence in the efficacy of their deadly new weapon, the Belgians gave them a severe punishing.

On April 27th the three of us started out after 5 o'clock to the Canadian area in search of news. The military policeman on the road at the outskirts of Poperinge on being queried said, "All right, no shells to-day in Pop." But we got only about 150 yards into the town when there was a terrific hair-raising explosion near us, followed by showers of bricks and bits of whizzing shell. It was a shell of very high calibre,

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and as we passed the next cross street and looked up it, we could see four houses settling into dust and a few people running towards the spot. A telephone wire cut by a flying fragment fell upon a car just ahead of us. It looked funny to see the doors of the houses along the street belch forth their inmates who rushed to the shutters, banged them to, rushed in again and no doubt hid themselves in the cellars. It reminded us exactly of the actions of a flock of chickens when a hawk appears in the sky.

A moment after, as we were leaving the town, another shell went screaming overhead, exploded to our right near the station close to the road, while a third went off on our left. Some Belgian soldiers who were bringing in a wounded man on their shoulders dropped flat upon the ground, letting the poor wounded chap fall with a crash. We opened the throttle and speeded on. A motor ambulance convoy loaded with wounded flew by us toward the base; in fact everything on the road was going at top speed that evening. We buttoned our coats up to our throats and took a fresh grip on our cigars as we tore up the road into that "unhealthy" district, feeling that we must go on. "This is the life," said the Major with a grin. Perhaps it was foolish but the excitement was worth the danger.

In the fields by the roadside were picketed cavalry horses, saddled and bridled, and ready to be mounted at a moment's notice. No contingency appeared to have been overlooked; everything had been put into readiness for anything that might happen.

At Vlamertinge everybody was standing by ready

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for the word to move. Heavy shelling had been going on all day and the shells were still coming pretty thickly. The street was littered with broken bricks, fresh plaster and other debris; on all sides were crumbled walls and ruined houses. The office of the A.D.M.S., Colonel Foster, had a shell hole right through it and his desk was covered with plaster. The office staff occupied the cellar and they informed us that the officers were housed in a white chateau on the opposite side of the street. There were several officers there; most of them evidently thought that we were fools to come voluntarily into a place that they would have given a good deal to be out of.

The front line was being held, and things were going fairly well in the salient. But sitting around in a building that was liable to be blown up any moment was not pleasant work for either officers or men, and some of the men who had been subjected to the strain for several days showed unmistakable evidences of it. The Canadians had lost heavily but as yet no accurate figures were obtainable on account of the complicated nature of the fighting and the fact that the wounded were going through several ambulances.

We did not stay any longer than was necessary to obtain the news and our return trip to Poperinge was a record one. We saw freshly-killed horses on the roadside, and in the Grande Place in "Pop" the fresh shell holes showed that the process of hammering was still going on with undiminishing vigour. Dinner was half over when we reached our mess that evening. As we entered the room a tin bowl fell to the floor with a

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crash. Every person in the room started as though it were a bomb, and we, fresh from our day's experiences, ducked our heads for safety. Tired out, we said nothing about our trip and went to bed early.

The next few days were full of interest. The news from the Canadian Division was both good and bad. they had had 6,000 casualties,—practically half of the infantry,—but all the reports, even those of the Germans themselves, agreed in giving them credit for having fought like fiends and having spoiled the great German plan. The first lists of the killed had come out and contained the names of many of my personal friends, and the sense of a great pride in the achievements of one division was marred by the sorrow for their loss.

The town of Poperinge was now deserted. Traveling in that direction one morning I met streams of refugees coming from it and on entering it found it like a city of the dead. Not a soul could be seen except one small unit which had been temporarily forgotten. The French gendarmes had driven the inhabitants out of the place because it was said to be full of spies who had been of great assistance to the enemy at a time when any bit of information might be of incalculable value to them. From one of the men of this stranded unit I obtained a three-pound piece of the 15-inch shell which had exploded close to us a few days before.

A non-com of the sanitary section who had come through Ypres an hour before told me that he had seen an old woman over 80 years of age sweeping the front sidewalk and polishing the windows. She was perhaps the only remaining resident.

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The city was being steadily reduced to ruins by a continuous avalanche of shells and he spoke to her and tried to induce her to come with him but without avail. "She had lived there all her life and she intended to die there; it had been her custom to clean the windows and sweep the sidewalks, and if Providence willed that shells should come and knock down her neighbors' houses and make a lot of dust, she would just have to sweep oftener, what was the difference anyway?" And so he had to leave her.

The laboratory at this time was a place of much interest and many distinguished generals and medical men came to find out about the gas and methods of combating it. General Headquarters had sent for me to watch some practical field experiments and to give them the benefit of our experience on this question. With the chief engineer of the local army we carried out some experimental work of our own on a large scale. These experiments led to certain recommendations which were later found to be of value in making the German gases less effective. We also did a good deal of experimental laboratory work with other gases which might possibly be used, with the object of discovering their antidotes.

On May 5th the Canadian transport was strung along the roads leading from Ypres and we knew that the division was out for a rest. We hunted out some of our friends in Bailleul,—some of the few that were left. There were 7 of the 25 officers in the 3rd (Toronto) battalion and 6 out of the 25 in the 48th Highlanders of Toronto, though the missing ones had not all

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been killed. They were greatly changed in appearance, were very tired, and could tell little of their experiences in any connected way; at that time they had simply a succession of blurred impressions; they could recall a terrible excitement but had little idea of the sequence of events. The men, sitting around the streets of Bailleul in the sun, looked as if they had seen and experienced more than they could ever tell.

One of my officer comrades had gone insane, and another had been so shell shocked that he was of no further use and had been sent to England,—the latter was one of those officers whom I had seen in the little club house at Winnezele. Two of my friends had been buried out in the front one night with two other officers—all in the one shell hole.

The medical officer, Captain Haywood, conducted the burial without candle or book. The green white light from the German flares and the red flashes of the guns was the only light to show the sad little party where their erstwhile comrades rested. The lay parson, exhausted with seventy hours' continuous work, and unable to recall a single word of the burial service, broke huskily into this rugged commendation, "Well, boys, they were four damn good fellows; let us repeat the Lord's prayer," but they couldn't manage to say even the Lord's prayer among them.

What a setting for a soldier funeral! The black night, the roar and flash of the guns and the green flare of the German star shells silhouetting those bowed heads above the soldiers' grave. What a fitting tribute to a soldier! The broken voice with the rough and

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ready words of praise: "They were four damn good fellows." What more could be said? What more would any soldier desire?

One chap had seen General Mercer, with his aide-de-camp by his side, crossing a fire-swept field deliberately stop in the middle of it to light his pipe. Everybody agreed that the General was the coolest man in sight that day. The Aide himself assured me that it took several matches to light the General's pipe and that the matches were the slow-burning variety; he said that it seemed to him to have taken about an hour to light that pipe, and all the time he was wishing himself safe in the shelter of a ditch. It had not been mere bravado on the General's part but a deliberately planned act to steady his men.

Some of the Canadian soldiers came into the dressing stations during the battle, accoutred in wonderful equipment that had taken their fancies. One wounded chap wore an Indian's turban, a French officer's spurs and a British officer's pistol.

Major W. D. Allan had seven bullet holes in his clothing, two of them through his hat; and yet his skin was not broken. The nearest approach to a wound was a big triangular bruise on his shoulder, made by a piece of spent high explosive. One of the bullets had gone through his hat and tipped it over his eyes as his unit was falling back from one trench to another; he said that he was positive he had broken the world's record for a hundred yards in the next few seconds.

The First Battalion, at whose mess I dined one night, had lost 400 out of a total of 800 men during a

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600-yard advance into the breach made by the German gas in the face of a terrific fire.

Meanwhile preparations were in progress for a battle in our area evidently for the purpose of relieving the pressure on the line elsewhere, and on the 9th of May we were wakened at 4.30 a.m. by the final bombardment. I had been invited to witness the battle by a general on the staff but I was unable to go.

The first wounded came in about noon and by four o'clock the hospital where we took our meals was filled. From the windows above we could see scores of wounded lying in rows on stretchers in that sunny courtyard, some conscious and others unconscious. Every conscious wounded soldier held a cigarette between his lips and I even saw them going in to the operating table smoking. The wounded were a depressed lot that day; the men themselves realized that they had been badly cut up for little purpose, for the wire had not been destroyed and they had been unable to make any progress. The authorities in England had not yet realized that high explosives were necessary to cut wire in spite of the fact that everybody in the field knew it. It required a newspaper agitation to convert some of the authorities as to the need of high explosives.

After a rest the Canadians took over a new piece of line near Festubert, and a hot spot it was. We knew this area well as far forward as the advanced dressing stations, and had been there by day and night in the car.

When the Canadian attack at Festubert began, I was wakened one night by a lull in the booming of the

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guns, and got up to sit by the window. It was one of those still nights in June when every sound carries for miles. The odours of sweet flowers floated up from the garden below, and the splash, splash of frogs hopping into the river could be heard from time to time. The guns had stopped, but the rattle of rapid rifle fire was as distinct as if it had been only half a mile away; then the rattle of machine guns could be distinguished, succeeded by the explosions of hand grenades, and I knew that the Canadians were hard at it, probably with the bayonet. It was not a comfortable feeling to sit seven miles away and listen to a succession of sounds so full of meaning, nor is a vivid imagination a good thing for a soldier to have in the field.

The following day a young lieutenant whom I had hunted out three days before, came in to the clearing station down the street, wounded in shoulder, head, hip and leg, with shrapnel. That boy is now Major Mavor, M.C., D.S.O.

Two days after, we drove over to headquarters of the 1st army. With the sun setting in a gorgeous glow, and with hedges in full blossom, Flanders was transformed for once that evening into a land of beauty.

About ten o'clock we heard a hum of an aeroplane overhead and then a series of explosions, like those of a heavy gun. Flashes were seen in the direction of a French town where there were great steel works and we drove home that way. The inhabitants of the country and the hamlets along the road were all out of doors gazing at the sky, and as we entered the bombed town we found everybody quite excited. Eight bombs had

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been dropped in the place, but none of them had any effect, except to rouse the populace to a condition of excitement.

Our headlights were burning, and suspicion was evidently aroused as to the possibility of this being connected with the attack, for we were suddenly halted by a blue-coated French soldier stepping in front of the car and holding his gun above his head in the usual way while eight other French soldiers surrounded us. Some of them pointed bayonets threateningly at us while we were all covered by rifles. It was quite a picture. Our headlights shone brilliantly on the three men in front, while the faces of the others, nearly all with moustachios and goatees, lit up by the moon and the glare of the red lights from the works, looked most ferocious. The slender, flashing French bayonets seemed to be at least three feet long.

As we waited to be identified, a British sergeant lounged forward, a little the worse for beer, and nodded cordially as he leaned carelessly on the front door and explained all about the bombs. At a word from him the Frenchmen fell back, and we moved on. Every house seemed to have a soldier on guard, but we were not questioned further, and drove peacefully home along the canal, whose iris-decked banks were perfectly reflected in its glassy waters in the brilliant moonlight.

Again I changed my billet by the bridge to live at a fine old house farther up the river. It had a beautiful old garden which was separated from the street by a high iron fence on a brick foundation. Walnut trees

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from the garden overhung the street and shaded a little octagonal summer house. The old-fashioned, square, red brick house faced the lawn, in the centre of which was an elongated brick-lined pool of water with a bridge over it. In the centre of the lawn was a large polished silver ball on a pedestal; this was regarded as a fine ornament. The lawn was separated from the garden by a high hedge. The garden proper, a real old-fashioned one, containing many berry bushes, fruit trees, and a few old-fashioned flowers, ran right back to the river. A brick boundary wall kept the river from washing away the banks, and brick steps led down to a little floating platform. There was much shade in that old French garden; it was the most peaceful and restful place that I ever found in France. Even aeroplanes sailing overhead on their missions of destruction seemed from my garden to be harmless.

I always took my French lesson there after dinner, when the bees droned about and one had an irresistible desire to sleep. My teacher, Professor Paul Balbaud, had been a lecturer in Toronto University, and at this time was drawing the magnificent sum of one cent a day as a private in the French 77th territorial regiment. On one occasion he presented me with ten days' pay which he had received that very morning, and I had the two five-sou silver pieces made into watch charms. Monsieur Balbaud was engaged in the telegraph service, and was an excellent teacher. Later on that year the pay of the French soldier was raised to five cents a day.

Madam Carré, a dear old lady, owned the house

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and she was kindness itself. Nothing was too good for the Canadians. Her grand-daughter, a tall good looking girl of Spanish descent, twenty-one years of age, had been married seven months when the war broke out, and her husband, an artillery man, had been killed. Three times a day during that first year did the girl go to church to pray for the safety of her husband, for she would not believe him dead.

I was wakened the very first night at my new billet, about 2 a.m., by the rat-a-tat of a kettle-drum, and two dreary notes continuously repeated by a bugle. It was the alarm for a fire at a farmhouse about half a mile from town. Our men from the hospital helped to get most of the furniture out, and were standing around watching the farmhouse and barns burn down, when the 17 Brigade Lancers appeared with the hand hose-reel, which, however, proved to be useless. The Lancers had broken into the fire hall and stolen the apparatus.

The local firemen afterwards came to the fire hall but found the engine gone; after some discussion they went home and donned their white duck trousers, blue tunics, and polished brass helmets. The fire chief and first deputy then had a dispute about something which resulted in the deputy going home in a huff, while the chief and the second deputy (the whole fire brigade) resplendent in their spotless uniforms of white, blue and gold, marched out to the fire. The British soldiers lined up when they saw them coming, and gave them three rousing cheers, while one of the Tommies solemnly swept the road before them with a broom. As my

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chauffeur "Rad" said, "It was just like a scene from a blinking comic opera."

The area was now well known to us, for, in the course of our work, we had been over every bit of road in it. It was very noticeable how the farmhouses along some roads, which paralleled the front line trenches about one and a half miles behind it, gradually disappeared. On Monday perhaps we would have to go down to a certain battery located on this road, and there would be a dozen intact farmhouses in the course of a half mile. On Friday of the same week, one or more of them would be burned down, while the shell holes in the fields and road around them indicated deliberate concentration of fire.

Our work was interesting and we kept busy all the time. The monotony of working seven days a week, however, becomes very great after a few weeks and seriously affects the health and the ability to work. In the other army services work came in periodical bursts; ours was a steady grind of seven days a week.

We saw the hay mowed and gathered in; we noticed the grain fields gradually turn to gold, saw the reaping and all other operations of mixed farming carried on in all its interesting detail. Meanwhile the First Canadian Division had settled down in the Ploegsteert section, which was out of our area, and the second Canadian Division had arrived and joined up with them. The Second Division had come over to teach the First Division a lot of things and there was a fair amount of feeling between them as will be seen from the following confidential conversation between two

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brothers in different divisions, upon meeting for the first time:

"Say, we have had a hell of a time trying to live down your reputation," said the younger brother.

"Yes, and you will also have a hell of a time trying to live up to it, too," retorted the senior.

And there the matter rested until events subsequently showed that both divisions were composed of exactly the same stuff.

CHAPTER IX.

THE MEDICAL ORGANIZATION OF THE BRITISH ARMY.

EACH battalion at the front has a headquarters, usually in a dug-out or a sheltered farm house close to the lines: each brigade, consisting of four infantry battalions has a headquarters farther to the rear: each division, consisting of three infantry brigades, artillery, etc. has a divisional headquarters in some town, still farther to the rear, out of shell range: each corps comprising two to four divisions has its headquarters in a town back of this again: each army, composed of two to four corps, has its headquarters still farther to the rear, and the popular idea of the Tommy is that since the respective headquarters occupy bigger and bigger chateaux the farther back they go, away back somewhere in a town all by himself, living in a big castle from which he operates everything, is the commander-in-chief of the whole British Army.

General headquarters is usually a very busy place, for there are the heads of the various services of the army, and all the orders affecting the army as a whole are issued through it. The offices of the chiefs of the services are business offices and are operated in a most business-like way. The system is so perfect that it is difficult to escape from it should an order be neglected or a duty left undone.

Among these chiefs is the Director-General of Medical Services of the British Army in the field, Gen-

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eral Sir Arthur Sloggett. Through him and his deputy, General Macpherson, went all the general orders affecting the health of the army.

At the head of each army medical service is a Surgeon-General (D.M.S., or Director of Medical Services), and at the head of each corps a full colonel (D.D.M.S. or Deputy Director of Medical Service). The chief medical man of each division is also a full colonel (the A.D.M.S. or Assistant Director of Medical Services), and he is responsible for the operation of the field ambulances and the evacuation of the wounded to the casualty clearing station while his division is in the firing line. The medical officers of battalions and the sanitary squad are also under him.

The casualty clearing stations and the mobile laboratories, are under the D.M.S. of the army, who is responsible for the clearing of the hospitals by motor ambulance convoys and by hospital train.

There are normally three field ambulances to each division and one casualty clearing station. The number of base hospitals to each division is normally two, but as many of these are utilized as are needed. They are scores of miles from the fighting zone, and do not particularly concern us here.

When a battalion medical officer or sanitary officer wishes to make a report or suggestion he does so through the A.D.M.S. of the division. In the same way the A.D.M.S. of the division communicates with the D.D.M.S. of the corps; the D.D.M.S. of the corps with the D.M.S. of the army, and the D.M.S. of the army with the D.G.M.S. at G.H.Q. A battalion medical offi-

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cer cannot go over the head of his A.D.M.S., nor could the latter pass his D.D.M.S. to make a report or suggestion. Everything must go up or down the system through the various heads, and no side stepping is permitted.

The front line trenches were about seven miles from our laboratory which was located in a town with three casualty clearing stations, a railroad and canal. This made it possible to evacuate the wounded rapidly to the base by means of hospital trains and barges during an engagement.

The system which enables a sick or wounded man to be removed from the front is simple enough. Each day the medical officer of a battalion, who himself may be located in a dug-out in the trenches themselves or in a cellar of a house not far behind the trenches, holds a "sick parade" at his "regimental aid post." During a battle the wounded are collected by the regimental stretcher bearers and brought to the aid post.

Any soldier who is feeling unwell reports to the M.O. of the battalion who, if the trouble is a minor one, may give him some suitable medicine. It is one of the difficulties of the M.O. to distinguish between a case of genuine illness and a fakir or "scrimshanker," and a good supply of common sense and a knowledge of human nature is a great asset in making correct diagnoses. It is almost impossible, for example, to distinguish between a genuine case of rheumatism and a clever imitation of it, because the only symptoms are pains, the effects of which can easily be simulated by a soldier. If the man shows serious symptoms he is sent back to the "advanced dressing station" which

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will probably be a mile or so behind the front line trenches, if possible in a house and on a road accessible to motor ambulances.

If the man can walk he goes through the nearest communication trench; if wounded he is given first aid, and if unable to walk he is helped or carried back by stretcher bearers from the ambulance—to the dressing station.

Some of these dressing stations taking in wounded under shell fire were located in shell-proof dugouts. At many points light narrow gauge railroads had been built which ran from the dressing stations right up to the trenches. On these railways little cars pushed by hand were used both for bringing out the wounded during a battle and for taking in food, water and other supplies. It is, of course, impossible to lay such railways in many parts of the lines where they would be exposed to direct observation by the enemy, but they are becoming more and more numerous as their value in saving time and labour in the "man handling" of food and trench supplies has been proved. At one of these dressing stations where the railway came right up to the shell proof dugouts fresh shell holes in the neighborhood testified to the fact that the work of the field ambulances is at times not unmixed with excitement.

The cases which accumulate at the advanced dressing station are given further treatment if required, and are evacuated by motor ambulance, usually at night, as the road to the station is frequently under the enemy's observation, to the field ambulance proper

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where they are given further treatment or dressings as the necessity may be.

From the field ambulance the sick and wounded are cleared by motor ambulance convoy to the casualty clearing station, or possibly in cases of tired or slightly shell-shocked officers and men, to the rest stations or convalescent hospitals, of which there are a number well behind the firing line.

At the casualty clearing station the men are checked over, their wounds redressed, operations performed, and all the work done necessary to enable the men to be passed on to the base hospital by hospital train or barge. These clearing stations, of which there are usually three in a town, may keep certain serious cases for days until it is deemed advisable to send them on.

While one clearing station is filling up and treating the patients, the other will be sending all possible treated cases down the line. From the base hospitals, which are near the sea, the men are forwarded as soon as advisable by hospital ships for distribution among the hospitals of England.

While a battle is in progress the men pass through this system so rapidly that they may be wounded one morning and be in a hospital in England the next.

The medical officer, of course, is attached to the battalion, and goes everywhere with it, and under him are a number of stretcher bearers who gather up the wounded. The advanced dressing station is merely an advanced party from the field ambulance which itself is divided into three sections, each of which may

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operate independently according to the nature of the country. Each ambulance is self-contained, having its own transport, and by using tents can work in an area which has no houses or other shelter.

The casualty clearing station, on the other hand, having an established capacity of nearly 600 beds, has much heavier equipment and is not supposed to be a mobile unit, though it is capable of moving with the aid of its two lorries by making repeated trips. Many of the casualty clearing stations are located in huts which can be torn down and moved forward and rebuilt by the engineers and construction units.

There is also in each division a sanitary section composed of one officer and 25 men, whose function it is to keep an eye on the sanitation of the divisional area, report failure on the part of units to observe the established sanitary regulations, see that the incinerators are operated, have new sources of drinking water tested, look after the bath houses on occasion, search for cases of typhoid fever, etc., among the civilian population, and, in general, make itself as useful as possible.

The British army regulations are such that each officer and man must be a sanitarian and must not only observe the regulations but see that others do the same; the principle underlying this system being that "if each before his doorstep swept the village would be clean." Consequently it is not left to the sanitary section to clean up a divisional area, but rather to report those responsible for not keeping it clean. In this way every man is made a responsible party, and if the officers of

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any unit see that the regulations are enforced by each man, the unit will be a sanitary one.

Naturally as the battalion M.O. is directly connected with the field ambulance to which he sends his cases, he is most interested in the efficiency of that unit. Since the field ambulances are under the direct supervision of the A.D.M.S. of the division, you will find the latter during a battle visiting these to see that they are operating smoothly and whether more motor ambulances, stretchers, supplies or other necessities are being provided.

At the same time you will find the D.M.S. of the army visiting his special pets, the casualty clearing stations, and seeing that the evacuation of the wounded by train is working smoothly.

The hospital trains are specially fitted up with beds, kitchens and dispensaries, and with nurses and a medical officer in charge.

The hospital barges make the finest little hospitals that you could desire. They are the ordinary flat-bottomed square-ended Dutch barges, roofed in, and when the interior has been cleared out they form elongated covered floating boxes. Skylights in the roof give a splendid light, and the barges are wide enough to allow of two rows of beds with an aisle down the middle. The medical officer's surgery and bedroom are at one end of the barge, while the nurses' quarters are at the other.

The barge is entered through the roof by a stairway, and the first impression one gets on descending these is one of cosiness and restfulness that is never forgotten. Whether the barge is moving or at rest can-

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not be determined while one is inside, because the motion is so easy through these sleepy placid canals. Usually only serious cases that cannot stand the vibration and jar of a train journey are taken by the water route.

In the British Army there are specialists of renown in medicine and surgery who are supposed to supervise the medical and surgical work of a certain given area. They travel about, find anything new that occurs of interest, act as advisers, and hand on to other units the special information or "stunts" that have been worked out or discovered at home or in the field. The consulting surgeons are usually to be found during a battle operating where there is the greatest need of skilled surgery.

Besides the sanitary officer of each division there is a sanitary officer for each army, and a chief sanitary officer for the whole expeditionary force. These are all in touch with the sanitary adviser at the base and the authorities in England. Since, under war conditions, new developments are always taking place in this work, the knowledge gained of practical value filters through to the army by these channels as well as through the scientific journals.

Each army is provided in the field with one or more "advanced depots of medical stores" which keep on hand and give out the drugs and medical materials demanded by the various hospitals and medical units. If, for example, a field ambulance wants a lot of iodine, absorbent cotton, etc., the officer commanding sends an ambulance with an indent signed by himself, and the

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officer in charge of the depot hands over the material required.

There are other branches of the service, like the gas schools and inland water service, which, though strictly not medical, are closely akin to it.

It would be of little avail to speak of all the minute detail, of which there is a tremendous amount in each and every one of these offices and sections of the medical service. The methods of filing correspondence and records alone is wonderful when one thinks of the conditions and number of men involved, and comparatively few mistakes are made. This appears the more remarkable when one has had numerous experiences with the mistakes made in the offices in England where one would think the systems would have been systematized long ago.

The medical service of the British Army in France is a marvel of efficiency and one that the nation can well afford to be proud of.

CHAPTER X.

KEEPING THE BRITISH SOLDIER FIT.

THE history of war has always been a history of epidemics. The fact that in an army men are crowded together makes it easy for all communicable diseases, once introduced, to spread with great rapidity. And because soldiers are always associated with the civilian population, it means that such diseases are readily communicated from the army to the civilians, and from the civilians to the army. It is therefore apparent that during a war, disease, unless quickly checked, may run like wild fire through a country, and be disseminated far and wide by soldiers returning to and from their own homes, or other distant places while on leave.

Advances made in our knowledge of how diseases are spread and controlled, particularly through recent studies in bacteriology and immunity, have made it possible to keep communicable diseases in absolute subjection. The marvel of the age is the lack of epidemic disease in the army to-day. This is particularly striking in view of our experiences in other recent wars. In the Franco-Prussian war of 1870, for instance, small-pox was fanned into a great flame, and there resulted the largest smallpox epidemic in 80 years. It is interesting to note that the medical authorities in Paris, in the first year and a half of the present war, vaccinated over 25,-

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000 strangers passing through Paris; they are taking no chances with another outbreak of smallpox.

In the Boer War the British losses through typhoid fever alone were 8,000 against 7,700 killed by bullets, shells and other agencies.

The British army of nearly five million men in France and England to-day, has so little typhoid that it is practically a negligible quantity, and this holds with other communicable diseases. There must be some basic reason for this freedom from contagious diseases, for we know that such freedom does not come by accident.

No attempt will be made to deal with those auxiliary forces employed to keep the men physically and mentally fit. Such things as the provision of an adequate and wholesome food supply; proper clothing; amusements, such as games, competitions, horse shows, cinemas, variety shows; and Y.M.C.A.'s are all an integral part of the machinery necessary to keep an army in the field well and happy.

Only an attempt will be made to discuss the principles underlying the prevention of disease in use in the British army in France,—principles with which the average layman is comparatively unacquainted.

In the first place, it is well to realize that in the temperate climate of Europe, the vast majority of communicable diseases of importance from the military standpoint are contracted largely from three sources:

Group 1. From throat and nose secretions; e.g., diphtheria, measles, etc.

Group 2. From biting insects; e.g., malaria, typhus fever, plague, etc.

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Group 3. Through intestinal secretions; e.g., typhoid fever, cholera, dysentery, etc.

The first group, which includes practically all the ordinary diseases like measles, mumps, whooping cough, influenza, colds, pneumonia, scarlet fever, diphtheria, etc., is conveyed in most cases by one infected person transmitting directly to another person,—through coughing, spitting or sneezing,—germs present in the nose and mouth secretions.

The second group is conveyed by insects biting people or animals infected with the disease, and subsequently biting people who are healthy. In this way the disease-producing organism is introduced into the body of the healthy person, and beginning to multiply, brings about the symptoms of the disease. Malaria is transmitted in this way by the anopheles mosquito; typhus fever by lice, and plague by the rat flea. These are all diseases greatly to be dreaded in the army.

The third group, including typhoid and paratyphoid fevers, cholera, and dysentery, all of which are intestinal diseases, is largely conveyed from the sick to the well indirectly through contaminated water and food. To develop one of these diseases means that the excreta of somebody who has the disease or who has had it, has been taken into the mouth and swallowed, and the germs finding a favorable medium in the intestines have multiplied and produced the typical symptoms. One of the chief ways in which this type of infection occurs is through drinking sewage-contaminated water or milk; another is through contamination of

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food by the hands of the person excreting the germs; and the third is through the contamination of the food or eating utensils by flies and other insects which carry filth germs from place to place on their feet and bodies.

With these facts in mind and with some knowledge of sanitation and medicine it is easy to see how most epidemic diseases can be held in check. Put briefly, it means that the sanitary organization must be such that the germs from one infected soldier are prevented from reaching another, or as is sometimes said, some link in the chain of circumstances whereby disease germs can pass from one to another, must be broken.

The methods employed to break these links are simple; the carrying out of the methods is oftentimes very difficult.

It is obviously essential in the first place to remove from the army, at the earliest possible moment after it has been diagnosed, every case of communicable disease. This means the adoption of measures for picking out soldiers who show symptoms of disease, which really comes down to the fact that the medical officers must always be on the alert and carry out the instructions of the director of medical services of the army with despatch. In the British Army this is one of the most important features in the control of epidemics. If a man is suspected of having any communicable disease he is instantly placed under quarantine until the diagnosis has been confirmed, after which he is removed from the army area altogether as a possible focus of infection. The British Army takes no chances, and its wonderful

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record of freedom from contagious disease proves that it has been absolutely sound in its technique.

This is practically the only way of eliminating diseases, such as measles and scarlet fever which cannot be diagnosed by bacteriological methods, but of course the procedure is employed in all other kinds of epidemic disease as well.

Great Britain has been fortunate above all other nations in this respect that she sent over at first a small army of regular troops, perfectly equipped from the medical standpoint as well as in every other way. Efforts had been made for years to remove typhoid carriers from the regular army, and naturally no soldier was sent into the field who was known to have typhoid, or to be a carrier of typhoid or any other contagious disease germs. Furthermore, the soldiers had practically all been vaccinated against smallpox and inoculated against typhoid fever.

As division after division was sent out to the army in France, they too were completely equipped with sanitary squads, casualty clearing stations, field ambulances, water carts, and other necessary medical equipment. Consequently as the army grew and expanded into a huge force it was thoroughly equipped not only with the necessary apparatus for caring for sick and wounded, but also with the experience acquired by those already in the field. In this way the British Army differed from all of our European Allies who had been compelled to mobilize everything at once and found themselves woefully lacking in medical equipment and personnel, so much so in fact that they had

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been in the beginning unable to handle all epidemics successfully.

With a realization that the medical equipment of the British Army was complete; that it had been sent into the field 'free of communicable diseases; that it had been vaccinated and inoculated against two of the most dreaded diseases, smallpox and typhoid fever, and that every reinforcement subsequently sent out had been carefully freed from suspicious cases of disease, it can be readily understood that the British Army began under auspicious circumstances, and that thereafter its freedom from contagious disease depended to a great extent on the preventive measures adopted.

It is impossible, however, to prevent our soldiers billeted in France from occasionally contracting communicable diseases from the French civilian population, and it is obvious that as there were from 3 to 5 per cent. of the soldiers uninoculated against typhoid fever, we would get some cases of typhoid fever.

Besides this, unless further precautions were taken, the army would be susceptible to disease such as cholera, dysentery and the like should there be cases of these in the war zone.

We therefore arrive at the conclusion that, as there might be some "carriers" and undiagnosed cases of disease among soldiers and civilians excreting disease germs, additional means must be adopted to destroy such germs before they could reach other soldiers. This is the place where sanitation and hygiene steps in, and it is in these matters that the army of Great Britain is unexcelled by any army in the field to-day.

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Since the group of intestinal diseases can originate only from the excretions of people who are giving off the specific germs, it would be logical to endeavour to destroy such excreta or render it incapable of contaminating water or food. This is done. All excreta behind the front line and reserve trenches is destroyed in numerous incinerators, which are kept burning night and day. The British Army is the only army which has succeeded in doing this. All excreta which cannot be burned is buried so that it cannot be reached by flies.

As it may happen through accident or carelessness that water supplies have been contaminated, it is the rule to sterilize all water used for drinking purposes, either by boiling, by the use of bisulphate of soda, or by chlorine. The chlorine method is the one in general use in the British Army, as it is in all of the other allied armies.

The possibility of using chlorine in the field was brought to the attention of the British Army authorities by the publication of a method evolved by the writer in 1909. According to this method a stock solution of hypochlorite of lime was added to the water, the amount necessary for any given water being determined by a solution of potassium iodide and starch. This was particularly useful in the trenches where it was possible to accurately sterilize a pail or a barrel of water if necessary. Small tablets of hypochlorite of lime, each one sufficient to sterilize a pail of water, were also ordered and issued to the first Canadian division, and proved useful.

The great bulk of the water supply, however, is

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sterilized directly in the water carts by adding one or two spoonfuls of the dry chloride of lime to the partly filled water cart, the mixing being done by the addition of the rest of the water and by agitation during the trip back to the place where the cart is stationed.

In addition to this, large mobile filter units, after a plan draughted in September, 1914, and officially suggested by the writer in 1915 after experience in the field, were built and issued to all the British armies. These mobile filters are capable of filtering and sterilizing large quantities of water and delivering it to water carts or into stand pipes, ready to drink. A check is kept on the efficiency of the filtration and sterilization by mobile field laboratories.

Standing orders forbid the use of unboiled milk in the army as well as fresh uncooked vegetables, so that there is little danger from these sources. When one sees the peasants watering their vegetables with sewage, the reason for such regulations are apparent.

As it is possible for flies to carry typhoid bacilli and other disease germs from excreta to food, a constant war is waged against these filthy insects. Flies breed chiefly in manure, and one fly will produce many millions of flies in the course of one summer. The obvious method of keeping down flies is to destroy their breeding places, and therefore it is the duty of everybody concerned to see that all manure piles in the army area are gotten rid of. Some of it is burned, some spread on the fields, some buried, and so forth. On the other hand food is screened from flies whenever possible, and privy pits made inaccessible to them by

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the same means. On the whole the house fly has not yet, in so far as we know, played any great part in causing epidemic disease in the British Army in France, because so many of the precautions outlined have been carried out.

By getting rid of cases of intestinal disease, and "carriers" of intestinal disease, destruction of excreta and garbage, screening of food, destruction of breeding places of flies, sterilization of drinking water, boiling of milk and vegetables, and in the case of typhoid and paratyphoid fevers, inoculation, the chances of intestinal disease germs getting through from one person to another are comparatively small, as the results would indicate.

To show that these results are not due to accident an example will demonstrate: Early in the war when the British took over from the French a section of the line in the Ypres salient, the Belgian population in the little village of Vlamertinge and neighborhood was being devastated with typhoid fever, and the French troops also had a great many cases. When the British troops took over the line they not only escaped getting typhoid fever themselves, but they succeeded in absolutely stamping it out among the civilian population, and in getting rid of any "carriers" of the disease.

The cases were discovered by a house-to-house investigation by "The Friends' Search Party"—a group of Quakers who had conscientious scruples against bloodshed. This search party notified the medical authorities, particularly the laboratory in the area, of any doubtful cases, and the diagnosis was then made

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by laboratory methods. In the last six months of my stay in France, near the Belgian border, I do not think that the Friends' search party unearthed a single case of typhoid, and as a matter of fact few cases of the ordinary epidemic diseases such as measles or diphtheria were discovered, although they continued to make house to house investigations and report to us regularly.

The insect-borne diseases in the Western Europe war zone are, as far as we know, carried by flies, lice and mosquitoes. Flies carry disease germs more or less mechanically, and are controlled by the methods outlined above.

Mosquitoes are responsible for transmitting malaria and yellow fever, though the latter never occurs in Europe. Malaria in France is also comparatively unknown, though we found the *Anopheles* mosquito which is responsible for transmitting the disease elsewhere.

There were also numerous cases of malaria recurring in soldiers from India, Egypt, and other hot countries, so that we had both the infected individual with the malaria parasites in his blood, and the mosquito which was capable of carrying the organisms. Yet in 1915 we had only a dozen cases of malaria develop in men who had never been out of England, and were therefore, presumably, infected in France.

Possibly the chief reason for this was due to the fact that after the mosquito has sucked the blood of an individual infected with malaria, and been infected with the malaria parasite, the weather was not warm enough for the parasite to undergo its necessary trans-

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formation in the blood of the mosquito. A continuous warm period of several days' duration is necessary for this purpose, and in France these time periods never occurred of sufficient duration. Here was a climatic feature which proved to be of very great importance in preventing the spread of a disease most inimical to the health of any army.

Here again, any cases of malaria developing were removed as rapidly as diagnosed, so that mosquitoes did not have much opportunity of becoming infected.

Typhus fever is one of the most dreaded diseases in the army, for it is highly fatal, and both in former wars and in the recent Serbian campaign has proved a terrible scourge. It is quite a different disease from typhoid fever, and is conveyed from man to man solely through lice. In other words, the phrase "No lice, no typhus" is scientifically true.

Every army in the field is a lousy army, and every soldier in a fighting unit is more or less lousy. The louse commonly present is the body louse, and it lays its eggs in the seams of the uniforms and on the underclothes. The eggs hatch out quickly so that when a man once becomes infected the lice multiply with great rapidity.

For typhus to get a grip on an army means that there must be at least one case of the disease, and there must be lice on the case. Some of these lice will fall off, wander away, or be left on the bedding, in the straw, or in the patient's discarded clothes. If these lice have bitten the typhus patient and thereby been infected, it seems to be necessary for a certain length of time to

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elapse for the organism to develop in the body of the lice before they are able to introduce the virus into uninfected individuals by biting them.

As yet there have been no cases of typhus fever in the British Army in France, though it has occurred to a greater or less extent in Germany, Austria, Russia and Serbia. The quarantine services at the ports of the countries bordering on the Mediterranean have prevented it spreading to any other country.

Typhus fever is known as a dirt disease, and its control is possible through the plentiful use of soap and water. The most difficult thing for a soldier to obtain in the field is a bath. Normally he is in the front line trenches for a week, in the reserve trenches for a week, and in rest for a week. This means that he cannot get a bath for at least two weeks, and he doesn't. So that though a soldier goes back into the trenches clean and free from vermin he is sure to become reinfected from lice left in the dugouts; or some lice eggs on his clothes perhaps have escaped destruction, and he may be as lousy as ever when he comes out of the trenches again. The old straw in the barns and the billets is sure to be infected with lice, and it is very difficult to sterilize the men's blankets. Consequently a persistent continuous fight against this variety of vermin must be kept up, for lice are not only a potential source of danger in transmitting typhus fever and relapsing fever, but they are a great source of irritation to the men and responsible for much loss of sleep.

The greatest luxury at the front is a hot bath, and these are provided in every divisional area on the Bri-

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tish front. Three or four miles behind the trenches in the rest areas, in places where a plentiful supply of water can be obtained, the army has established bath houses. Sometimes a brewery, or part of it, has been taken over for this purpose, because the breweries all have deep wells from which a plentiful supply of water can be obtained. If the bath house is in a brewery they may utilize the large beer barrels cut in two for baths. These are filled with cold water and live steam turned into the water to warm it. After the bath the men dump the barrels, which are immediately refilled by attendants, for the next group.

Most of the bath houses, however, are in improvised shacks built upon the edge of creeks or ponds. The water is pumped into an elevated reservoir and heated frequently by means of a threshing machine boiler, rented or purchased from some neighboring farmer. One section of the shack is divided off for a bathroom with a number of showers and the other rooms devoted to the receiving of dirty clothing, storing the clean clothing, washing, drying and sterilizing.

As you pass along the road you will see perhaps a platoon or a section of a platoon marching to the bath house, without belt or equipment, and carrying towels. At the bath house a certain number, say twenty men, pass into the first room where they undress. Their underclothes and shirts are thrown to one side to be washed; their caps and boots are not treated in any way. The uniforms are hung on numbered racks and placed in the disinfection chamber where they are immediately treated with live steam, or they are taken into an adjoin-

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ing room where the seams are ironed with hot irons to destroy lice and eggs.

The men then pass on into the bathroom where they are given about ten minutes to luxuriate with plenty of soap and hot water. As they pass out of the bath through another room they are given clean socks, underclothes and shirts, and by the time they are dressed their own uniforms, disinfected, are handed back to them. The whole operation takes from twenty-five to thirty minutes, and from a thousand to fifteen hundred men can be put through each bath house in a day.

The discarded clothes are washed by local peasant women paid by the army; in one of these establishments in our area there were 160 Belgian peasant women engaged in this work. Mending is also done by them, while socks and clothes too far gone to be mended are packed in bundles and sent away to be sold.

The waste wash water from the baths and laundries entering the creeks naturally causes trouble from troops down stream who may have to use it. Horses will not touch soapy water, and the brewers object to making beer with it; they say it spoils the beer.

Consequently the sanitary officers have in many cases been compelled to put in tanks to treat this dirty water and purify it. This is usually done by adding an excess of chloride of lime, which precipitates the soap as a curd and carries the dirt down with it. By sedimentation, and filtration through canvas, cinders and sand, the water is clarified and turned into the creeks again clean. So completely can this be accomplished that the experience at one bath house is worth narrating.

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This bath house was built on a little pond which accumulated in winter and was not fed by springs or any other auxiliary source of supply; consequently with the advent of warm weather it would have dried up unless the water had been conserved in some way.

The sanitary officer in charge was equal to the task. With the advice of engineers and the laboratory he built a plant which subsequently worked to perfection. The water used to bath at least a thousand men a day, as well as the wash water from the laundry attached to the bath house, was collected and treated with acid to remove the soap; the scum formed carried to the top all of the dirt, which was then filtered off by means of sacking, cinders, and sand. The excess of acid was treated with lime which neutralized it, and the excess of lime was removed by soda. The water was all filtered before it was returned to the pond into which it flowed just as clear as it had been before, and with enough hardness present to give it a lather with soap.

The system was operated during the whole summer and gave complete satisfaction. It really did what nature would have done in a much longer time and with a much bigger plant. Had the pond been used to bathe in direct it would have been unfit for use in the course of a few days, whereas by the method employed it was always perfectly sweet and clean.

The common sense and resourcefulness of the British sanitary officer is well shown by this solution of a difficult and apparently hopeless problem. It is indeed a difficult problem which a British officer will acknowledge to be hopeless, and it is this very British

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quality that the Hun should always keep in mind in thinking of the end of the war and the reckoning afterwards.

As far as we know there has been no plague among the warring armies in Europe. Plague is conveyed from rats having this disease to human beings by means of rat fleas. These fleas become infected by biting the infected rats and subsequently infect human beings by biting them. There are plenty of rats in the trenches and dugouts, particularly in winter; in the summer they breed along the water courses, and in the autumn are attracted to the trenches where there is plenty of waste food to be had.

Numerous devices are used to destroy them, and it is a common thing to see a soldier sitting patiently in the trenches with his rifle between his knees and a piece of toasted cheese on the end of his bayonet. As Mr. Rat, attracted by the savoury odour, approaches and takes the first sniff, the trigger is pulled and there is one living rat less. Prizes are sometimes given to the man who can kill the largest number in a week, and bags of 25 and 30 are not uncommon. Sometimes poison is used, and even ferrets have been employed with, however, little success.

In connection with the rat problem, we had an illustration of how impossible it is even for a rat to escape the British army system. Army routine, the result of many years of experience, once put into operation is as sure and certain as death and taxation.

The regulations are that if any considerable number of rats have been noticed around the trenches sick

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or dying, some of them shall be sent to the field laboratories for examination. Bubonic plague is a rat disease; consequently if rats are dying in any great numbers, we would conclude that some disease, possibly plague, must be the cause.

In this case the Director of Medical Services of the army had been notified that a rat had been despatched to a laboratory for examination. Consequently he was anxious to know the result of the examination, and when a report was not forthcoming he sent a telegram to the officer commanding the Canadian laboratory asking that a report on the rat be forwarded at once. As we had not received the rat we reported the same to the D.M.S. who put the matter up to the D.D.M.S. of the corps who had forwarded the rat. The rat had gone to another laboratory, and "the system" to locate the rat was put into operation.

The following is the correspondence upon the subject:

1. *To D.D.M.S. J. Corps.*

In accordance with your lw/ER/ 16 of 1/2/3. a rat is being sent from trench x.y.z. to No. 1 mobile laboratory at ———.

(Signed) A.D.M.S. K.Div.

2. *To O.C. No. 1 Mobile Laboratory.*

Please let me know the result of your examination of this rat.

(Signed) D.M.S. Z Army.

3. *D.M.S. Z Army.*

I have not received this rat.

(Signed) O.C. No. 1 Mobile Lab'y.

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4. *To D.D.M.S. J. Corps.*

With reference to attached, will you please say what has become of this rat.

(Signed) D.M.S. Z Army.

5. *To D.M.S. Z Army.*

It has been sent to Canadian laboratory and report has been called for.

(Signed) D.D.M.S. J. Corps.

6. *To O.C. (Canadian) Mobile Laboratory.*

Will you please let me know the result of your examination of this rat.

(Signed) D.M.S. Z Army.

7. *To D.M.S. Z Army.*

This rat was quite normal and had evidently been killed by a blow. The report was forwarded to A.D.M.S. K. Div.

(Signed) O.C. No. 5 (Can.) Mobile Lab.

Even a partly decomposed rat was unable to escape the army system.

CHAPTER XI.

LABORATORY WORK IN THE FIELD.

WITH the medical organization of the army in mind it may be seen that a small mobile laboratory might be of great practical service to the army in the field. Under the conditions which exist in the present war, the army itself is not very mobile, nor is it necessary for the laboratory to be, but it is of great importance to have a car which will permit of the area being covered quickly should a specimen, sample or investigation be required. The car is the really essential mobile part of the unit.

Our laboratory had charge of both the bacteriological and hygiene work of a given area; it was the only laboratory that did both types of work. When our apparatus had been unpacked and set up in the old ball room of the Hotel de Ville it made quite an imposing show, and after we saw what equipment the other laboratories had we were decidedly proud of ours.

Our first bit of work proved to be the examination of a number of soldiers who had been in contact with a case of cerebro-spinal meningitis, to detect "carriers" of the specific germ. Then material of all sorts began to come in for examination from the casualty clearing stations, field ambulances, sanitary and medical officers, rest stations and other places. Most of the routine bacteriological work proved to be of much the same nature as that done in a health laboratory at home, and

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consisted of examinations to detect some of the ordinary communicable diseases such as diphtheria, cerebro-spinal meningitis, typhoid fever, malaria, dysentery, tuberculosis, and venereal diseases.

Should a case of diphtheria, for example, be found in a soldier, all his immediate friends and companions with whom he had been in contact, would be swabbed to see whether they were infected. Those found to be infected would be removed from the army at once.

In a case of suspected typhoid fever the examination of serum, blood and excreta would be necessary to determine whether the case were really typhoid or not. If found to be typhoid the laboratory would be called upon to try to discover the source of the infection. The same general methods hold good in other epidemic diseases where the laboratory is capable of making the diagnosis, to see whether any danger lurks in "contacts" or "carriers" and to find the source of the infection where possible.

Very frequently material from wounds is sent in by the hospital surgeons to see whether wounds are infected. The soil of Flanders has been liberally manured for hundreds of years, and in every cubic yard of this manured soil are millions of the germs which cause gas gangrene and tetanus (lock-jaw) when introduced beneath the skin. If a wound is infected with gas gangrene or other dangerous organisms, the knowledge that they are present may materially modify the treatment used by the surgeon, and the laboratory is of value to him sometimes in determining that point.

The usual routine work of a hospital clinical

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laboratory was also carried on by us for the casualty clearing stations in the area, and all kinds of work from the making of a vaccine for the treatment of bronchitis in a British General to the inoculation of a civilian child with anti-meningitis serum came within our scope.

The hygiene work of the laboratory is also of a varied character: It consists of the examination of water supplies, milk and foods; the detection of poisons in water, and, occasionally, in human beings; the evolving of methods to purify effluents discharged into streams; work on poison gases and methods used to combat these, and many other things.

In each division there are some sixty water carts, each of which holds about 110 gallons. We attempted to get samples from all of these in turn, to see whether the water had been disinfected. As all the sources of water supply in Flanders, with few exceptions, contain large numbers of bacteria, and as a properly chlorinated water contains very few bacteria, it is easy to tell from a couple of simple tests whether or not the water in the carts has been chlorinated.

As we sometimes had eight divisions in our area at one time, this water control meant a good deal of work. The water carts were usually to be found at the headquarters of the unit to which they belonged, and we quickly discovered that the way to get the largest number of water samples in the shortest time was to travel by the map up and down the twisting narrow roads which intersected each other as though following the trails of the original inhabitants.

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It must be remembered that four or five miles behind the front line every farm house and barn is in use most of the time for billeting soldiers, and that these farm houses are infinitely more numerous than they are in America. Little villages and towns are very frequent and many of them bear the same name as other towns and villages a few miles apart. Thus there are at least two Bailleuls, two Givenchys, two Neuve Eglises and so on. In our quest of these water carts we had to search the countryside diligently and we averaged a great many miles a day; we soon got to know every road and almost every farm house in our area.

When a cart was found it was necessary to get the man in charge of it—the water detail—in order to obtain information as to the source of supply, the amount of chlorine used, whether there had been complaints of taste and so forth. While the information was being obtained, officers of the unit would often come out to see what the trouble was and would ask questions; possibly some non-coms and men would also gather about, and the first thing we knew would be giving, to a very interested audience, a little lecture on the dangers of drinking untreated water; their interest would be greatly increased if a bottle filled with the water, to which a couple of drops of solution had been added, turned bright blue, thus showing the presence of the free chlorine. By such means a good deal of practical educational work was done, and the danger of men drinking raw water thereby reduced.

Reports of all samples were sent to the A.D.M.S. of the division concerned, who forwarded them to the

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medical officers of the units, with more or less caustic remarks should the samples be bad. The M.O. in turn would get after the man in charge of the water cart, who usually had some more or less plausible excuse.

The water details of the first Canadian Division were the best trained lot of men we ever ran across. The very first day we took samples from their water carts they were all sterile, and there were no complaints about taste. It was an excellent example of what training could accomplish, for they had all been carefully trained in their duties in Canada and England.

As the water details of any division were constantly changing, the efficiency of the treatment depended to a great extent on the constant supervision of the problem by the A.D.M.S., medical and sanitary officers.

We have found divisions coming into our area for the first time with only 25 per cent. of their water carts chlorinated, whereas before they left they would have 90 per cent. or more chlorinated, and the division thoroughly educated as to the necessity for sterilizing their drinking water properly.

Wells, springs, creeks, and ponds used as sources of supply were also examined, and not infrequently samples from "springs," encountered while digging new trenches, were sent in to be tested. The tremendous number of bacteria found in some of these "spring" samples we on several occasions reported as indicating the presence of buried animal matter in the immediate vicinity of the springs, and resulted in finding this to be correct. In one case in which a badly polluted water

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was so reported upon, the burial place of some fifty Germans was found only a few feet away.

One suspected epidemic of dysentery was a typically water borne infection which did not prove to be the real thing. Half of one company was in a front line trench and half in support. Part of the one section took their drinking water from a shallow well near at hand without treating it, and practically every one who drank it, thirty-one in all, came down with typical symptoms of dysentery, while all the others who did not drink it raw escaped. The well water was found to be badly polluted. The sick were all quite well in four or five days, and able to return to the front line, but it proved to be an excellent lesson in hygiene to that Division.

A curious phenomenon in connection with the army water supply was noted that first spring in Flanders. The flat surface of the country in our area consisted of a very tenacious clay, and the farm wells were usually sunk ten to twelve feet in that clay. In the months of March and April, though the fields were water logged and the ditches brimming over, the wells which were being used by the troops were going dry. In other words the soil was almost impervious so that once a well had been emptied it would not fill up again for days.

For this and several other reasons we reported the necessity for large mobile water purification units, which could take the water from larger bodies of water such as ponds, creeks, canals or rivers, purify it, and deliver it filtered and sterilized into the water carts or

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tanks. Such a system was subsequently adopted by the war office and is now in general use in the British Armies.

One hot morning in mid June we received a telegram from the Surgeon General to investigate a water supply complained of in the Festubert region. A premonition seized me that I was going to be killed, for the battery to be visited was in a very "unhealthy" spot. So I made a new will, and wrote a letter of farewell, to be posted in case of accident.

The battery was found nestling in the midst of an orchard, but the M.O. who knew all about the water supply, was not to be found. Reluctantly I accepted from the Colonel an invitation to dinner, for the feeling was still strong in me that some danger was impending. Half-way through dinner there came the well-known scream of an approaching shell, which burst at the other end of the orchard. A second shell burst a little closer; a third came closer still, and a fourth rained shrapnel on the roof; all the others, with one exception, fell short, and the shelling was over for the time. It was just another one of those "intuitions."

While the shells were flying we all kept on eating as if this were a usual everyday accompaniment to lunch, though I noticed that they watched me with as much interest as I eyed them during the process, each curious to know how the other took it.

The varied nature of laboratory work in the army and its practical applications may be seen from the following examples:—

One day the O.C. of a hospital sent over a pint of

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tea suspected of poisoning 28 out of 29 men who drank it. From the history of the affair we did not believe that this could possibly be the cause, and after making a few rapid tests to exclude metals, we proved that the tea was not poisonous by the simple, practical test of drinking it, Major Rankin being the official tester. This method of making a practical physiological test rather astonished the British authorities.

A German gas mask found on the battle field was submitted to us to find what chemicals were present. That mistakes were sometimes made by the Germans was evident when we found that the mask had not been treated with chemicals at all; some of the Huns at least had been unprepared for a gas attack.

The clarifying apparatus on the British water cars was mechanically defective and usually broke at certain definite places. Recommendations were made by us after we had experimented with rubber instead of rigid connections, which resulted in all the water carts in the British army being equipped with rubber connections, the results being entirely satisfactory.

A great deal of experimental laboratory and field work was done with chlorine gas and the efficiency of gas masks and helmets. Experimental physiological and pathological work was done on animals with chlorine and other gases, and on the drying out and deterioration of gas helmets and the chemicals used in them. Subsequently a Gas Service was inaugurated and all work of this sort carried out in special laboratories at G.H.Q.

Quite a number of cases of nephritis occurred

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among soldiers, and arsenic was suggested as a possible cause. The laboratory was asked to examine a considerable number of samples of wine and beer to see whether traces of arsenic were present or not. None was found. A large quantity of wine found to be diluted with ditch water, and sold to our soldiers, was destroyed, and the vendors fined.

One day a young medical officer, so excited that he could hardly speak, rushed into the laboratory with a lot of dead fish. After some questioning we found that there were tens of thousands of dead fish in the Aire-La Basse canal and, as this ran into the German lines, he suspected that the canal water had been poisoned by the enemy. We told him that we thought the fish had probably died from asphyxiation as a result of organic matter from a starch works being emptied into the stream. He went away unconvinced, to make a further enquiry and returned later in the day to report that the fish in the canal died every year in the spring when a certain distillery dumped its waste into the canal. Thus did former experience with starch mills pouring their effluents into Ontario streams and killing fish prove of unexpected use.

The laboratory was used a great deal by the highly trained officers of the Indian Medical service, who were always wanting some unusual parasite or insect identified, and made a good deal of use of our library.

A German high explosive percussion bomb was brought in one day for us to identify the explosive present. We did not allow the messenger even to lay it down but besought him to hold it tight and to keep mov-

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ing towards the explosives laboratory seven miles away while we escorted him quickly and safely from the premises. The way some of those chaps handled bombs and shells made you tired. It would have been a great pity if that two hundred year old building had been blown up and the British Army compelled to pay for it.

A poor soldier up and died one day without warning or preliminary sickness. They thought it might be poison, and his wife would have been deprived of her pension if the man had committed suicide. We were asked to examine the stomach contents to decide whether poison was present. No poison was found.

We were sent a little vial containing a small amount of material and asked to determine the nature of the contents. The bottle had been found beside a dead German. It proved to be opium, and the owner had evidently been prepared for a painless passage across the Styx when such necessity arose.

Occasionally we had to investigate possible cases of cholera among troops coming from India. One day we received a telegram to proceed to a certain place about ten miles away and report on the sanitary surroundings and particularly on the water supply of a place where an old Frenchman had died with "choleric dysentery." We found the place after some search, and discovered that the old man had died a month before, and that the suspected water supply, unboiled, had been used ever since by a certain headquarter staff without ill effects. Needless to say that was the best proof obtainable that the water supply was safe.

The use of raw milk was forbidden in the army,

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and condensed milk was issued instead. Sometimes "blown" cans of this were sent in for examination and found to be infected with gas producing organisms. Whenever such occurred, the report would be forwarded back through the system to England and the manufacturer would be apprised of the fact and checked up on his methods. Canned foods of various sorts were also brought in for examination, but nothing of a harmful character ever discovered. The food supply of the British Army, as a matter of fact, was of the highest quality and had been subjected to rigid examination by the Government inspectors during its preparation; practically none of it was ever found to be bad.

Another unusual problem arose out of the fact that several soldiers had contracted anthrax, both in England and in France, and the shaving brushes issued were suspected of being the cause. We undertook to search them for anthrax spores, but found it was too long and tedious a job for a field laboratory, for the brushes were full of spores of all kinds. Later on in England anthrax was actually found by other bacteriologists in some of these brushes, according to reports published.

These few examples taken at random will serve to demonstrate the varied character of the work of a field laboratory, and to show that a certain amount of experience is necessary in order to handle some of the problems affectively. We were peculiarly fortunate in our combined experience. Major Rankin, a first rate pathologist and bacteriologist of the government of Alberta, had been in charge of the government la-

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laboratory at Siam for five years previous to the war, and knew tropical medicine like a book, while Captain Ellis had carried on research work for three years in the Rockefeller hospital laboratories in New York and was thoroughly conversant with all the most recent work in vaccine and serum therapy. Consequently there was practically nothing that we could not tackle between the three of us, either in bacteriology, pathology, sanitation or treatment of epidemic disease.

Wherever an action was about to occur on the front the hospitals were evacuated of all sick and wounded in order to obtain the maximum number of empty beds. Consequently when fighting was going on the hospitals were very busy but the laboratory routine greatly decreased except in hygienic work. We therefore undertook scientific investigations of various kinds to keep busy and be of the maximum use.

At the suggestion of the D.M.S. of the army, Major Rankin made a survey of the army area for anopheles mosquitoes. The Indian corps was in our area at the time and he obtained the co-operation of the officers of the Indian Medical Service, who being particularly keen on biting insects collected many specimens for him. This variety of mosquito transmits malaria, and, as we were getting a few cases of malaria in troops who had been in tropical climates, it was important to determine accurately the varieties of mosquitoes present, particularly since the numerous ditches, canals and ponds of the country were ideal places for their multiplication. In spite of the anopheles mosquito being found everywhere, Major Rankin reported that he did

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not believe that there would be many new cases of malaria, develop in France and such proved to be the case.

Captain Ellis began an investigation into the grouping of the various strains of "meningococci"—the organism causing cerebro-spinal meningitis, with the ultimate object of obtaining a more efficient anti-serum for the treatment of this disease.

Apparatus designed to purify wash water from baths before turning it into the streams; designs for the building of small chlorinating plants near the trenches, and the construction of field incinerators for consuming garbage, were constantly being referred to us for consideration and suggestions; we thus had a variety of sanitary work of an interesting and useful kind, which helped to keep us busy.

The nature of our activities carried us through the area of shell fire, among the batteries and sometimes quite close to the trenches. We were free lances to all intents and purposes and frequently had to hunt out new problems to work upon. In travelling about in the course of our work we saw things more or less from the spectator's standpoint, and there were few things going on that escaped us.

Many sad and depressing sights were witnessed, and one received many vivid impressions of what war means to an invaded country,—impressions which can only be attained by actual experience.

Accompanied by the sanitary officer of the 19th division one morning I saw a very sad example of what ignorance of the essentials of hygiene can bring about.

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Down in a swampy spot on a branch of the canal was a little hamlet, and one of the tiny houses was occupied by a family of refugees from La Bassee.

When we entered the house swarms of flies flew up from the table and buzzed about while we did our best to prevent them from settling upon us. The father of the family was in bed unconscious, with typhoid fever. The mother, dead from the disease, had been buried the day before.

During the funeral the eldest daughter, a pretty girl of sixteen, sat up in a chair trying to look after the visitors. When we called she also was in bed delirious with the disease in the same room as her father.

The baby in the carriage had had typhoid. A little two year old boy was just recovering, and was thought to have been the original case. Two other boys of seven and nine years of age were getting some bread and milk for their dinner, one of them being probably a mild case; and a girl of eleven, evidently coming down with the disease, was going about looking after the household.

With that swarm of disease-carrying flies in the house there was no possibility of any of the children escaping the infection. It was with the greatest difficulty that the sanitary officer of the division succeeded in getting the French civilian authorities to move in the matter and remove the cases to the French civilian hospital. The father died a week later, and the sanitary officer himself was subsequently killed during the battle of the Somme.

The French refugees do not complain; they are

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not that kind. They told their stories simply and invariably finished with a shrug of the shoulders and the phrase "c'est la guerre n'est ce pas?" (That is war, is it not?) But if the French army ever gets on German soil I would hate to be a German.

One night we found that our first Canadian brigade was going into the trenches at Festubert without the chemical necessary to saturate their gas masks, which had just been issued to the soldiers; we succeeded in borrowing 500 pounds from a wide-awake army corps and took it down in the car to an advanced dressing station which the brigade would have to pass. The Germans were particularly jumpy that night as we felt our way along that very rough road with no light to guide us except the electric green light of the numerous German flares, the occasional flashes of a powerful German search light sweeping the sky and ground, and the angry red spurts from the guns which lit up the sky like summer lightning.

Once we had occasion to make a trip from one shelled village to another, the driver had been given the direction and no further attention was paid to him until we came across a reserve trench manned by Ghurkas. This drew our attention to the fact that the country was quite unfamiliar. However, the next French sign post showed us that we were on a road leading to the desired village and we kept on.

The day was very quiet and hazy and it was impossible to see very far. We suddenly came upon the remains of a little village which had been literally levelled to the ground; not two feet of brick wall could

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be seen anywhere. At the cross roads in the centre of the village two military policemen seemed to be surprised at our appearance with a large motor car but said nothing, evidently thinking that we knew our own business best, and we made the correct turn according to the sign board and kept on. About two hundred yards farther on we ran into a veritable maze of trenches, barbed wire entanglements and dug-outs, without doubt part of the front line trench system. Needless to say we made a rapid right-about face and speedily retraced our steps by the road we had come.

We found later on that the road we had taken did go to the village that we wanted to visit but that it went through the German trenches en route. At the point where we had turned, which was only four hundred yards from the German trenches, thirty men had been killed by snipers during that month while getting water at one of the wells in the neighborhood. The haze in the atmosphere saved us from observation for we would have been a fine target for rifles, machine guns and even whiz bangs.

We met officers in every branch of the service,—infantry, cavalry, artillery, flying corps, ordnance, army service, medical, engineers, construction, water transport, etc., and thereby obtained a splendid idea of what was going on, and how the various branches of the service worked together and viewed any given problem.

Some of these views were quite at variance with one another. For instance the artillery man looked upon the infantryman as the man who protected his guns and kept off the enemy while he killed them. The

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infantryman naturally looked upon the artillery as the arm to support him in time of trouble and prepare the ground while he did the dirty work. The aviator called them all "ground soldiers" in a more or less lofty manner.

The medical and other services looked upon the fighting man as the one who gave them a great deal of work, and they all usually forgot that they existed for the express purpose of keeping Tommy in the trenches clothed, fed, healthy and protected from the assaults of the enemy; for Tommy is the man, say what you will, without him everything else goes smash; it is the human being who still counts in war; it is the man power which will win.

CHAPTER XII.

SKETCHES FROM A LABORATORY WINDOW.

The Bandstand in the Square.

MANY interesting little affairs happened in the Bandstand in the Grand Place beneath our laboratory windows. One Sunday evening in June a khaki-clad figure ascended a pulpit which had been improvised there; the seats in front of him were filled with rows of generals, colonels and other officers. In a rich, stentorian voice he gave out the lines of a verse, and led by a cornet, the strains of the grand old hymn "O God our help in ages past" swelled on the summer evening air, sung as only soldiers can sing.

The crowd of soldiers about the bandstand grew, and little French children playing about in their best Sunday clothes, stopped in curious wonderment to hear "Les Anglais" sing. A few of their elders strolled over and even though they could not understand, they listened attentively.

Our thoughts flew thousands of miles over the ocean to other Sunday evening services at our home in Canada. We could see the old family pew; we could hear father and mother and the old friends singing that same old hymn, while our youthful minds were likely busied with recollections of a lacrosse match or baseball game that we had seen the day before, or maybe of a visit to the old dam where we had had the finest swim

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of the season. We could see women attired in spotless white, and men in frock coats and silk hats, walking sedately to church, and we longed with an intense longing for one more such Sunday in the old home town. It seemed ages since we had been there; we wondered whether we would ever visit the old scenes again, and we had a premonition that we never would. The theme of the brief sermon was the old, old story of Christ's coming to save sinners, and the guns boomed and a belated aeroplane overhead buzzed homeward while the speaker appealed earnestly to his hearers to serve Christ by following his example in true living even as they were now, by offering their lives, serving humanity.

General Haig presents medals.

One summer evening, after the battle of Aubers Ridge a number of junior officers and private soldiers, including Indians, began to gather about the bandstand. As ten o'clock approached, motor after motor drew up, numerous staff officers descended and formed themselves into groups. There was much saluting and hand-shaking, the saluting being done by the junior officers and men, and the hand-shaking taking place among the seniors.

Although furniture was none too plentiful a table which was secured somewhere, was placed about six paces in front of the grandstand steps. A cloth was placed upon the table, and two officers began spreading on it in orderly array various small boxes. A list was produced, names were compared and carefully checked. The officers and men who were to receive decorations

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were then paraded, and as the roll was called each man took his place in order in the line. The list was again checked over, and compared with the boxes on the table.

At 10.20 a big car drove up and a figure stepped out—a figure known to the whole world—Sir Douglas Haig. Well groomed, handsome, quick of his movement, he looked as he was, every inch a soldier. As he approached the groups everyone stood to attention; the senior officer gave the salute, and the General acknowledged it.

After a few words with the officers in charge, General Haig took his place behind the table and made a short speech, after which the soldiers were called up one by one while he pinned on their medals or decorations. Each soldier saluted as stepped forward, and as he stepped back to his place he saluted again in acknowledgment of the remarks of the General.

There was no fuss, no feathers; the affair was typically British. Such decorations as the Legion d'Honneur and Croix de Guerre, had to be presented, and they were, after which everybody shook hands and went away. It was all very simple. In serving your country you risk your life, and incidentally you may get a decoration for bravery. Why make a fuss about it?

An Old Flanders Hotel.

There are many kinds of hotels in the little towns and villages of northern France, some good and some bad;—mostly good if you only want bread, cheese and beer, and very bad if you want anything else. Still, you do occasionally run across an hotel which is capable

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of providing a decent meal, though the rooms and general accommodation are, as a rule, exceedingly poor. Heat is a thing unknown. If you raise a row and demand a fire, they will provide it for sundry francs and centimes extra. In war time coal becomes more and more difficult to obtain, and the inveigling of a fire out of mine host becomes increasingly difficult.

The M—— Hotel was rather a pretentious hostelry. It occupied part of the City Hall or Hotel de Ville which faced the Grande Place. The Hotel de Ville is a rather good looking red brick building, three stories high, and is said to be over 200 years old. In the centre an arch way, protected by heavy iron gates, leads into an inner court, occupied chiefly by stables. To the right is the entrance to the police magistrate's office and court, and to the left is the entrance to our Hostelry.

A typical old Frenchman, with a snow-white drooping moustache and closely cropped white hair, runs the hotel with the aid of his rosy cheeked daughter and a couple of maids. The old man spends his time in dispensing wine and beer, looking after the maids, occasionally cooking a meal for a particular guest, buying the food, and playing billiards with the little groups of old cronies that foregather in the common room each evening. Like all Frenchmen, he had been a soldier in his time, and had never forgiven the Germans for 1870. His picture as a young man in uniform, hung in the dining-room of the hotel.

Moreover, he was a musician, and before the war had played the French horn in the town band. His

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banquet hall, which we were now using as a laboratory, had been the band room and the home of all band practices in the long winter months. How the old man did roll his eyes with ecstasy and raise his hands with unutterable joy as he listened for the first time to the wonderful mellow music of the British Grenadier Guards' band as it played in the bandstand in the square. Handel's largo, the overture to Tannhauser, and a fantasia on British airs,—each brought forth a different series of gestures. "Monsieur, I have not heard such fine music since I heard the Republican Guards' band at Paris; in fact, monsieur, this is finer—the tone is richer, rounder and more mellow. It is marvellous, Monsieur le Colonel, marvellous; it is entrancing; a-ha! heavenly!"

M—— Hotel in the evening was an interesting sight. Little tables were spread about upon the sawdust sprinkled floor, each table with two or four guests discussing the official communiques of the day, the flow of talk assisted by a bottle of red or white wine. M. X., the miller, at heart more or less of a pessimist invariably got into an argument with that fierce optimist, M. Y., the lumberman. Night after night they would argue as to the progress of the war; whether Germany was really short of food; whether there were really three million men in "Keetchenaire's" army; whether the country was infested with spies; or why Von Kluck's army turned back from Paris.

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An Indian Concert.

Towards four o'clock, one afternoon, we noticed an unusual clearing up of the village square. Military policemen were ordering away motor cars, wagons, and lorries, while everything in the square was made spick and span. About four-thirty, Sikhs, Beloochis, Pathans, and Ghurkas began to stroll into the square and congregate in groups, shaking hands with acquaintances they had not met for some time, just like typical Frenchmen. Those who came later carried drums and bagpipes of the regulation kind. At five minutes to five the bandmaster made his appearance, and the band lined up while they tuned their chanters.

Sharp at five o'clock, with a punctuality that was remarkable, the band stepped out across the square to the tune of "The Cock of the North," played in perfect time and tune. At the far side of the square they wheeled about and back they came with ribbons flying and chests inflated, looking like real natives of the Scottish hills. It was the most perfect pipe playing I had ever heard. The French were delighted. As the strains died away in the wail of the chanters, a hearty round of applause brought smiles to the serious faces of the Indians, and away they went again to "Highland Laddie," followed by "The Campbells are Coming."

Then another band followed with performance on the Indian pipe which is something like a chanter, without the bag or drones. The effect was awful. To make a hit they attempted "La Marseillaise," and it was a hit. Had it been a farce it could not have been beaten

SKETCHES FROM LABORATORY WINDOW

—no two instruments were in tune and some of the notes of the scale were altogether missing, so that the most ghastly discords were sprung upon us. No wonder such instruments can lash the hillsmen into fury. They had us nearly fighting mad.

To hint that we were not entranced with their efforts, we clapped but faintly—but the musicians took it as hearty applause, and burst forth with fearful onslaught upon “Rule Britannia.” When they were through you could have heard a pin fall. Not a soul risked a sound lest the players should mistake it as an invitation to renew their entertainment; so the real pipe band came on for another whirl and we were made happy once more.

Precisely at five-thirty, the concert ended, and the cosmopolitan crowd of French civilians and soldiers, British Tommies, Indians, Highlanders, and Canadians, melted away. Five minutes after, save for the presence of a few blue rock pigeons flitting about in search of their evening meal, the square showed no sign of life.

The Jail.

The town jail and dungeon is in the Hotel de Ville. Heavy barred doors open into a little dimly-lit store room, with windows high up protected by iron bars. Through this room a small doorway leads to a dungeon without light of any sort. We always knew when this prison had an occupant—in the morning a fatigue party under a corporal would appear marching across the square carrying food rations. The corporal

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would halt his men, step forward and give the signal on the door; it would be opened by the sentry guarding the inner cell. The food was then conveyed to the prisoner, the fatigue party marched away, and the sentry with rifle on shoulder paced up and down the front of the jail until his relief arrived. At no time was the guard off duty for a moment until the prisoner, perhaps under sentence of death, had been removed.

Once we had to report on a swab from a prisoner under the death sentence. Military law says that no man can be shot while suffering from any disease in hospital. Consequently when this man was found to have a suspiciously sore throat, it was reported by the Medical Officer and there was great excitement. Telegrams flew back and forth about the matter while I had to stay up till midnight to obtain a good culture. The culture, much to the relief of the staff officer who was waiting for the report, did not show diphtheria bacilli, and at five o'clock the following morning the poor chap met his fate.

A Canadian Graveyard.

The road to Bethune was always of interest to us, because near the pretty little village of Hinges was a hill; in fact Hinges was right on the top of this hill—our area, elsewhere, was as flat as a board. Hinges was interesting because it was full of trees and hedges and gardens, and somehow reminded one of the beautiful little sequestered villages of England, rather than a French village.

On the far side of the village, where the hill de-



FRENCH SOLDIERS ADVANCING UNDER COVER OF LIQUID FIRE.

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scending swept away off towards Bethune, a fine big French chateau nestled in the midst of a huge park of enormous trees. From the chateau a sweeping view of the surrounding country was obtained. Not more than two miles below it, on the La Basse Canal, could be seen the spires and towers of the real little city of Bethune. Away beyond Bethune one could see the blue hills in which the Germans were strongly entrenched. To the right among these hills projected three sharp-pointed, pyramidal hills, indicating the location of the dumps of French coal mines, then operated by the Germans.

For a time during the battles of Givenchey, one of our field ambulances had been located in the spacious shady grounds of the chateau. A little graveyard near the main gateway, on the roadside, is the last sleeping place of a number of Canadians who died in this ambulance. To-day a neat fence surrounds this little area of Canadian soil and the graves are kept trim and covered with flowers. Even before the authorities took any action I saw the French country people themselves decorating the little mounds beneath which lay "Les Canadiens" who had come so far "to fight for France" in this struggle for the freedom of the world.

It is a beautiful little sleeping-place, and somehow it never seemed to me so sad a spot as some of the other graveyards in France where our Canadians lie. As the roar of the British guns increase as the months go by, and the number of shells carrying death and destruction to the Germans, multiplies—one can imagine that the spirits of those who lie below are watching the

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enemy lines being pressed back towards Berlin, and that they will understand that their sacrifice has not been in vain.

And, one night as I passed the spot, during the battle of Loos, when the sky flickered red as from summer lightning with the flash of myriads of shells, and the horizon was defined in electric green from the flares of the Germans, I fancied that I could see the shadowy spirits of the departed ones hovering over this spot before their final departure, and I felt that they must realize that the work of our army in it's struggle for the freedom of the world was being carried on with increasing efficiency.

Indissoluble ties now bind France to Canada: her soil has been watered with our very best blood and the bond of a common suffering in a righteous cause has united us forever.

A Hot Day in the Field.

One hot day in early June I made a tour of the — divisional area with the sanitary officer. We had been asked to go over this area, and make suggestions for the improvement of its sanitary condition. It was the only time during two summers spent in France that I felt I was really in the "sunny France" of my imagination. The sun beat down on the floor of our open car so that when one stopped for a minute it became a veritable little red hot radiator. So long as we kept moving, the breeze created made it bearable; but when we left the car for a minute the seats become too hot

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to sit on, and the perspiration fairly streamed down our faces.

The air rising from the fields and roads vibrated like that over a hot stove; the dust raised by motors hung suspended for long minutes in the motionless air, and filled one's nose and mouth. The chickens in the farmyards stood with beaks wide open gasping for air.

Even military form was relaxed on account of the heat, and lorry drivers, men on transports, and troops marched and worked with their coats off. All the water ditches near the front were filled with soldiers bathing themselves. It is extraordinary how war conditions will break down conventions. Many times that day I saw absolutely nude men bathing in a roadside ditch, and women passing only a few yards away, neither of them being at all concerned about the others. Sections of the Aire-La-Bassee canal looked like the "old swimming pool" in midsummer. Hundreds of soldiers dived, swam, and rolled about in the dirty waters. Finely built, rosy-skinned chaps they were too, playing about like care-free boys, with aeroplanes buzzing by overhead, and shells exploding in a village to the rear.

After a busy morning making our inspection and taking water samples for examination, we dined at the divisional Mess B and set out again to complete our tour. We visited the various filling points of water carts and gradually drew nearer the front line trenches. Turning down one arm of "the tuning fork"—a forked road near Festubert, we came upon an advanced dress-

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ing-station. A little to our left was a grey pile of bricks and rubble, all that remained of the village of Festubert.

The medical officer of the dressing-station told me that only ten minutes before the enemy had been shelling the spot about a quarter of a mile farther on, which was our next point of inspection.

"What do you think? Shall we go?" asked the sanitary officer.

"I leave it to you," I said, and we proceeded.

As we approached our destination I picked up the next numbered bottle. It was number 13. A curious sensation passed over me and I put the bottle back, taking up number 14. "Why don't you live up to your disbelief in superstitions," I said to myself and I put bottle number 14 back. When we arrived at the place I took up number 13, got the water sample while the car was being turned and "beat it." Of course nothing happened and we finished our trip at 5 p.m. after a 60-mile tour through the area occupied by as fine a Scotch division as Scotland ever produced.

There are compensations for almost everything in life if you can discover them: I never enjoyed a bath more in my life than the one I had when I reached home that night, sticky and dusty and hot, with the aid of a sponge and half a gallon of water. (Baths are rare in French houses.)

The Fire Fete.

Merville is a staunch compact little town with a big church whose lofty byzantine, rounded dome projected high into the air forms a landmark that can

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be seen for miles. We have been able to pick up this tower quite easily from a point in Belgium fourteen miles away—a point from which we were actually watching the bombardment of our lines at St. Eloi on the 10th of June 1916. The church is a very large one for a town of the size, but as the people are very good Catholics in that district, it was in constant use from early morning to late at night. Funerals passed to and from it daily and the chants of the resonant-voiced priests became such a frequent thing that we ceased to pay any attention to them. Funerals in France are a most terribly depressing sort of thing, anyway.

One Sunday there was evidence of something unusual on hand. A stage twenty feet across had been erected against the wall of the Hotel de Ville, facing the square and approached by a flight of a dozen steps. During the course of the morning it was covered with green boughs and flowers, a cross was erected on the top while various coloured banners and the tricolors helped to make a very effective and pretty stage.

Meanwhile around the church square there was great excitement. Girls of all ages in white, and boys with short white trousers, blue coats and tam-o-shanters had been going towards the church since early morning. From our laboratory window we could see these youngsters being collected into groups and being instructed by nuns. Banners of various kinds floated in the air and hung from the windows of the houses round about.

We had settled into our daily work when the sound of children's voices floated through the laboratory windows, and we looked out to see a procession coming

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across the Grande Place, led by an old man carrying a gilded staff and wearing a cocked hat. Right behind him walked a priest between two altar boys, all three wearing elaborately worked tunics of lace; the boys carried poles with lanterns on the top.

Following them came, two and two, the smaller boys of the village. Then came a band of tiny boys, carrying wooden guns over their shoulders and dressed as Turcos; large groups of bigger boys followed dressed in white trousers, blue coats and tam-o-shanter hats, and headed by a bugle band.

These were succeeded by a number of girls dressed entirely in white, the smaller ones being in front and the larger ones behind. Then came the really beautiful part of the procession. In this section every girl was dressed differently, each dress being of some period in the history of Flanders. As a study in costume alone it was exceedingly fine.

Some of the dresses were quite beautiful. One had a blue-laced bodice over white and a red velvet skirt with a high pointed black straw hat; another had a black bodice with a white under vest and a blue skirt, the hat being of white lace. Others which I cannot now remember in exact detail were very interesting and recalled all the historical tales that I had ever read of ancient Flanders.

Next came a canopy supported by two of the older men but with choir boys on the four guy ropes. Under it walked the priest who was to be the master of ceremonies for the day. Then came other girls in white, depicting various characters in French history, such as

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Joan of Arc. The prettiest girl of the village was the one chosen to be the angel, she wore a large pair of wings and was dressed in a white filmy material which made her quite realistic according to the commonly accepted ideas of angels. After these walked the older girls and women of the village according to their age, the tottering old grandmothers coming last. Finally came the men in the order of their age.

By this time the procession had doubled backward and forward on itself as it gradually approached the altar under our windows. The officiating priest, which on this occasion happened to be the clergyman from our own hospital, slowly mounted the steps of the stage as the chant swelled into greater volume, and the whole crowd went down upon its knees in prayer. After certain offices had been performed by the priest at the altar he descended and the procession dispersed.

Such was the interesting "Fete de Feu" of Merville. We were told on the very highest authority that at one time over two hundred years ago, the town caught fire and that nothing could be done to save it. In this dire extremity the parish priest prayed to God and promised him that if he would save the village the town would each year for all time have a memorial procession of thanksgiving; immediately the fire went out and the thankful villagers and their descendants have since that time never failed to keep the sacred promise then made.

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Toban's Pup.

Private Toban, contrary to army orders, owned a dog. It was a nondescript pup, with a cross eye, and also a kink in his tail. It was coloured a sort of battle-ship grey with two or three splashes of brown on the flanks, and his nearest blood relative was probably a French poodle—though his ancestry was a subject of prolonged and sometimes heated debate between Toban and his mates. A Tommy who had scornfully described him as "A 'ell of a lookin' dawg" had been promptly felled by a blow from Toban's right.

Before the second battle of Ypres, when the division was in training, the Canadians did a good deal of route marching. Toban used to take the pup along with him and the pup used to become tired. Then Toban would pick him up and carry him. Finally the medical officer noticed his fondness for the dog and would, on occasion, take the pup in front of him on the saddle.

Once the battalion was going into action and the M.O. was busy at his regimental aid post, making preparations for a rush, when Toban came in. "Say, Doctor," he explained, "I can't take the pup with me and I tied him to a tree down the road."

"I will look after him" promised the M.O. and Toban disappeared.

"Here Corporal, find that dog, and label him with Pte. Toban's number and company," ordered the M.O.

In a couple of minutes the Corporal returned.

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"Say Captain," he reported, "I found the pup wrapped up in Toban's blanket and tied to a tree."

The rush began and the doctor forgot all about the dog until an hour later, when Toban, spitting teeth and blood, stumbled into the room with a bullet through his jaw.

"Oh, say Toban," called the M.O., "I found your dog, and he's all right."

When Toban's face was bound up the M.O. asked, "Do you think you can make the field ambulance by the bridge?" Toban nodded and started off.

A minute later he thrust his head into the room—the pup was in his arms, still wrapped in the blanket—and spluttering gratefully through the dressings, "I got 'im, Doc, good-bye," away went Private Toban en route to Blighty.

The Incurrible.

Private Saunders of the —th Canadian battalion was a hopeless alcoholic. In England he had become such an incurrible that the regimental officers decided to get rid of the man. Major M— hearing the case being discussed by some fellow officers, said, "Let me have a try at him" and with relief they agreed to his transfer to the Nth.

In due time the battalion went to France, and like all others in the first division, took part in the second battle of Ypres. During one of the attacks Major M. was shot through the chest, and left on the field as his battalion was slowly forced back. Saunders learned that the Major—the one man who had treated him

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like a human being, was somewhere out in front. Under cover of night he left the trench and crawling on his hands and knees searched about for hours amid a hail of bullets and shrapnel, till he found the Major.

"You can't carry me, Saunders, leave me and go back," commanded the Major.

"Now look here," said Saunders, "you have always been my boss and I've done what you told me, now it's my turn; you do as I tell you," and getting the Major on his back he carried him 200 yards to the shelter of a ditch. Then obtaining assistance he went out and succeeded in having the Major conveyed to a dressing-station.

Again taking his place with his battalion, Saunders went into another attack the same night, and had his head blown off. Here was a case where, as far as the officer was concerned, kindness had its own reward; and here again was a case of an apparently useless man, when his hour had struck, arising to the supreme heights of self-sacrifice.

Dirty Jock.

You can't always tell the real worth of any man to the army. Some men, who are efficient and valuable, in times of quiet, are not able to stand up in the grueling of a battle; while other men, ordinarily useless and difficult to handle, will develop wonderful initiative, resourcefulness, and daring under stress or emergency. The quality of heroism may be surrounded by the most unlikely exterior—but at the supreme moment the

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hero in every man will come out and he may surprise us by rising to undreamed heights of self-sacrifice.

Jock Smith was a nuisance to the whole regiment; he was a constant reproach to the Colonel, the Medical officer and everybody else. The very day his regiment landed in England he got gloriously drunk and it was only by the simple but very certain method of prodding him with the point of a bayonet in the immediate rear that he was kept from falling out of the ranks and going to sleep on the roadside.

"I didna know ye were gaun ta march the nicht oor I wudna hae got drunk," he apologized.—So it was always. Smith was dirty. Smith was troublesome. Smith, in short, could have well been done without. So dirty did he become, in fact, and so verminous, that his medical officer ordered that he be given a bath; and the order was carried out by a squad of four husky Tommies with a considerable amount of enthusiasm on the part of the squad and a tremendous amount of profanity on the part of Smith.

One bright day "a show was pulled off." Like the rest of the battalion, Smith was in it. As they went over the parapet with the cheer that the Germans have learned to know and dread, Smith was well up in the van. He did his part with an enthusiasm that was a credit to his brigade. An officer passing through a captured trench found Smith in a quandary with three prisoners backed up against the wall. "Come along" cried the officer, "leave those men for somebody else." An hour later Jock walked into the dressing station wounded. "Well, what is the matter with you?" said

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the M.O., looking up from his work of bandaging the wounded. "I think am hit, Doctor," he answered, and he was, for a great chunk of flesh had actually been blown out of his thigh.

About that time the officer of the trench episode came in with a couple of bullet wounds. Catching sight of Smith he said, "Hello Smith! Where did you leave those prisoners?" "Dinna ye ask foolish questions," was the reply, and nothing more could be got from Jock.

Smith submitted to the surgical dressing without a murmur, and was laid out on a stretcher to await the ambulance. Finally it came.

"Here, take Smith," ordered the M.O.

"No, never mind me, Doctor," said Smith, "jist tak the ither men, I'll be walking."

"Do as you are told," commanded the M.O.

"Now Doctor, jist pit the ither boys in; they're worse nor me, I'll walk."

"Damn your eyes," snapped the Doctor, "don't be a fool; get in there," and in spite of his earnest protests Smith was hoisted into the ambulance to leave the firing line for all time.

CHAPTER XIII.

PARIS IN WAR TIME.

EARLY in March, 1916, a telegram arrived appointing me representative of Canada on the War Allies' Sanitary Commission. This Commission, which had been formed for the purpose of mutual assistance and co-operation in matters of hygiene and sanitation, was to meet in Paris in the middle of March. It was a splendid opportunity to meet some of the great medical men and scientists of the Allies, and during the few days before the congress met I gathered together all the data that I thought might be of use, as well as plans and photographs.

It was a bright spring day when I left by motor for Paris via Amiens. We stopped at Merville to call upon my old French friends whom I had not seen since my leave in Canada, and distributed a number of presents which had been sent to them from home by my family. They were greatly pleased at having been remembered by their Canadian friends, for the French have a real regard for us.

As we bowled along over hill and valley, through the sector occupied by the British Army, freed of all responsibilities, we felt as though we were off for a holiday. The area as far as Amiens had recently been taken over by the British and we were surprised to find that there were no British troops in that town excepting a few officers. It had, for good and sufficient reasons,

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been placed "out of bounds." Amiens was a real city, the first that we had seen in the north of France; it had wide paved streets, broad boulevards, double street car lines, electric lighting and all the things that go to make up a modern city in any country.

The road from Amiens to Beuvais led away from the front and all evidences of military operations disappeared. The country in that region was rolling, well tilled and well wooded. Numerous quaint little villages, each one different in character from the other, nestled in the shelter of the valleys. At one place we stopped to pick the mistletoe from a row of apple trees that were simply covered with the green parasite; while we watched, away to the west, a gorgeous sunset flame and die. It was the finishing touch to a day that had been almost perfect, and we tumbled into bed at the Hotel de l'Angleterre in the ancient city of Beuvais to sleep the sound sleep induced by fresh air and sunshine in those who have not been accustomed to it.

Next morning at ten o'clock we set out for Paris, and, crossing the Oise at the point where the British had blown up the bridge during their retreat from Mons, reached the gate of St. Denis in the walls of Paris at noon. Although every pedestrian and wagon driver was being stopped and made to show passes we were asked no questions.

Paris seemed cleaner than ever in the spring sunshine and I was more than ever captivated by the beauty of her buildings. The street market of St. Denis was thronged with women and had a fair sprinkling of bearded French soldiers. Even at that early date quite

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a number of men were seen hobbling about in civilian clothes with service medals on their coats. We saw many Belgian soldiers but British soldiers were entirely absent, for Paris, too, was "out of bounds" to the British army. The very few men of military age seen was remarkable compared with London, and though the great battle of the war, Verdun, was then at its very height not sixty miles away, Paris, as far as we could judge, was not at all worried.

At night the city was brightly illuminated till nine o'clock; then the lights were lowered. Even at midnight the streets were light enough to see to get about. Paris had little fear of Zeppelins; they had made several attempts to reach the city but had failed in all except one raid. The establishment of listening posts and other devices near the front for detecting the approach of the airships made it a simple matter to prepare plans to intercept them and give them a warm reception, for it takes a fairly long time for a Zeppelin to reach Paris after it enters French territory. A few weeks before our arrival French anti-air-craft guns and search-lights mounted on motor lorries had pursued and brought down a Zeppelin and the Huns had probably decided that the game was not worth the candle.

Paris, therefore, freed from worry from this source, went its usual way at night and crowds thronged the Montmartre district, the quarter inhabited by the student and demi-monde class. Most of the theatres were in that quarter, and, although the majority of the regular playhouses were closed, the picture shows and

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music halls, such as the "Folies Bergeres" were crowded nightly.

There were two performances a week in the Grand Opera House, consisting of acts from different operas. The "Comedie Francaise" the Government endowed theatre, still gave performances at regular intervals, which in perfection of acting were, as always, unequalled anywhere in the world.

The Opera Comique also gave grand opera on Sunday afternoons, and the one performance that I was fortunate enough to see—Carmen—was the most perfect production of grand opera that I have ever seen or heard. From the standpoint of the critic I could find no flaw, and though Carmen is not a favorite of mine, I revelled in the perfection of staging, acting and singing of this performance. The street and mob scenes were so realistic that one forgot that they were not real street scenes; the acting of the singers was so fine that one was carried away by it and forgot all about the wooden acting of grand opera customary in America and England; and it was only when the curtain finally rang down that one realized that the flawless performance had been but a play.

The restaurants on the Rue des Italiens, near the Place de L'Opera in the Montmartre district were thronged with people. The weather was warm enough for the crowds to sit at the tables under the awnings in front of cafes and sip their wine or coffee, and there I spent many a half hour after my evening lesson in French, watching the crowds surging up and down the broad sidewalk.

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Men were scarce in Paris, particularly men of military age. A few "Poilus" home on leave, and a number of Belgians, with a sprinkling of other soldiers, were the only evidences of war. The men seen were practically all over the military age. It was the golden age for the "has been"; the old man had again come into his own.

The girl of the demi-mondaine was having a hard time of it in Paris. There was no travelling public such as usually thronged Paris in search of pleasure and excitement and upon which she had been accustomed to batten. She was therefore forced to take up with an older and often inferior class of men which she would have scorned in times of peace.

Rumour said that many of these women were starving, and judging by the voracious manner in which they tackled pedestrians openly on the streets at night there was ample ground for that belief. Men were followed and grabbed by the arm who had no intention or desire to make or receive any overtures.

It was so different to what one had heard of the French women of the street that it came as a great revelation of how the times were out of joint, and how difficult it really must have been for such people to obtain the money necessary to live. One would have expected cruder things in London but such was not the case, though there is this difference that sollicitation is not permitted on the streets of London while it is in Paris.

Official Paris allows the people within its gates to do as they like in matters of morals without let or hindrance. And so the "Petite Parisienne" whose man

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had gone to the war and perhaps had been killed, took to the streets again in search of another, and was forced to take up with men she would have despised in other times.

English speaking people have no idea of the Parisian viewpoint on questions of morality; in fact our view points are so diametrically opposed to one another that we have no common ground for discussion. The average Parisienne of the street is not immoral; she is unmoral, that is to say she has no morals because she never did have any. She has been accustomed to look upon herself as a commodity of barter and trade and we cannot in fairness judge her as we judge women who have been brought up to other ideals.

As I sat sipping my coffee one evening one of these women leaned across the aisle and entered into conversation. As she rattled away a poorly-clad child selling bunches of violets approached and looking at me placed a bouquet on the table beside me. Mechanically I put my hand into my pocket for a penny, but by the time I had found it to my surprise the child had passed on. The woman stared at me and at the retreating child and asked, "What did she do that for?"

"Perhaps because I smiled at her," I said.

The woman asked no more questions but got up and walked away; the child's action had touched her as it had touched me and I like to remember that on four different occasions little French children, strangers to me had given me in this same sweet way flowers that they might have sold.

The English soldier was popular in Paris. Be-

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fore the city had been put out of bounds for the British Army it had been a favorite resort of men and officers, who had made a great reputation with the Parisians for being courteous, kind and liberal. The Belgians on the other hand were quite unpopular, being openly called "dirty Belgians" and, judging from my own personal observation, there was a certain amount of reason for this disrespect.

Towards nine o'clock, when the lights were lowered, the genuine Parisian who had been dining in the cafes began to go home, as did the successful women and their consorts, causing the crowds to become perceptibly thinner. Those women who had not been successful, redoubled their efforts, and it was really pathetic to see the attempts of some of these poor outcasts who were little more than children, to capture their prey.

At midnight the Place de L'Opera was absolutely deserted. On two occasions I watched this strange fascinating panorama of human life and emotion, forgetful of the time, and found myself quite alone there as the clock struck the midnight hour. Alone I watched the moonlight streaming down upon the Grand Opera house transforming it into the purest marble.

I wondered whether it was all a dream. Could it be really true that I was there in Paris in the middle of the great war? Was it possible that the greatest battle of all time was taking place at the very moment not sixty miles away? Yet it was a real "Bon soir" that a passing gendarme gave me as I strolled homeward past the great bronze shaft erected by Napoleon

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in the Place Vendome and now towering black in the white moonlight, while the river Seine shimmered like molten silver in its way to the sea. It was really true but it was one of those times when a soldier in Europe finds it very difficult to accommodate himself to the violent contrasts which he is constantly meeting, when transferred suddenly from the war zone back into the peaceful life of the civilian.

The quiet and dignified Hotel Lotti on the Place Vendome was described in the guide books as frequented by the French nobility and the aristocracy; the claim proved to be correct for when I was there two French countesses, an English knight and a Duke had apartments there. The Hotel Lotti is next door to the Hotel Continental and is owned by the former manager of that Hotel. Both the Hotel Continental and the Meurice across the road are supposed to be particularly fine and "splashy."

Shortly after we came, the Prince of Serbia arrived in Paris and stayed at the Hotel Continental. At the same time representatives of all the allied governments arrived and stayed at one or other of these hotels. There was a guard of Serbian soldiers always at the entrance to the Continental as well as a crowd of onlookers which sometimes swelled to tremendous proportions. The newspapers chronicled the movements of the Serbian prince and when it was announced that he was to leave the hotel the traffic on the street was blocked with cheering crowds.

If I heard the Marseillaise sung once I heard it sung twenty times by the throng on the street below my

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windows, for the Prince of Serbia was the symbol to France of that brave people whose valour had won for themselves immortal renown and had captured the imagination of the French people. The French are certainly a nation of hero worshippers and though they no longer recognize an official nobility they do dearly love a title.

The same kind of demonstrations took place when Lord Kitchener and Asquith drove through the streets. Everywhere they went the roads were lined with the dark blue uniforms of the national guard, the gendarmes and some of the territorials in their light blue service dress.

Then French soldiers lining the route across the Place de la Concorde on the day when we drew up to see Lord Kitchener, Mr. Asquith, General Cadorna of Italy and other foreign representatives pass, looked small and insignificant in their, to us, sloppy uniforms; yet those were of the race "who had threshed the men and kissed the women of all Europe"—the soldier, which through all the centuries since the time of Julius Caesar, had shown the most consistent fighting ability of any nation in Europe. Their soldiers at that very moment were fighting for their very existence and week after week were pouring out their best blood in torrents on the battlefield of Verdun, demonstrating to the world the possession of qualities which we had prided ourselves belonged to the Teutonic races and particularly to Britons,—the quality of "sticking it."

They are a wonderful people, the French, marvel-

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lous in their spirit of self sacrifice. The French woman does not weep when her son or husband goes to war. No, he goes to serve "La Patrie" that word for which we have no synonym, the something which is greater than everything else, for which all must be sacrificed with joy. France is a name to conjure with; it is an ideal as well as a country, for it embodies all that Frenchmen have fought and died for in all the centuries.

Paris had never before seemed half so clean, but this is the impression that you always get when you return to it. Perhaps it was the contrast with the filthy, muddy streets of the little northern villages in the war zone,—streets traversed daily by hundreds of motor lorries and thousands of men each of whom brings in, from the surrounding country, a certain amount of dirt.

On Sunday morning towards eleven o'clock the great avenue—Le Bois—leading towards St. Cloud, was crowded with the better class of Parisians, all wending their way to the woods and parks for the day. They were there in tens of thousands, on foot and in taxis, and very frequently carrying lunch baskets.

Never does one see such a smartly dressed crowd of women as one sees in Paris. No matter what the combination of colour, no matter what the style, they look well, for they have the national gift of knowing how to wear their clothes. Even the widows in mourning, and there were many of them, looked most interesting. French women have a grace of carriage and know how to walk, which is in striking contrast to the majority of English, Canadian or American women. It is the

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ensemble which gives the Parisienne that air of distinction which is so characteristic.

The children were dressed in the styles which are usually seen only in the fashion plates and as much pride and thought was evidently spent upon them as on the dress of the mothers themselves. The French children in Paris are particularly well behaved and obedient.

The trees in Le Bois were just bursting into leaf on that first Sunday of mid March. The rented boats on the little lakes were filled with young boys and their sweethearts, and they splashed up and down and ran into each other, and made much noise after the manner of people of that age under similar circumstances the world over.

Crossing the Seine we ascended the hill to the race course of St. Cloud, from which a magnificent view of Paris is obtainable. It was a splendid situation for the French Canadian hospital established there under the command of Lt.-Col. Mignault of Montreal.

The French authorities did not want the wounded from Verdun to come to the Paris hospitals, for it might depress the people too much. So, though Verdun was at its height, no wounded were seen in Paris and the hospitals in fact were almost empty at the time. And as the Parisians did not see any evidence of great losses through the presence of wounded, it was quite natural to conclude that there could not be many wounded. If not why worry, for the newspapers were full of the tremendous casualties inflicted on the enemy? The French army must be very good to be able to hold the

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German back like that, must it not? So Paris was optimistic and the wounded went elsewhere to the country where it was said the air was much better than in a large city like Paris.

The French Canadian hospital, however, was not going to be done out of the work that they had come so far to do, and demanded patients. As the hospital was situated in the suburbs (where the air was presumably good) permission was granted and it was filled with wounded from Verdun on the following day.

Though not fully completed when I saw it, the hospital was in running order. It consisted of a series of wooden huts arranged in the area behind the grand stand, and had just enough shade trees around to shelter the huts partially from the sun. It was always a marvel to me to see soldiers recovering from what have always been considered to be fatal wounds. I saw one man that day at St. Cloud who had been shot through the centre of the forehead two days before at Verdun, the bullet coming out of the top of his head, and leaving the brain exposed. The man was sitting up in bed reading and when the wet dressing was raised by the surgeon one could see the brain pulsating.

Of the meetings of the War Allies' Sanitary Commission there is little to be said because they were of a technical nature, and chiefly of interest to scientists. The first meeting was held on March the 15th and one was held thereafter every afternoon for the next three weeks, with the exception of Sundays. About thirty-five delegates were present altogether, representing the

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civilian, naval and military services of Russia, Italy, Serbia, France, Belgium and Great Britain.

At each session some subject on sanitation was discussed according to a program decided upon the previous day. Some countries had already had experiences with certain epidemics, which were quite unknown as yet to the other allied countries; in such a case the experience gained by one country in devising ways and means of stamping out an epidemic would be of great interest and practical value to the other countries.

A striking example of this was the experience of Serbia with typhus fever. Typhus is conveyed from man to man through the bites of lice infected through biting some one who already has the disease. Serbia had had a tremendous epidemic of the disease both in the army and in the civilian population, and had had to resort to all kinds of improvised means of controlling lice when their regular disinfecting apparatus had been lost or destroyed during their retreat. Naturally the experience of Serbia was of the greatest interest to all the other armies which were also lice-infected but had had no typhus fever as yet.

All the discussions were conducted in French, and curious to relate the non-French Allies understood one another more readily if possible than they did the French themselves, largely due to the fact that the latter talked so rapidly. Many scientists of great note were present, among them being M. Roux who had succeeded M. Pasteur as chief of the Pasteur Institute in Paris. He was by far the easiest speaker of all to follow,—so easy in fact that I constantly congratulated myself

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on my knowledge of French when he was speaking, only to sadly admit when the next Frenchman began that I had still a long, long way to go.

Every morning the five of us who were representatives of the British army, Australia and Canada, met and drafted our joint report of the previous day's meeting for submission to our respective governments when the Congress would be over; many days of labor were thereby saved since the report was complete when the meetings ended. This used up the mornings, and the regular meetings took up the afternoons till five o'clock. Every evening I took a lesson in French conversation so that there was not much time for sight seeing even if there had been anything to see. It was in reality three weeks of hard work yet I managed to see quite a bit of Paris and of what was going on in our spare half hours and the two or three half days during which no meetings were held.

Some of the delegates were very remarkable men. The Frenchmen were all scientists of note. One of the Serbian delegates had been continuously in the battle field for four years and was thoroughly tired of war. He was a handsome and very interesting man. In fact all the Serbs whom I saw in Paris were big, fine-looking men.

The chief Russian delegate was a prince, a lieutenant-general of cavalry, and a wonderfully well informed scientist. Though a man over sixty years of age and without a medical degree, he seemed to be perfectly informed in every question relating to bacteriology, chemistry, sanitation and medicine and would put the

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average notable medical officer of health to shame. He was to all of us a perfect marvel. He spoke English and French fluently and had the keenest sense of humour of any member of the congress, constantly enlivening the proceedings by his witty and humorous remarks.

One day the Commission visited the French storehouses in Paris, where all the drugs, medical and sanitary supplies for the French army were kept. Something of the magnitude of the war being conducted by the French could be gauged by the enormous warehouses, packed to the roof with medical supplies for the army.

We also visited the series of wooden buildings being erected to house the Red Cross supplies sent to France as gifts from other countries. The Canadian building was the only one completed and stocked and we were shown that as a sample of the others; all the French representatives were very careful to explain to me individually that Canada had been very good and more than kind in remembering France.

The Russian Prince, who objected strenuously to this trip, vented his satire during the whole of the afternoon. We would, perhaps be ushered into a huge warehouse packed with wooden boxes to the ceiling, when the Prince would adjust his eyeglasses and looking them over with a comprehensive sweep of his hand say to me, for we travelled together that day,— “Ah, yes, boxes! how very interesting! do you know, Colonel, nothing gives me greater pleasure than spending the afternoon looking at piles of boxes?” Each syllable was so clear-

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ly and distinctly enunciated that the simplest remark made by this born comedian of a Prince was perfectly delightful, and we had a joyous afternoon together.

Pasteur is a name revered by one and all in France. The first question asked when you are introduced as a scientist to Frenchmen is, "Do you know our Pasteur and his work?" and when you reply in the affirmative they beam on you and look as if they wanted to kiss you.

The Pasteur Institute was devoted entirely to putting up the various sera, vaccines and other material required by the army in the field. We were shown over the Institute by M. Roux, the Director. The reverence with which each foreign delegate removed his hat as he approached the rooms where Pasteur had lived and worked was most impressive to the resident of a country where there was little reverence for anything in the way of ability of any sort except that for making money. Pasteur is buried in a mausoleum in the Institute and numerous tributes from societies and great men the world over testify to the esteem in which he was held by the thinking portion of the world.

One particularly interesting feature of the work of the Institute was the manufacture of a certain poison for rats in the trenches. Rats are a great nuisance and a possible source of plague to the armies in the field. In the Autumn the rats come into the trenches where there is an abundance of waste food, and are particularly numerous where there is lots of water near which they like to breed.

The method used to kill them is quite ingen-

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ious. The rats are fed at a certain time every day for about ten days, at the end of which they will come in large numbers almost on the minute. The poisoned food is then placed for them and a large proportion of the rats are destroyed. Where poison has once been tried it is useless to make any further attempts with the same poison for a long time to come, for the rats will refuse to touch it. The wholesale method outlined has been found in practise by the French to give the best results.

Our trip to the French front in the Champagne was interesting. Leaving the station one morning at eight we arrived at Chalons-sur-Marne about eleven and visited a couple of hospitals there. The hospitals were well equipped, and some of the surgical devices in use were new and exceedingly ingenious.

The most vivid impression which remains of those French hospitals, however, was the lack of fresh air in them; seldom have I breathed a more vitiated atmosphere. Though it was a warm, pleasant day outside, every window in the hospital was closed tight.

It is another indication of the strong scientific contradictions sometimes met with. Though, in theory, the French are most excellent sanitarians and as a country revere the name of Pasteur, while we have forgotten, if we ever did know, the name of Lister, in practice they are about as poor a nation in practical sanitation as it is possible to be. Imagine a hospital, thoroughly equipped and clean as a new pin, with such bad air that one of our party fainted and another had to leave in a hurry to escape the same fate.

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After an excellent lunch at the town hotel we left by motors and char-a-banc for the field hospitals. The drive of some twelve miles was made over the chalk plains of the Champagne and the dense clouds of white dust, raised by the cars ahead, half smothered us. The only trees on this rolling country were scrub evergreens and only enough of these had been left for cover, the rest having been cut for stakes, and pit props. Through these bits of woods and across the open country ran the numerous white ditches used for reserve trenches.

The field hospitals themselves were as fine as I have ever seen in equipment and appearance. They consisted of series of huts, well laid out and with walks planted with trees and shrubs from the surrounding country. That was the artistic touch that made French field hospitals look better than the British hospitals. Wells had been sunk for hundreds of feet in the chalk, pumping engines installed, and disinfection chambers and baths built with a capacity of a thousand men a day.

While there we saw German aeroplanes being shelled and were much interested to note that the anti-air-craft fire of the French gunners was just as bad as that of the British.

On our return we visited a French mobile laboratory at Chalons, and were much struck by their method of running it; like our own Canadian laboratory they carried all their equipment in boxes which were conveyed by a single motor lorry.

We arrived in Paris at midnight tired and sleepy to

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find my trusty "Rad" waiting for me, and we drove home a load of thankful friends, while the rest of the delegates searched in vain for taxis which were unobtainable at that time of night.

A small item appearing in the Parisian journals on the following day made us think. It read, "Chalons-sur-Marne bombed by aeroplanes." Whether the aeroplanes that we had seen being shelled had carried back word that an expedition of some sort had been seen coming and going from Chalons in a large number of motors and whether they had suspected that it was the congress including Lord Kitchener, Mr. Asquith, General Cadorna and others will never be known; the fact seemed to be that Chalons had never been bombed before our visit.

The saddest and at the same time the most inspiring sight that it was my privilege to see in Paris or during the whole war was during our visit to the institutes for the maimed and blinded soldiers.

The institute for the maimed had for its purpose the starting out in life afresh men who had lost arms and legs in battle. The French are at the bottom an exceedingly practical people even if they do not appreciate fresh air as they might. They discovered very quickly that the first thing necessary in the treatment of disabled soldiers after they were ready to leave the hospitals was to make them realize that they were still valuable and useful members of society. To this end the soldier was fitted out with the best mechanical appliances in the way of wooden arms and legs that it was possible to give him; and it was characteristic of

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the French people that they had these artificial limbs made by the disabled soldiers themselves. This saved the labor of able bodied men and gave interesting and necessary work to the disabled soldiers.

The trades being taught were basket making, brush making, piano tuning, draughting, typewriting, tailoring, tinsmithing and so forth; while classes in reading, writing and other subjects were held for those who were deficient in these requirements, and anxious to learn. And here the astounding observation was made that in certain cases uneducated men have been able to learn more in six months than the average child learns in as many years. In such cases the individual has an extraordinary power of assimilation and simply "eats up" everything put before him. The maimed men were all happy and smoked and sang at their work. They were heroes still.

The school for the blind was, in some ways, of quite a different character. At the time of our visit there were about 350 soldiers in the school, learning to be self-reliant and useful citizens. Naturally it is a much more difficult task to teach a blind man than a maimed one that he is still a valuable asset to his country and the first weeks in the Institute are frequently devoted to convincing him of this cardinal fact. When he has learned to dress himself, get about alone and begins to learn a trade he becomes convinced of this truth and the victory has been won. For the appalling future facing him of a life in total darkness dependent on a wife or parents is too terrible a one for any man with any self respect. Unless new hope can be given them they



THE CAMOUFLAGE.

Anti-aircraft artillery disguised against enemy observers flying above.

The diagram shows a 2D hexagonal lattice of atoms. A central atom is highlighted. A hexagonal unit cell is outlined. The lattice constant is labeled 'a' and the vertical distance between layers is labeled 'z'.

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face the prospect of becoming drunkards, beggars and parasites on society. And the principle underlying all this work, is to make the blind man feel that he is yet a self-reliant, valuable citizen of "La Belle France."

How it is working out a glance at the men in the various buildings clearly showed. Here was one group of men wearing smoked glasses feverishly manufacturing brushes; as they worked they whistled. In the next room another group was mending the seats of rattaned chairs; in the next they were making raffia baskets; in the next willow baskets, chairs and tables. Another lot was learning to set type for books for the blind; others were learning typewriting, piano-tuning, barrel making and boot repairing.

Perhaps the most interesting of all were the men learning to be professional masseurs: This is a particularly suitable profession for the blind because it depends for its success altogether on the sense of feeling, and these chaps rubbed and manipulated each other's muscles and joints in the most approved expert style, using one another as patients. Some of the blind graduate masseurs were already practising their profession in Paris.

One recent arrival was being conducted about the garden by one of the white clad nurses, who was evidently trying to comfort him in some of his bad moments. The poor chap looked heart broken and one felt, even though dimly, something of his Gethsemane as he realized that the glory of the sun and all the beauties of nature were no more for him,—that before him was only night eternal. Yet a moment afterwards

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when the supper bell rang the rattle of canes on the walks and the sound of scores of men whistling and singing as they came from all the buildings round about proved most convincingly that hundreds of others had gone through this same struggle and had come out victorious.

My visit to the Institute for the blinded soldiers was to me the most inspiring experience that I had in France, strange as that statement may sound, for it showed more conclusively than war itself the infinite capacity for courage that exists in almost every man. Yet the sights that we saw—so terribly pathetic—made one realize as never before the truth of the epigram “War is hell.”

When we again passed through the gates of St. Denis on our way towards our “home” in the field, it was a sunny day and all the fruit trees were in full bloom, making a broad belt of white for three or four miles around Paris. With the exception of a stop at the cathedral of Amiens to see the wonderful old stained glass windows, unequalled by any in Great Britain, we travelled steadily all day without incident and reached our little home town near the Belgian border by five o’clock to find that all was well.

CHAPTER XIV.

TABLE TALK AT A FLANDERS MESS.

“**L**OOK Out,” warned the Colonel as they stumbled along the Rue de la Gare, “there’s a hole somewhere about here.” The Canadian officers passed gingerly on feeling their way down the inky street. A Zeppelin had been over the night before and the lighting regulations were being strictly enforced.

Suddenly the Captain stopped, passed his hand along a brick wall, gave a pull at a wire, and a gong on the inside rang like a fire alarm.

“How in the dickens you can see in this darkness beats me,” said the Colonel. “You must have eyes like a French cat.”

The door was opened by Bittleson, and the three officers entered and walked along the dimly lit, tiled hall into a room at the far end.

“Home, Sweet Home,” said the Colonel looking around the room. “It is the nearest thing we can get to it anyway, worse luck.” They all threw their British warms and caps onto a large chair, flung their sam-brown belts on top of them and picking out their own respective easy chairs drew up before the fire, which was burning brightly in the French grate stove in the corner of the mess room, formerly the dining room of Madame Deswaerts. The whole side of the room facing the rose garden and pigeon cots was glassed in and the two huge French windows were, no doubt, a

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pleasant feature in the summer time; at present they admitted a great deal of the cold, damp air from outside.

"Rawson," called the Colonel. Rawson a little black-haired Jew, the Doctor's batman and temporary mess cook, entered.

"Yessir," said Rawson.

"Put some more coal on that fire; it's as cold as hell in here," grumbled the Colonel.

The fire was duly replenished while the Colonel took a cigarette from his case and opened his "By-stander."

"Do you know how to cook that canned asparagus?" asked the Colonel as Rawson turned to leave the room.

"No Sir," said Rawson.

"Well how do you think you would cook it?" asked the Colonel.

This was a poser; Rawson was evidently non-plussed.

"Would you boil it, Sir?" he ventured when the silence had become oppressive.

"You guessed right," and the Colonel deftly flicked a burned match up behind a picture of the local curé. "What would you do with the tough part of the stalks?"

"I dunno, Sir." Rawson was stumped again.

"Have you ever eaten asparagus?" asked the Colonel.

"No, Sir," said Rawson, "but I've seen it in the stores."

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"Well, go and boil it for five minutes with some salt," ordered the Colonel, "and then serve dinner."

"Yessir," said Rawson, retiring to the kitchen.

"It beats hell," fussed the Colonel, "how ignorant that boy is; he hasn't a single ray of intelligence; he carries on just like a trained monkey; he never thinks, never."

"Yes, he does," contradicted the Captain looking up from a New York Journal received that day, "I actually saw him thinking yesterday; I could almost see the wheels going around; in fact, I imagined I could hear them grating, so seldom had they been used. It was really one of the most fascinating things I ever saw; you couldn't describe it but you could act it. The Doc. saw it too. Wasn't it funny, Doc.?"

"It was a marvel," said the Doctor. "I have always classed Rawson as belonging to the palaeolithic age and imagined the missing link to have about the same brain capacity as he has; since our experience yesterday I have come to the conclusion that Rawson is a 'throw back' and had normal ancestry. This is more apparent when we know he is never savage but on the contrary very gentle."

The conversation was interrupted by the entrance of Bittleson, the Colonel's batman. Bittleson had been deposed from his position as cook two days before for being dirty and careless. He now came forward with his cap on his head and saluted as only Bittleson could salute.

"Beg pardon, Sir," he hesitated with a deprecatory smile, pointing with his thumb to the kitchen

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door, "but Rawson aint really up to cooking stuff like this here sparrow grass—not yet. P'raps I had better take a holt."

"All right," agreed the Colonel, "are you sure you know how to cook it yourself?"

"Sure," answered Bittleson with an inflexion that spoke volumes as to his knowledge. "Why when we was at Salisbury —"

"Shut up," commanded the Colonel and Bittleson respectfully saluted and retired.

When the dinner was served we waded through our passable soup, tough roast beef with "frits" and waited with pleasant anticipation for the chef'd'œuvre of the evening. The asparagus duly arrived and was placed on the table by Bittleson himself with something of a flourish.

"What the sam hill do you know about that!" said the disappointed Captain as all gazed at the plate full of white asparagus butts,—as hard as tent pegs. The tender edible portions had been thrown away. The Colonel turned to Bittleson but the latter was too quick for him and had already made a strategic retreat.

"What a mess-president?" said the Captain, "Eh, what, Doc.?"

"Go to blazes," growled the Colonel, "You can't get results without tools; pass the coffee pot." And they relapsed into silence for a few moments as they severally speculated on the number of Bittlesons they knew of in the army—in all ranks.

"Well, I wonder how long this blinking war is

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going to last," queried the Colonel. "No signs of light on the horizon yet; Fritz is some sticker."

"I am fed up with the whole thing," returned the Captain snapping his cigarette butt viciously into a corner. "What are we out here for anyway; what are we fighting for; what is the whole bally business about; that is what I would like to know?"

"What did you come out for?" asked the Colonel. "You had a good position and a good future in your profession over in the States; something made you come; what was it?"

"I don't know what it was; chiefly a desire to be in the game and not be a quitter I guess; I hate the idea of my kids, if I ever have any, asking me what I had done in the great war. I went up to Forbes Bay to play golf and forget the war and suddenly found myself buying a ticket for Valcartier Camp and here I am." There was silence for a minute. "What did you come out for Colonel?" asked the Captain.

"For adventure," replied the Colonel. "So did everybody else; anybody who says he didn't come out here for some such reason as that is a damned liar; don't you think so Doc.?"

"I don't think I did for one," responded the Doc., "but I wouldn't be sure; I had every inducement to stay home if any man had, congenial work, interesting hobbies, the finest woman in the world, and I hate the military game; I guess there were lots of others like myself."

"Well, what in thunder did you come for; what was the big idea?" demanded the Colonel.

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"The big idea in my case was that I thought I might be of some use in keeping our men efficient, in other words 'service,'" said the Doc. "What is more, that is what you and the Cap. both came for if you would only admit it."

"Piffle," snapper the Colonel.

"It isn't piffle, it's the truth," asserted the Doc. "Why do you feel sore now because other fellows you know haven't come out? If love of adventure brought you, there is no reason for feeling crusty because your friends haven't the same love of adventure that you have. Let them stay at home and mind their own business if they want to and can't see things as we do."

"Yes, but it's different now to what it was at first. Everybody knows we are in this fight to the death,—that if we are licked it is 'good-night!'" said the Colonel.

"You can't convince them of that in England—not all at once," argued the Cap. "The newspapers still construe every local success into a great victory, the great mass of the people think the war will be over in the autumn, and the strikers still strike!"

"Well, if they don't see the desperate nature of the affair in England how can you expect them to realize it in Canada?" questioned the Doc. "England has air raids, bombardment of her coast towns by German raiders, ships sunk by submarines and all the evidences of a nearby war. Of course she thinks she has the money and that money will win. I guess Germany hasn't much real money but she carries on pretty well without it."

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"She is like America in that respect in regard to money—thinks that the last dollar will win," answered the Cap. "It won't, its the last big army in the field that can strike at a vital point that will win this war."

"That takes money," said the Colonel.

"Yes, but hang it!" countered the Cap., "Germany can print money and keep on paying; as long as the war lasts paper money will be honored; it has to be if the Government says so. Only when the end comes and there is no gold to honor the paper will the crash come: Germany hopes to be in the position to obtain compensation when the war ends. I believe that Germany is deliberately trying to ruin the Allies and particularly England by causing them to make tremendous expenditures in gold, which is the only thing neutrals will honour; then when we are weakened in both men and money she hopes to get in her knock-out!"

"As a secondary consideration she may be trying to ruin England because she has failed to get in the knock-out blow; that is more likely," reasoned the Colonel. "She has tried hard enough to give the knock-out both in the first rush to Paris, at Ypres, at Verdun, at the battle of Jutland, and by her Zep and submarine campaigns. Hitherto she has failed. Now I believe she is carrying on in the hope that we will become exhausted and quit; they don't know the English."

"Neither does anybody else," said the Cap. angrily, "they don't know themselves. They laughed at Lord Roberts and nearly crucified him: they laughed at the German navy, at Zeppelins, at subs and at poison gas, and they paid no attention to Sir William Ramsay

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for kicking against American cotton going into Germany to make explosives to be used against us. Now they are having a great laugh at Pemberton Billings because he says the air service is rotten and advocates the building of thousands of aeroplanes wherewith to swamp the Germans with bombs. When he talks in Parliament, they get up and walk out of the house. That is typical of the English people as a race; they are so intolerant and so d—conservative that even in questions of life and death they won't learn. The aeroplane is a new brand of the service and therefore they won't take it seriously and they say Billings is just a blatherskite. But you know and I know that when sixty planes went over the German lines the other night they played havoc with certain cantonments. If so why will not ten or twenty times as many planes accomplish ten or twenty times as much? It is simply a problem in mathematics. But will Englishmen see that? Not much. 'Muddle through' is their national motto and they are proud of it. Thank God the Germans are just as stupid. If it was the United States they wouldn't play the fool in regard to new ideas, believe me."

"Rubbish," retorted the Colonel, firing up at the mention of the United States, "There is a nation with no sand; she hasn't even got gumption enough to know that other people are fighting her battles for her. She has a three-for-a-cent war on with Mexico and she can't raise 50,000 voluntary troops, while Villa sticks his fingers to his nose at them. Their only aeroplane was brought down by a Mexican revolver bullet; their fleet

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is a joke; they are the greatest bunch of bunco steerers in the world to-day!"

"Don't you believe it," replied the Cap. with deliberation, "I have lived in the U.S. for several years and I think I know the people. They have the makings of a wonderful nation. They are keen as mustard and without silly antique prejudices inherited from the middle ages. It is true, as a nation, they have something of a swelled head. But give them a chance; they will come up to the scratch some day; mark my words."

"Dollars! Dollars! Dollars! that is the American God," continued the Colonel, "like the children of Israel they worship the golden calf; they have no other ideal than to become rich, buy automobiles and 'put it over' the other fellows. The Germans spit in their faces every day and they say 'business is business' and take it. The Germans sink the Lusitania and the President sends a note advising them to be more careful in future and so it goes. Why, any decent man will strike back when he is struck by a filthy swine; even a worm will turn."

"He couldn't," objected the Cap.

"Why couldn't he," returned the Colonel. "What's the matter with him? Is he a jelly fish?"

"Because he is the chief engineer of the nation," explained the Cap. "He is head of a nation that is a conglomerate; it isn't yet fused; it contains fifteen to twenty millions of people of German origin. It is like running an express train. As long as the track is straight and the levers are left alone the engine will keep the tracks if he can keep his hand on the throttle and observe the signals. There are some

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bad signals up in the States. It is overrun with spies who know everything; the navy is in bad shape; the Mexican affair is on; they are nervous about Japan and they have no army. With a publicity bureau such as the Germans have, controlling many newspapers and magazines, the enemy can do a tremendous lot to alienate public sympathy from the allied cause, and until America is touched in the quick there will be no demand for a change of conditions."

"Then the President should lead public opinion," announced the Colonel.

"Yes, and bring down the wrath of the enemy upon him; just give him time; he hasn't got that jaw for nothing; he knows history; his opportunity will come and he will rise to it. Don't you think so Doc.?"

"I don't know," said the Doc. "I used to think he had tremendous reserve power; now I'm not so sure. The President, in my opinion, made his great mistake when he failed to make a dignified protest on behalf of the violation of Belgium's neutrality. The U.S. stood for great things in the world; she was the ideal of the smaller nations to whom she was the personification of Liberty. She fell down and to-day even France shakes her head or smiles behind her hand when the name of the United States is mentioned. Yet, I feel that we cannot judge because we don't know all the facts. The best men in the United States are with us heart and soul; they feel disgraced and degraded individually and as a nation because they are forced to eat dirt; they want to go to war for they realize the European situation. Yet, we can't tell what is going

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on behind the scenes in the United States; we don't know all facts; the cards are not all on the table. If we knew what President Wilson knows, we might judge, but we don't. For all we know Great Britain and the other Allies may want America to keep out. The Japanese question may be a very ticklish one. We don't know and therefore we can't judge; that is my opinion."

"What is the feeling over there anyway?" asked the Captain.

"It was hard to determine," said the Doc. "Apparently everything was going on as usual in New York. The editorials of papers like the *New York Tribune* and *Times* were absolutely the finest I have ever seen showing why the United States should be in this war. On the other hand the Hearst papers and many others were antagonistic; the middle West at least is pro-German, and the South is an unknown quantity. I met many thinking men who used to be very favorable to the President but who now curse him and his typewriter. Many business men had signs hung over their desks 'Nix on the war.' They are different from English people who through their press are leading the politicians and forcing the authorities to more strenuous action. The United States on the contrary seemed to be willing to place all responsibility on the shoulders of the President and follow him. Meanwhile, he senses public opinion and plays golf. He has more power than any man in the world to-day, far more."

"And you really think they will finally come in?" asked the Colonel.

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"I think they will have to; there will be no choice," answered the Doc. "If they would only realize that the British fleet is the only thing standing between them and Germany they would become panicked. But they don't and while the British fleet protects them from the Prussian—who is out for world domination—they soak the British hundreds of per cent. profit on supplies. It is really very funny if you can see it from the humorous standpoint."

"It seems pretty rotten to me," said the Colonel, "for a nation to take everything and give nothing, while others fight for it."

"They don't know anything about Europe; they don't, as a nation, know what the war is about. As far as that goes we have nothing to swank about in Canada!" said the Doc.

"Canada has realized her responsibilities, anyway," put in the Colonel.

"Just exactly what she has not," contradicted the Doc., in turn waxing wroth. "What have we done anyway? Put four divisions in the field, of which two-thirds were born in Great Britain. We have somewhere about nine million people in Canada; we should get 12 per cent. of that number under a system of national service, that is nearly 1,100,000 men. They say we have recruited about 300,000 for service abroad. It isn't as if the rest were mobilized for war purposes—they are not. There is not even a home guard. There are tens of thousands of men around the streets of Toronto to-day who should be at war; I know a lot of them personally and they haven't 'bad hearts' either,

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or dependent mothers. They are just rotters, nothing else."

"Some of them who work for Red Cross one day in six months, throw out their chests and tell you they are 'doing their bit' at home. I saw red all the time I was back and a lot of them felt very uneasy when they met me. When I see these chaps here tramping in and out of the trenches day after day and think of those spineless blighters at home it makes me sick."

"Ottawa has no backbone. It hasn't nerve enough to do anything. Quebec holds the whip hand and Quebec is anti-war. And so the political game goes on while Canadian profiteers make barrels of money—blood money—out of munitions and food-stuffs. We make the most of what we have done but I believe that Canada's effort is a disgrace."

"Well what would you have?" questioned the Colonel, "Canada has to produce food for the Allies; she has to carry on; she could easily be ruined by conscripting all her men for active service."

"Nobody suggests that all her men be conscripted for active service," said the Doc. "What is needed is that every man should be working for the Empire. Whether it is in growing wheat, making munitions or fighting, makes little difference. We need everybody working for the common cause. There are plenty of men trying to sell real estate to-day who should be out ploughing land for wheat to keep French and British soldiers fit; there are lots of chaps who cannot fight or plough who can run a lathe in a munitions factory; there are plenty of women who could replace men on

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farms; every woman and man in France is working. Why should not Canada be doing the same?"

"Its quite a bit different," argued the Cap., with a wink at the Colonel. "After all if Germany won out it wouldn't make much difference to Canada."

"Wouldn't it?" demanded the Doc., hotly. "That is what a relative of mine said and I am only waiting for an opportunity to see the swine and tell him what I think of him. If the British fleet failed to-day do you know how long it would take the Germans to get over to Canada? About ten days! And about ten thousand German marines with a couple of naval guns would make Canada throw up her hands as fast as a footpad would an old lady in a dark lane. I would say that ten high explosive shells in Quebec and about twenty in Montreal would do the trick. That followed by the despatch of two or three regiments to Ottawa would settle the matter. The whole thing would be too ridiculous for words. The United States would mind their own business because the Monroe doctrine would avail but little without troops to back it up."

"Then what?" asked the Colonel, as the Doc. stopped for breath.

"Canada is the ideal country for a powerful German colony. I honestly believe they would prefer Canada with all its latent resources, its water power, great wheat fields, minerals and forest wealth, to any spot on earth. With their systematic methods, their thousands of trained scientists in all branches of industry, their tremendous capacity for work and resourcefulness, they would take a hold of Canada and

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develop it in a way that would startle the world. Germany has millions of surplus population that she would transfer to Canada for development purposes. She would have 100 million people to the south of her for a market and in ten years she would control the markets of the whole world. That is the German dream and there is only one thing that stands in the way of its accomplishment, only one thing."

"The British fleet?" asked the Cap.

"The British fleet!" repeated the Doc.

"I think you look on the whole thing too seriously," objected the Colonel. "After all we are not reduced to extremities or anything like it."

"No and that is the idea of every other conservative man in the British Empire," said the Doc. "They all hope that something will turn up before long, and fail to consider that while they hope the German works. Just take a common enough example of how the devils do work in comparison to ourselves. You remember those trenches that we lost in the salient for several days to the Germans. Well our fellows were simply thunderstruck when we took them back. They were remodelled, strengthened and put into such perfect shape that our chaps said they had never seen a real trench before. The beggars must have worked twenty-four hours a day to do it. Catch our fellows doing anything like that."

"What good did it do them? We got them back," laughed the Colonel.

"Yes, and did you notice the price we paid. Everything we got from them we pay the utmost for; they

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extract the last ounce from us; and so it will go on to the end. If they work twenty-four hours in the day we will have to do the same. You can't help taking your hat off to the brutes."

"Just about once a day," agreed the Cap.

"Or oftener," said the Colonel.

"Well, what is the end going to be?" asked the Cap.

"Personally, I don't think there is any doubt about us winning out finally, but the end is not yet in sight. We have not used all our resources yet because as an Empire we have not felt that we were up against it hard. But the British are coming to it and if the war lasts long enough Great Britain will be rejuvenated. She was getting pretty rotten before the war. Suffering is chastening her; I have great faith in that for there is no doubt that trials and suffering strengthen a nation just as they strengthen individuals. I believe a newer and greater Britain will arise out of the ashes of the old. There will be many problems between capital and labor to work out; there must be a redistribution of land; people will have to work much harder than they have ever had to before. But to five millions of men in the army of the British Empire a man has become a man once more. When men stand side by side in the trenches, while the German shells play upon them, the men of wealth, or education, or title realize that a shell does not discriminate between him and the workman by his side. The soldier knows that the only thing that counts is whether a man is really a man; when he has stood before his maker for weeks at a time in the front line, not knowing when his hour

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would strike, he realizes that there are few things in life that really count. He is going to take that point of view back with him into civilian life and he is going to put it into practice. He will have no fear of anybody. He will want to make a comfortable living but he will not, at least for years to come, adopt the old ideas that money or so-called position really count. Because he knows what really does count; he has had the greatest experiences and has felt the most tremendous excitement that can come to a man in life and a great deal of what would have appealed to him before the war no longer moves him."

"Therefore I believe that there will be a new understanding between the rich and the poor; between the educated and the ignorant. There will be a new idea of public service. These hundreds of thousands of people who have been helping in Red Cross and other service work will not go back to the old careless life, for they will have been moulded to new points of view and a new sense of responsibility. All this, of course, pre-supposes that the war will last long enough so that the nation as a nation will suffer. The profiteer must be shorn of his ill gotten gains; the taxes must be heavy enough to pinch everybody; the necessity to save in order to provide for others must come home to every man, woman and child. Through things like that and the suffering which has come and will come to relatives of the killed and wounded the nation will get a new outlook on life and a healthy one. I think we are now in the dawning of a new era."

"Sounds like a book," commented the Colonel. "Do

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you really believe that people will change? Personally I doubt it."

"I think so," reasoned the Doc. "The basis of all reform is education and the world is certainly undergoing a process of education right now such as has never been known in history. You have seen how quickly a city can be educated by going about it properly and we all know that the point of view of the world has undergone a tremendous transformation on nearly everything since the beginning of the war."

"Only Canada lags about two years behind. She doesn't know that a war is on. Far from here she pursues her peaceful way quite oblivious of the war. But the very fact that she is safe, that she has not been invaded, makes her moral obligation even greater than if she had been, because she is free to develop her industries normally and without loss. She can pay; she must pay. Canada's obligations are just as great as her resources; no more; no less. That is the viewpoint that posterity will judge her by. And if she does rise to the occasion she will go down in history as a real nation and with a soul."

"The Doc. is right," agreed the Colonel.

"You bet," seconded the Cap. "Some speech that—eh, what?"

There was a ripping sound in the distance, followed by the crash of an exploding shell. In the silence that followed the hum of an approaching plane could be heard. "Bombs!" warned the Colonel.

Bittleson appeared. "Excuse me, Sir, Madame Deswaerts presents her compliments and says would

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the gentlemen please come down into the cellar till the aeroplanes pass over?"

"All right Bittleson," agreed the Colonel, as they got up and strolled cellarwards.

CHAPTER XV.

ON THE BELGIAN BORDER.

UPON my return from Canada, while waiting in London for orders to proceed to France, I received a telegram to appear at Buckingham Palace on the following morning at 10.15. The taxi drove through the outer courtyard to the inner palace entrance and my coat and hat were taken charge of by a scarlet-coated attendant who gave me a numbered check for the same.

An equerry-in-waiting asked me what my decoration was to be, and he showed me into a large room with an immense bay window from which a splendid view of a magnificent park could be seen. The bay window was divided up by scarlet ropes into several sections, into one of which I was ushered. One of these was for the C.B.'s, and contained a sole occupant, a naval officer. The next sections were for the C.M.G.'s, the next for the D.S.O.'s, M.C.'s, etc.

There were eight officers in our section, the first six being generals. An attendant then came and placed a hook on the left hand side of our tunics, our names were checked over and we were placed in order according to rank.

When everything was ready the great doors leading into the room where King George was to invest us, were swung back and we slowly proceeded towards it. The first name was called and the naval officer stepped forward and disappeared into the room beyond. The next

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officer, Lord Locke, who was the first in line for the C.M.G. went next, and so they proceeded quickly until my turn came.

As I advanced I could see the King standing about twenty feet in front of a large window, dressed in a morning suit, and looking exactly like his pictures. As he hung the decoration of the order on my little hook he shook hands cordially and said "I am glad to give you the C.M.G."

Then he added, "Have you been with my army in France?"

I replied, "Yes, sir, with the first army."

"Have you been out there long?" he queried.

"I have been there for eight months, was re-called to Canada for two months, and am now on my way back," I replied.

He nodded, adding something I did not catch, shook hands for the second time, and repeated as though he really meant it, "I am very glad to give you the C.M.G."

I backed away a few steps, and retired by another route, feeling that this was the simplest and easiest ordeal I had ever gone through. It was impossible to make a mistake even if you had tried to and everybody was kindness and courtesy itself. An attendant removed the decoration, placed it in a box and handed it to me; another attendant handed me my coat and cap and I left the palace. "So much for Buckingham!"

Soldiers were drilling in the courtyard and guards sprang to attention and presented arms as I passed, while a policeman hailed a taxi for me in which I

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drove to St. Paul's to see the most beautiful chapel there—that of “The most distinguished order of St. Michael and St. George.”

As I drove by West Sandling camp and through Hythe to take the morning packet back to France a cold raw wind searched my very bones. The channel was rough enough to make the windward side of the deck wet and unpleasant and the officers with which the boat was packed huddled into their trench coats and British warms trying to keep out the cold. The torpedo boat destroyers threshed about hither and thither in smothers of spray while away to the north the mine sweepers stretched across from shore to shore intent upon their never-ending search.

It was rough travelling on the road to the north next day; rain, snow, sleet and hail, driven by a stinging wind, lashed our faces during the whole of the trip. En route we called at General Headquarters and Army Headquarters to report, and arrived at noon in the little French town on the Belgian border which was the new location of our field laboratory.

The Major and Captain seemed glad to see me and escorted me to my new billet near the railway station; there was no glass in the windows and the room was very cold. The officers pointed out a big hole in the pavement in front of the house, made the day before by a German bomb. The bomb had killed a number of horses and several men and had blown the glass out of all the windows in the neighborhood. But the Major assured me that a bomb seldom struck twice in the same place and that, as the Bosches were after the rail-



“HOME, SWEET HOME”—MUD TERRACE.



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way station close by at the end of the street, the safest place was the immediate neighborhood of the station. As this sounded quite logical, I remained at the billet until summer time, though I never noticed any great eagerness on the part of my two officers to move to the vicinity of the station from comfortable billets in the centre of the town.

The very next day the town was bombed again and one "dud" fell in our back yard.

The new town was larger than our old one, but very uninteresting and very dirty in the winter months. The people were distinctly rougher in dress, appearance and manners than those in France farther from the Belgian frontier, differences possibly due to the effects of mixture with Flemish blood. The surrounding country was rolling and much prettier than that around Merville and it was a great relief to be able to rest the eyes with the diversities of a rolling landscape instead of constantly looking out upon a deadly monotonous level country.

The headquarters of the Canadian corps was in the town and the Canadians occupied the front line at, and north of, Ploegsteert wood, opposite the Messines-Wytschaete ridge.

For days and weeks officers and men kept calling to get the news from home in Canada, particularly about recruiting, and they would listen as long as I would talk. Favorite questions were: "What does the corner of King and Yonge streets look like?" and "How is Tommy Church?"

Among those who called was General Mercer to

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whom I had brought a box of candy from one of his office staff in Toronto and he stayed for half an hour while I told him all the home news. We dined with him that night and had a very pleasant evening with his staff, Lt.-Col. Hayter, Lt.-Col. McBrien, Captain Gooderham, Lt. Cartwright; the General was very optimistic as to the final result of the war, though he felt that it would last at least three years longer.

Our laboratory was now located in a school which was being utilized as part of No. 2 British casualty clearing station and the first visit I made to this hospital was to see an old school friend, Captain Cole, the medical officer of the Princess Patricia's who was there with a bullet through his lungs. The very first day after his arrival from the base after an attack of pneumonia he was caught by a sniper. He made an uninterrupted recovery and eventually returned to active service.

The British Army in France was steadily growing larger and troops were beginning to be shifted about to give place to new divisions coming into the line to train. A new division is never put directly into the firing line and given a section of front; that would be too risky. The new division is billeted in the area back of the lines and is gradually brought up towards the front. The infantry is put into the reserve and front line trenches by platoons and companies and mixed with the old-timers who know all the ropes. In this way the new comer picks up the routine of trench work very quickly, and, when the men have all been broken in, the division gradually takes over its section

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of front. In the same way the gunners are instructed in practical artillery work and the men in other branches of the service are similarly broken in.

There were rumours that the Canadians were again to move on to the historic Ypres salient and those of the old brigade were not looking forward to it with any perceptible amount of enthusiasm. Ypres had associations which a whole year had not been able to eradicate. Canadian casualties at this time were very slight; in fact almost nothing. "Plugstreet" was supposed to be the pleasantest part of the whole line, and to those who had been to Muskoka it seemed very much like home, for there were log houses and rustic gates and all the other accessories found in the wild playgrounds of northern Ontario.

"Plugstreet" was an easy place to approach since the woods prevented observation and motor cars could get right up into the woods itself. While standing in Ploegsteert woods by the car one day I heard somebody singing an aria from Faust; the voice was magnificent and evidently that of a highly trained singer who had sung in grand opera; I listened with great delight while he sang with the utmost abandon, and when he stopped, I watched for the owner of the voice to step out from among the bushes. The songster proved to be a cook preparing the evening meal. It was another example of the cosmopolitan nature of the first Canadian contingent, which had in its ranks men of every profession and walk in life.

Life was at this time becoming very monotonous

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for our men in the trenches. The mail was the one great event of the day.

To relieve the monotony of trench life all sorts of games were devised to pass the time. One unit had an intensely exciting morning in one of the trenches—racing frogs. Two frogs had by mistake hopped into the trench and were captured. Sides were formed and bets made as to which frog would reach a given point first. As their leaders with the aid of straws goaded their respective frogs into greater activity, the woods of Ploegsteert fairly rang with the cheers of the rival parties.

Early in April the Canadians again found themselves in the Ypres salient, as usual alongside the British guards. At St. Eloi they had had casualties amounting in all to something over 500.

The Australian divisions had arrived on the western front, and two of them came into our area. In length of limb and general "ranginess" they greatly resembled our own westerners, and walked with the freedom bred of a life in the open. Their usual question at first when they met another soldier was, "Have you been to war or in France?" They got the surprise of their lives when they found that life on the western front was far more strenuous than it was on the Gallipoli peninsula.

The British army was learning by hard knocks how to do things, and the truth of the old saying was constantly borne home to one that in the early years of any great war England paid dearly for her experience in blood and treasure.

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The Fokker plane had "thrown a scare" into the air service, and there was a general demand on the part of the British public for greater efficiency. As a new arm of the service it was not considered by Whitehall with the seriousness it deserved; only the men who saw planes come over, hover about, and were in consequence heavily and accurately shelled shortly afterwards, realized what the command of the air meant. The air tangle, and the inadequacy of the air service became such a scandal that Lord Derby and Lord Montague resigned from the air board as a protest against the way this branch of the service was being bungled.

As a matter of fact the Fokker was never considered, by our men, to be a very wonderful machine, and we quickly evolved types that were superior to it in every respect.

Nevertheless these were bad days on our front, and for a while as a result of the enemy's air superiority we were bombed with great regularity. At Canadian corps headquarters, where we dined with Generals Alderson and Burstall one night after our own town had been bombed, they were very much interested as they had occupied that town for several months, and each officer wanted to know whether his former billet had been struck.

The same night German planes bombed Canadian headquarters fairly heavily, and also some of the camps and hospitals (the hospitals were all marked with huge red crosses on the roof). During the same period the enemy shelled towns, camps and roads far back from the front line area, making life in the war area on the

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whole very uncertain and very uncomfortable. It was necessary to visit many places under cover of darkness, so accurate was the German observation and shell fire during the day time.*

For example: one Sunday morning we travelled from Armentieres to Ploegsteert by a road which in spots could be seen from the German lines, though screened by green canvas at such places. Just before we entered Ploegsteert village we were in full view of the enemy for a short distance. Instead of passing right through the long village street as I had intended we stopped for a minute to look at a well which was being used as a source of drinking water. As we started forward shells began to spray the road at the far end of the village at the very moment when we ourselves would have arrived had we gone right on. Naturally we changed our course and turned off at right angles towards home, while heavy shelling of the town continued.

Half a mile out of the village we met a civilian with his wife and little six year old girl, all dressed in their Sunday clothes, jogging along in a two wheeled cart to their home in Ploegsteert village, which was still being shelled. Why people should apparently discount death as some of these civilians seemed to do, passed our powers of comprehension; it never ceased to be an astonishing thing to me.

There was great air activity during that period on the part of the Bosches and with a reason. We knew

*Our men have since been astonished at the wonderful view of our lines obtained from the Messines—Wytschaete ridge.

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that they were ready for another gas attack, for our artillery had burst a tank in the German trenches and the yellow fumes of chlorine gas had been identified. A German gas bag used for getting the wind drift was also brought in to us for examination, showing that the enemy was awaiting a favorable opportunity.

As I sat out in our garden in Bailleul one evening at the end of April reading "The Morals of Marcus Ordeyne," three aeroplanes like great birds volplaned slowly down from the clouds—coming home to roost—until they were within 100 feet of the ground, just clearing the house tops as they dropped into their nesting ground on the other side of the town. I could see the pilots quite plainly.

In that brick-walled garden, full of rose bushes in leaf, I sat and looked at the cherry trees in early blossom, and thoughts came to me of other gardens away back in Canada, where I had spent many an hour in the gloaming, while real birds and bats flitted about across the sky. I leaned over to breathe the perfume of a white jonquil and a thrill of emotion swept over me and almost made me dizzy—for the odour was one I had not met with for a long, long time. This variety of jonquil my father used to grow at the lake, and in the spring of the year on which he died some of the bulbs planted with his own hands were in bloom when we made our first trip up there; they had seemed like a sweet message from the dead.

I went to bed that night very homesick, wishing that the Kaiser was in Hades and the war was over. For a long time I could not get to sleep and an agitated

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rapping on my door made me start up quickly from a restless slumber. My window was open and the choking fumes of chlorine poured into the room while Madame rapped away, exclaiming, "Monsieur the Colonel; the asphyxiating gas has arrived." I slammed the window to, soaked a muffler in water and wrapped it over my mouth and nose while robed in a dressing gown, I hastened down stairs. My own gas mask, carefully placed in a corner, had been moved, and, in the dark, I could not find it. I gathered the four women into the inner kitchen and made them breathe through towels wrung out in a solution of ammonium carbonate, which we were fortunate enough to find, while we excluded as much gas as possible by wet towels placed over the cracks in the doors.

It was a most unpleasant experience. As we were nearly seven miles from the German line, it was quite evident that the gas must have been discharged in tremendous quantity to have reached us in the strength it did. I had visions of the Germans discharging gas for hours and killing everything that breathed for miles back of the lines. It was a horrible sensation to realize that you had been caught like rats in a cellar and would slowly die of asphyxiation. The gas crept in through the doors, and it was quite impossible to breathe except through towels saturated with the chemical solution. I wondered how the Germans would feel about it when they came over through a country devoid of all life and whether they would take the trouble to bury all the women and children and dead animals.

Breathing was steadily becoming more and more

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difficult, when suddenly the door bell rang. One of the girls insisted on going to answer it, and quickly came back to report that a neighbor had called to see whether they were all right, and that the gas cloud had passed. Never did fresh air taste so sweet to me, and I wasted no time in sending to a hospital for a set of masks so as to be prepared should another gas cloud arrive.

The streak of gas that crossed our section of the town must have drifted along some depression in the surface of the country, for a good many people in other parts of the town, particularly where the windows had been closed, were not greatly inconvenienced by it.

The gas was strong enough to kill all the young foliage of the roses and other plants in our garden, while closer to the front a number of horses were poisoned by it. Several hundred soldiers of British regiments were gassed and the Germans, under cover of the gas cloud, raided the British trenches in an endeavour to locate and blow up certain mine shafts. That they did not succeed was shown recently when these same mines on the Wytshaete ridge blew both Germans and trenches far on the way towards the eternal stars.

Other gas attacks launched by the Germans the same night failed to achieve any results; and in one section they managed to gas themselves badly. We reported the gas to be chlorine, and the post mortems of gassed soldiers carried out by Major Rankin, blood tests by myself to exclude other possibilities, and evidence obtained elsewhere, all indicated that the gas employed had been chlorine.

The New Zealand division which had come into

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our area, held the line in front of Armentieres. A small epidemic of suspected dysentery in that division took us through that town frequently, and we found it almost completely deserted. The Huns shelled it almost daily and had made the place almost untenable for civilians, though, as usual, a number of them hung on and did a fairly good business.

The staff of our laboratory had been reduced from three officers to two, and after a good deal of discussion, Major Rankin dropped out at his own earnest request and was detailed to the Canadian Corps to train for the position of D.A.D.M.S. To celebrate the occasion he gave us a little dinner, and invested heavily in nectarines, strawberries and peaches from the graperies. The occasion was only slightly marred by the popping cork of a champagne bottle crashing through a skylight and bringing down a shower of glass on the Cap.'s head, which bled profusely.

One evening after dinner as we sat with French windows opened wide to the warm evening air of late spring, puffing idly at our cigars, a most beautiful bird song burst upon our ears—a song that made us stare at one another in amazement; we had never heard its like before. It might be described as a bird fantasia—the notes covered a wide range of sounds and the effect was beautiful. Captain Ellis walked quietly down the garden path and got close to the cherry tree from which the trills and lilts continued to pour, but could see nothing. Mlle. C— said it was a *chantresse* (songster) but that did not give us much idea of what it was like.

Every morning and evening after that, this indefa-

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tigable songster made music for us (or rather for his mate, probably sitting on her eggs) in the cherry tree on the other side of the wall. How we enjoyed listening to it! Many a time we tried to locate the singer in his leafy home, but in vain; the nearest we ever came to it was once when we saw a branch shake as the bird hopped to another limb.

One morning the brilliant bursts of song were lacking, and we missed them. Just before we left for the laboratory Mademoiselle C— brought in a rat trap to show us, and there caught in it, was our little shy singer with grey dappled breast, its head crushed by the cruel steel spring. Evidently in search of food in the early morning it had hopped on the trigger of the trap and met its fate. It was one of the little tragedies continually occurring in nature; to the little bird-wife waiting in the cherry tree it was just as great a tragedy as would be the death of her husband to the woman waiting at home.

This was an eventful period in the history of the war for Canadians. A heavy bombardment all along the line from La Basse to Ypres forecasted something unusual. My diary, unusually voluminous for the day of June 3rd, shows that I was greatly impressed by the occurrences of that day and had taken the trouble to write down my impressions at length. The following extract is a word for word copy from my diary:

June 3rd.—Awakened at 2.15 a.m. by agitated firing of anti-aircraft guns. Heard planes overhead and big guns going. Listened for a while and got partly dressed and went down into garden. Two British

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planes going up—no Bosches visible. Quite clear at 2.30 a.m. with low summer clouds. Slept till 8. Asked Rankin and Ellis at breakfast about bombardment; they hadn't heard it. Rad said 18 British ships sunk and Canadians had lost trenches—laughed at him.

Sanitary officer 24th Division called re beer used at Dranoutre taken from becque $\frac{3}{4}$ mile below Locre sewage outfall. Also discussed lime treatment of sewage effluent, grease traps, etc., etc.

French paper at noon said British and German fleets had been engaged.

After dinner went with Ellis to Abeele, called on paymaster for money. Major said Canadians had had 2,000 casualties. The Germans started a 5-hour bombardment at 9 a.m., June 2nd. General Mercer and Brig. General Vic Williams were making an inspection at the time and both wounded; were last seen at 3 p.m. going into a dug-out, which was taken afterwards by Germans, and have not been seen since—probably captured. Lt.-Col. Tanner, O.C. Field Ambulance, badly wounded. In counter-attacks by 3rd Canadian Division—a good deal of trenches recovered—not all. Attack made on 3rd Division—General Lipsett now in command—and part of 1st division. 14th, 15th, and 10th Battalions, 1st Division, made counter-attack this morning—Toronto Highlanders did particularly well. 4th and 5th C.M.R.'s said to have lost 500 each. Last official bulletin about fleet—Queen Mary, Invincible and Indefatigable—battle cruisers, sunk. Also 3 cruisers sunk and one abandoned; 6 torpedo boats sunk and 6 missing. Germans lost one sunk and one

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damaged. Evidently the British fleet was done in badly, but the reason cannot be explained until all the facts are known.

Went to No. 10 C.C.S. to see if Ellis' brother of the 7th Battalion had been wounded—no news of him but arranged to have any information telephoned, and that he be sent for by Captain Stokes—saw the spirochaete of epidemic jaundice. General Porter there, and chatted to him for a minute.

On the way back we stopped at Mt. Rouge and saw the German lines.

It was a beautiful clear day with a tang in the air like late September.

From our little observation point on the top of Mt. Rouge we could see for miles on all sides. Over in front lay Mt. Kemmel, bristling with guns but not one visible with the field glasses. Beneath us and between us and Kemmel, on the road that runs from Bailleul to Ypres, nestled the little village of Locre, with its white walled cottages and red tiled roofs.

To the left of Kemmel the sun made prominent the ruins of Wytschaete—a village in the German lines. Just beneath Wytschaete one could see the German trenches, two lines of them, which showed like brick red seams in the earth and ran up over and along the crest of the Wytchaete ridge, which itself ran towards St. Eloi and Ypres. Between these German trenches and our own was a sandy waste—no man's land—scarred and churned by untold numbers of shells. Even the forest patches in this region were dead and slivered by rifle and shell.

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To the left of Wytschaete one could see great bursts of brown, black, greenish and white smoke over a width of country perhaps $\frac{1}{4}$ of a mile and a length of 2 miles. It was here that the 3rd and 1st Canadian Divisions were fighting with the Huns for mastery. Perhaps as we watched these bursting shells were killing our own friends.

The region of St. Eloi was cut off by the Scherpenberg Mountain and to the left of that again we could see with wonderful clearness the ruins of Ypres. As we watched, great clouds of dust went up at intervals from the square. The tower of St. Martin's Church, and the tower of the Cloth Hall to the right were clearly distinguishable.

To the left of Ypres again we could see spires of towns, and one town far away was right on the sea we were told, probably Dunkirk. To the right of Kemmel was the ruined tower of Messines in the German lines; to the left of that the smoking chimneys of Armentieres now also somewhat battle scarred, and away beyond it and a little to the left the City of Lille.

Thus we could see from Dunkirk on the sea to Lille, that fair city, well inland in northern France, and could follow the battle line from Pilken beyond Ypres to La Bassee. In that line we could actually see the flashes and shell bursts in Ypres, St. Eloi, Wytschaete and near Levantie. It was a wonderful day, and a view never to be forgotten.

It was a bitter day for us, and we had a bad evening discussing our hard knocks.

At 10.30 p.m. Ellis came back from the lab, with

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the latest report of the sea battle which has worried us so much :

LOSSES.

British.	German.
3 Battle Cruisers sunk :	2 Dreadnaughts sunk.
Queen Mary.	1 Battle Cruiser sunk.
Indomitable.	3 Light Cruisers sunk.
Indefatigable.	6 Destroyers sunk.
3 Cruisers sunk :	1 Submarine rammed and sunk.
Warrior.	2 Battle Cruisers badly damaged.
Black Prince.	3 other ships damaged.
Defence.	1 Zeppelin destroyed.
8 Destroyers and Torpedo Boats sunk.	

Hooray! even if above is not true."

The corrected report of the battle of Jutland was confirmed later and caused profound relief in the army. Why such a report had been allowed to pass and remain uncontradicted so long could not be fathomed. Those were very black days for the army in the field and many a man died with despair in his heart, convinced that what had been the greatest fact in his whole life—the invincibility of the British Fleet—was a myth. The British nation will take a long time to forgive the Admiralty for that unnecessary delay.

In that dark period the army in France, with the fleet destroyed, saw its lines of communication being cut, and the end in sight. I ran across Lt.-Col. (Canon) Scott, C.M.G., in a rest station the day after the correct report had arrived. His eye was blacked, his nose skinned, and his wrist sprained and he presented all the signs of having been in a fight, though as a matter of fact he had fallen from his horse while suf-

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fering from the effects of anti-typhoid inoculation. Notwithstanding his condition he had slipped away from the rest station that night and had gone up to the Canadian area to spread the good news of the naval battle in order to cheer up our men who were going into action. A German barrage had prevented him from getting up to the front line but he managed to have the good news telephoned in to the trenches. That was characteristic of the unselfish work of Canon Scott; he never spared himself and his thought was always for "the boys in the trenches." He is a great soul.

The Canadian losses in the St. Eloi battle were said to be about 6,000 and there was little glory for anybody and a good deal of prestige lost by many in that affair. . . .

The death of Lord Kitchener off the Orkney Islands had startled the world and all wondered what catastrophe would happen next. The loss of Kitchener was greatly deplored by the French people who looked on Kitchener, the inscrutable, as a great mystery and one to admire and marvel at. . . .

One day at Boulogne returning from leave after an uneventful channel crossing with some sort of Russian delegation, we had picked up our grips and started for the gangway, when the strains of a band on the dock became audible, and we could see a group of French officers waiting to meet the Russian delegates who were slowly filing down the gang plank. The band slowly played the Russian national anthem, and we all dropped our baggage and stood to attention. As the strains died away we again seized our grips and



BRITISH TANKS AS USED IN THE FLANDERS OFFENSIVE.

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began to push forward when the band struck up the Marseillaise and again we dropped everything and stood to attention. After an interval of about ten minutes the last bars of the tune died away and for the third time we seized our things only to hear the strains of the British national anthem rising on the air. Again we dropped our stuff and smartly came to the salute like good loyal subjects though we heartily wished that the delegation had gone by the Archangel route, for we felt certain that the band would play the national anthems of Belgium, Japan, Serbia and Italy. However, like most things, it came to an end and we filed off after a delay of what had seemed to be a good half hour. It is strange how we were all keen to get back to the front to the work which we got so fed up with and would sometimes give the whole world to get away from.

The summer of 1916 was the period of the battle of the Somme and most of our interests hinged on that offensive. At the beginning of July the British began their big advance to the south and the fighting in our area consisted largely of trench raids, artillery bombardments, gas attacks, aeroplane raids and other events incidental to trench warfare.

A spectacular show occurred when the offensive began and the enemy observation balloons, hitherto practically unmolested, were attacked by our airmen with some new incendiary device with the result that nine were brought down in a few minutes in flames and the others were quickly hauled to earth to remain there for many weeks. Only occasionally during the succeed-

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ing months would a captive balloon ascend and then would quickly disappear on the approach of one of our planes.

Pens for German prisoners were under course of construction all along the front—a most satisfactory procedure from the psychological standpoint, as it seemed to express confidence in what the future was to bring. The capacity of the hospitals had also been increased from 540 to 1,000 beds, which also indicated business.

The Canadians were still in the salient side by side with the Guards and the latter used to cheer “the fighting Canucks” as they called them, as they went into the trenches. The only regret of the Canadians at that time was that they did not have the “Immortal Seventh Division” on their other side.

An attack by the Australians on our front resulted in casualties amounting to several thousands and the hospitals for many days afterwards were filled with cases of gas gangrene due to the men lying out too long in the open with infected wounds.

Divisions from our area would move out and go south to the Somme while battered divisions from the Somme front would drift up into our area. Among these was the Ulster division whose fife and drum band came marching gaily up the street, nearly every musician wearing a German cap. A few days later the south of Ireland division came up and the two divisions occupied the line side by side. Needless to say they fraternized in the best spirit while out of the line just as they supported one another while in it.

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In the second week in August the first Canadian division came out of the salient into the training area preparatory to going down to the Somme, and the other Canadian divisions soon followed.

During this period a Canadian medical officer, noted for his self-possession, was proceeding along the road and came across a private soldier who had been hurt in an accident. At the same time a car stopped and a young lieutenant stepped out to see whether he could be of use. The M.O. examined the injured man and said to the lieutenant rather brusquely, "Is that your car?" The lieutenant said that it was. "Well we'll just put this man in and take him to the hospital in Hazebrouk if you don't mind," said the M.O. and without waiting for permission helped the injured man into the car. The lieutenant seemed to be quite agreeable and they drove to Hazebrouk several miles away.

The M.O. thoroughly enjoyed that drive; all along the road officers and men saluted the car deferentially and the M.O. acknowledged these salutes most graciously. Somehow or other the world seemed to be peculiarly affable to the M.O. and by the time Hazebrouk was reached he simply beamed on everybody.

As they drove up to the hospital there happened to be a General and a Colonel chatting to the officer commanding the hospital at the front door. Much to the M.O.'s surprise the General saluted first but as he made haste to acknowledge the salute, he observed that the General was smiling at the lieutenant beside him. Then, only, did it dawn upon the M.O. that the lieutenant was the Prince of Wales and his confusion was so

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great that he could never afterwards recall just what he did for the next three or four hours. He was heard to say that night that the Prince of Wales was "an awful decent chap and a thorough gentleman" and also that the Burgundy wine in Hazebrouk was of very inferior quality.

The work of the laboratory was very heavy from routine work of various sorts and an attempt to stamp out diphtheria from a Scotch division. Much the same sort of experiences as have been related elsewhere were encountered and we had entered upon the fed-up stage of life at the front. It needed something of extraordinary interest to rouse one's interest to any unusual degree.

At the beginning of September the three Canadian Divisions were en route to the Somme, while the newly arrived 4th Canadian Division came up to take over part of the line near the Ypres Salient.

The British and French were doing well and taking many prisoners on the Somme, as were the Russians on their front while the Roumanians began their offensive and swept far over the country much to the horror of the critics and everybody else.

There was great elation on the day of the big offensive on the Somme when the British first used "tanks." I shall never forget the thrill I had when we read a telegram received at one of the headquarters repeating a wireless message from an aeroplane observer to the effect that he could see a tank wobbling into a village followed by cheering troops. It was the first time that engines of warfare had led the way to an attacking

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force and the picture of the enemy fleeing before these new engines of terror spouting fire and destruction and rolling over trenches and machine gun emplacements, while cheering Tommies followed in their wake, will never be forgotten. We envied the air men their view that day and thought of how they must have thrilled at the sights below them.

We had been ordered to get out of our quarters in the school on October the first. After some difficulty we decided to build a hut for laboratory quarters and selected a field near the British isolation hospital. The view from the site selected, overlooking the rolling fields, with the Mt. de Cats surmounted by its monastery to the left, and Mt. Rouge to the right, is about as fine as anything I have seen in Belgium.

With the aid of a carpenter from the Canadian casualty clearing station, we built the hut, 40 feet by 20 feet, ourselves, and when I left for England early in October, it was a great satisfaction to feel that we were established in what a Surgeon-General subsequently stated to be "an ideal field laboratory."

On the way from what proved to be my last stay in France, we visited the Somme area and saw some of our old comrades. The Canadians had on the previous day suffered heavy casualties in trying to take Regina trench and we passed homeward through the tent covered area behind Albert with the knowledge that more of our old school friends were at that moment lying out wounded and dead in no man's land.

As we drove along the moonlit road from Albert on the way to Boulogne we passed company after company

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of soldiers trudging along towards the front; they did not sing. It was the 4th Canadian Division going into action—about to experience that great adventure of battle for which they had trained so long and had come so far to obtain.

Farther along the road we could hear away in the distance a song; we could not distinguish the words but we knew that soon we would hear "Pack up your troubles in your own kit bag and Smile, Smile, Smile!" They were Canadians coming out of the trenches.

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