KORERO

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KORERO

IN THIS ISSUE

Korero's Illustrations

The picture on *Korero's* cover is a reproduction of Sergeant D. M. Hutcheson's drawing, "Browned Off," in the Artists in Uniform Exhibition. Illustrations inside are by *Korero* staff artists.

A KORERO Report

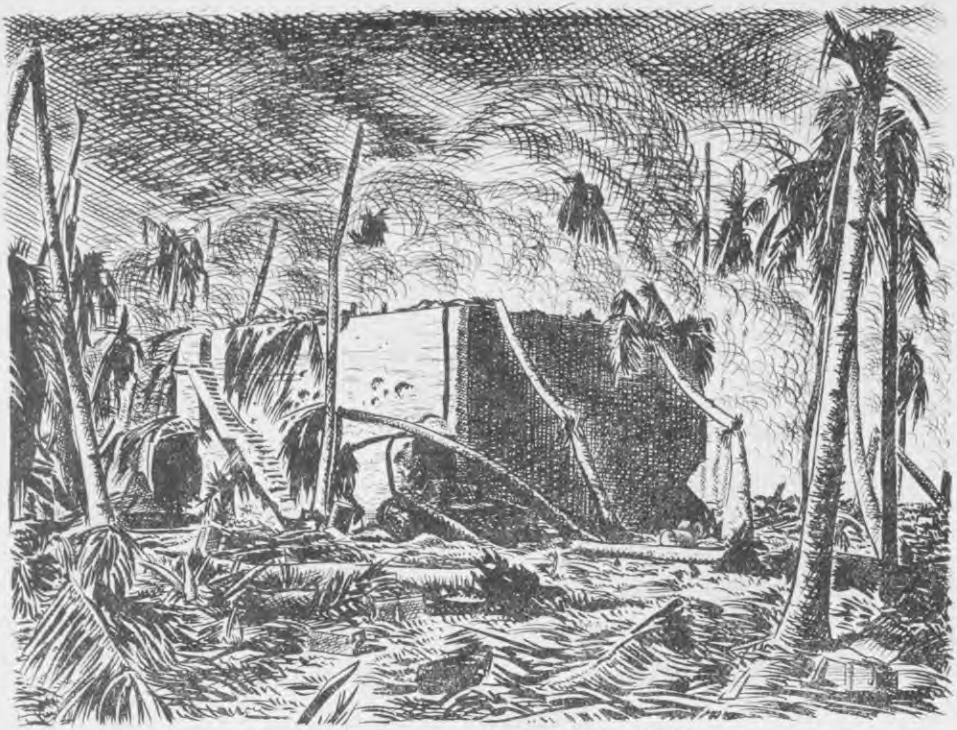
IN DECEMBER, 1941, a young officer of the Colonial Administration left Tarawa one day ahead of the invading Japanese. He had been in command of a Government vessel which maintained contact between the scattered islands of the Gilbert Group and knew those waters like the back of his hand, especially around Betio. He came back to Betio twice. The first time he brought his vessel to within some 50 miles of the island and picked up a number of other officials who had escaped from the Japanese and headed south in a small boat. The second time was two years later when he led the U.S. Marines in through the surrounding reef to recapture Betio for the United Nations.

After his escape from the Gilberts he joined the R.N.Z. Navy and was commissioned in the rank of lieutenant. Some successful anti-submarine work in the Pacific was followed by a call to confer with Marine Corps officers to whom the recapture of the Gilberts had been assigned. Because of his special knowledge of these waters he was asked to take the first destroyer in to Betio.

* * *

Tarawa is a group of small islands. Betio is one of them. As an American report has put it: "As real estate the Gilberts aren't much to look at." Betio itself is about 2 miles long by 800 yards wide, and is nowhere more than 10 ft. above sea-level. Before the war there was a hospital there and administrative buildings and a staff of about twenty people. When the Marines arrived they found blockhouses with walls 15 ft. thick and a suicide garrison of 6,000 Jap. defenders. The capture of that tiny atoll cost the Marines over 1,000 dead and over 2,500 wounded. In the words of the New Zealand officer, "they fought and died like heroes."

The landing was made on 20th November. For a week previous the American Air Force had rained 1,000 tons of bombs on Betio. The landing itself was covered



THE JAPS.' DEFENCES ON BETIO

This drawing from an official United States Marine Corps photograph shows one of the forts the Japs. had built on Betio. In some of the blockhouses, a concrete emplacement 5 ft. thick was covered with palm logs 18 in. in diameter. Outside the logs were angle irons of railway-rails, and over all was 10 ft. to 12 ft. of sand and coral.

by a naval barrage that pumped 1,500 tons of shells on to Betio's square mile. Yet the Marines found that this tremendous concentration of explosions had done little to weaken the efficacy of the Jap. defences.

The Jap. shore batteries opened up first as the huge task force approached the island about 5 a.m. Their shooting was not good. The first few salvoes from the battleship struck a fuel dump on the island, making a grand target. The transports stopped some 12,000 yards out, and in went the two destroyers through the reef and into the lagoon to provide a covering barrage for the following Higgins boats. Meantime the heavy ships poured in a rain of shells from farther out, and carrier-based planes screamed down to dive-bomb the defences. Standing out about 2,000 yards, the destroyers began their barrage and in two hours one ship fired 700 rounds of 5 in. shells at this almost point-blank range. The Jap. shore batteries replied, but scored only five hits on one of the destroyers. Enough certainly to do plenty of damage—had any of the shells exploded.

* * *

Meanwhile the Marines were disembarking into Higgins boats and making for the shore. At first things were quiet, but as the small craft approached, the land batteries gave them everything they had. Then when they were still 600 yards out the boats began to strand on a shelf of coral. There was nothing for it but to wade in or transfer to the few landing-boats with shallower draft,

Plenty waded—neck-deep, chest-deep, knee-deep. There weren't enough of the shallow-draft boats, and those available couldn't afford to take chances. The best they could do was bring men in for a shorter wade.

And in there things were hell. An innocent looking wreck out in the lagoon was pouring in a murderous back fire. From under the long wharf machine-gun nests were raking the water. In front the Jap. pill-boxes were putting out a hail of lead. The Marines were being slaughtered. The destroyers promptly turned their guns on the wreck and silenced it. And the Marines came on. Within a little over an hour six waves had established themselves on the beach. But only just. The three beach-heads were only 125 ft. to 150 ft. deep, and at one the Marines were pinned for a time between the water's edge and a log wall 20 ft. inland.

* * *

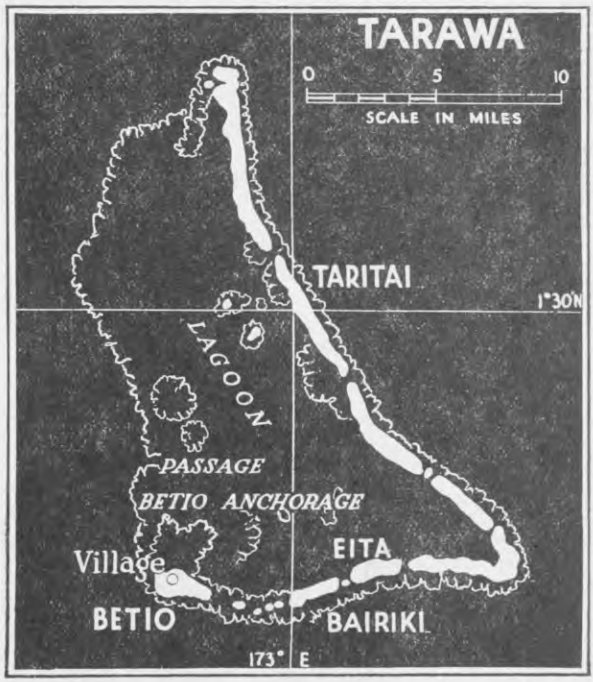
The Jap. pill-boxes and blockhouses were hard nuts to crack and were still pouring out deadly fire at nightfall. Things weren't so good. There was little sleep that night, and those on guard, two out of every three, had orders to fire at everything that moved.

Next morning, as reserves came in, it was found that under the cover of night the Japs. had stolen out and re-established themselves on the wreck, taking American machine guns and ammunition from stranded boats. Once again they raked the incoming boats until the destroyers put them out of action.

Afternoon saw an improvement in the situation. Some tanks and 75 mm. guns were ashore and were knocking out the blockhouses at point-blank range, while infantry slipped bangalore torpedoes through the slits. The incessant bombardment was having its effect and accurate and concentrated dive-bombing by carrier planes was cracking up the fortifications. The co-operation of the dive-bombers was amazingly accurate. At times they were working only 200 yards ahead of the attacking troops.

The blockhouses built by the Japs. were almost impregnable. A concrete emplacement 5 ft. thick was covered with 18 in. diameter palm logs. Outside the logs were angle irons of railway rails, and over all was 10 ft. to 12 ft. of sand and coral. The Commanding Officer describing them said: "Nothing but a direct hit from a 2,000 lb. bomb would cave in or destroy that blockhouse. A number of them stood up like a house in the sky, silhouetted, and practically every one was hit by a projectile."

Other pill-boxes were protected by two rows of palm logs 6 ft. apart with the



Tarawa consists of a chain of principal islands and a number of smaller ones.

On Makin, also in the Gilbert Group, which the Americans attacked at the same time as Tarawa, the fighting was bitter in spots but less gruelling. American casualties here were 65 killed and 121 wounded. As will be seen from the map, Makin consists of two large islands and a number of islets.

space filled with coral, sand and rubble. No bullet could get through them, and it took a large calibre shell to do much damage.

The positions were consolidated by nightfall on the second day, and the third day was the beginning of the end. The valuable airstrip was taken and work began on it while the Japs. were still sniping from the far tip of the island to which they had been driven. The official clean-up was seventy-six hours, but six days after the first attack odd snipers were still being rounded up, and as long as twenty days later a live Jap. came out of a blockhouse. He'd been living in there with a lot of dead men for a long time.

The Japs. fought to the death. Some took their own lives, pointing the muzzles of their rifles to their heads and pulling the triggers with their toes. They were big men—about 5 ft. 10 in. in height—and the pick of the Japanese forces, the Imperial Marines. Altogether between 3,000 and 6,000 were killed, with the latter figure given by an official U.S. spokesman.

The Marines who took Tarawa were mainly those who fought on Guadalcanal and had been resting in New Zealand. They had a tough job, but in the opinion of the Naval pilot they did it splendidly. The Japs. tried several counter-attacks without success, though at times on the first day and night the Marines' position was crucial. The only aerial reprisals attempted were the excursions of several Jap. bombers, who would come over each morning at 5 a.m., so regularly that you could set your watch by them and after dropping a few bombs, hurry home.

Though their real estate value may be negligible, the Gilberts do possess an important strategic value. "For the Japanese they constituted the major nerve centres of their Western Pacific Naval sphere and a threat to American communicating lines. In American hands they represent an important new dent in the Japanese defensive perimeter and a spring-board for operations in a number of directions which the continuing Pacific offensive must take."

THE ROAD TO ROME

A KORERO Report

OUR TROOPS who disembarked near Anzio and Nettuno landed in a region of the utmost interest and importance. This is not the first time in recent history that Anzio has appeared in combined operations. Twenty years ago this lovely bay was the scene of a thrilling naval drama. The film was "Ben Hur," and the director was, naturally, Cecil B. de Mille. The battle at sea went off without a hitch. But, alas! the same could not be said for land operations. For a hungry lion took a fancy to an Early Christian Italian super. This unrehearsed incident was not regarded with satisfaction by any but the monarch of the jungle.

Nettuno is named after a famous temple to Neptune which in classical times dominated the heights overlooking the harbour. These two ports were strongholds of the Volscians. When Rome, as a prelude to world conquest, established her power over the cities of Latium five hundred years before the present era she found in those towns the last pockets of enemy resistance.

They are important because they give access to the Appian Way, which leads in turn to Rome. This celebrated road, the oldest and most celebrated in the world, was begun by the Censor Appius Claudius in B.C. 312. It runs from Rome south to Capua and Brindisi; it is about 350 miles long, and from 14 ft. to 18 ft. wide. It is paved with hard stones in irregular blocks, closely fitting together on a firm substructure. Despite the enormous lapse of time a part of it is still in use.

The new Appian Way was built at the end of the eighteenth century by Pius VI, a Pope who defied Napoleon. It is close to the old one, which it rejoins at Albano. Within sight is another celebrated road, the Tusculan Way, leading to Frascati. All three of these great highways are the object of the present fighting.

Those roads to Rome are as unique in interest as they are of importance to the whole campaign. They are the arteries of a countryside which is rich in fine vineyards and the home of excellent wines. Here, in the Roman Campagña, squat groves of silvery olive trees stand out against a background of cypress and pine. Cattle graze amid the deserted aqueducts, and sheep crop the grass among the tombs. For the place is really a vast cemetery. The Romans deliberately lined their triumphal highways with imposing sepulchres reminding captive and conqueror alike of the shortness and impermanence of life. This is a genuinely classical landscape with its broken pillars and ruined arches against the lovely line of the Alban Hills and Mount Soracte sparkling in the distance.

The Appian Way enters Rome at the Capuan Gate, which gives its name to a famous restaurant. A portion of the ancient wall is to be found in the restaurant's wine-cellar. This place enjoyed in peacetime a well-deserved reputation for superb chicken, roasted on a great spit before a huge fire and served with the cool, dry, white wine of Orvieto. No better introduction to Rome could be either imagined or hoped for.

Rome is a little bewildering at first, but always charming and full of interest. There are so many Romes for those who know where to look—Rome of the Cæsars, of the catacombs, of the early churches; Rome of the Popes and the great artists and builders; Rome of the modern Italy and imperial ambitions. Those political pretensions have been brought low; but the other Rome, the ancient centre of the Christian faith, the Mother and teacher of western civilization, keeps her place unmoved. Her sole meaning for history is in the moral order.

In normal times Rome is one of the most delightful cities in the world. A walk along the Corso provides intimate glimpses of a lively and colourful scene. The presence of two courts, with the Royal and Papal officials from the Quirinal and Vatican respectively, allow

ON THE ROAD TO ROME

The peaceful hill town of Albano is typical of the country over which the Allied armies in Italy are fighting.

the man in the street to feel at times that he is watching history being made. There is everywhere a profusion of flowers; water plays in countless fountains of quaint and curious design. It is a place of noble palaces and majestic flights of steps where even the civic monuments are usually in good taste.

It is a city of the past where up till the beginning of the war the busy spade of the archæologist was continually unearthing new marvels. In the last twenty years the Italian Government has in this way given an immense impetus to the study of history. In areas that teemed with buried treasure decaying tenements have been demolished and whole new Fora revealed. Great roads were built like the famous Via Dell' Impero past the Roman Forum, linking up Mussolini's Palazzo Venezia with that famous Christian monument, the Colosseum.

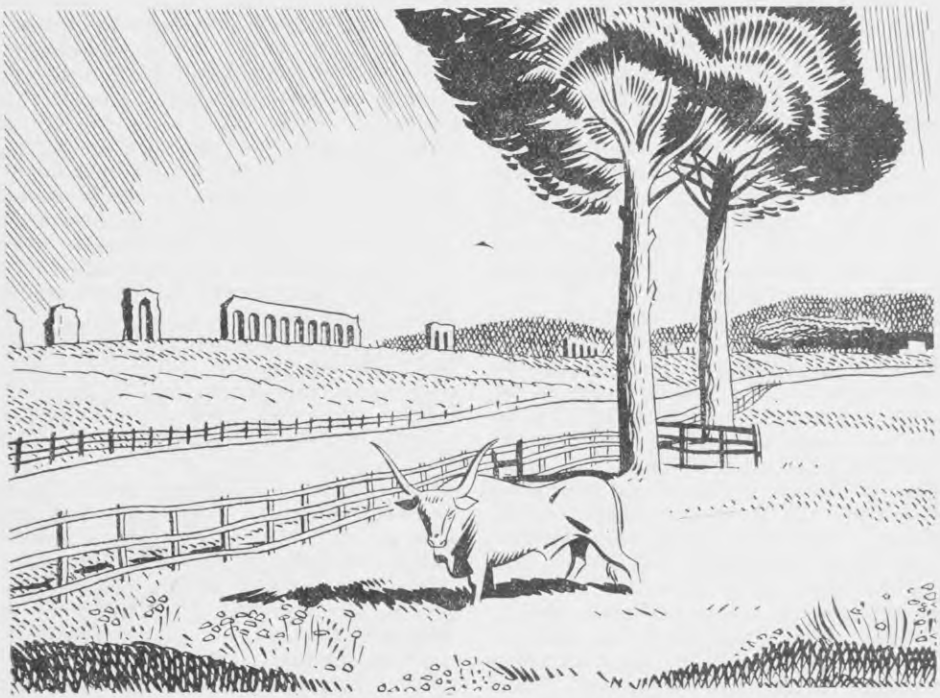
A new University city has arisen on the outskirts; while playing fields and stadiums are supposed to encourage a love of manly sports. It is doubtful, however, whether Italians are by temperament adapted to our forms of recreation. Players have been known so far to forget their differences as to execute a concerted attack on the referee. Football, indeed, seems almost too perilous for the Italian public; spectators with weak hearts sometimes suffer a fatal collapse from the intolerable excitement.

The real interest of Rome lies elsewhere. We find it in the splendid palaces and venerable churches ingeniously restored in recent times. There on the seven hills, surrounded by tranquil gardens of ilex and cypresses, the life of Rome goes on. While the ancient sanctuaries hold perhaps more interest for the

student, there is no denying the immensely imposing effect of such sumptuous Renaissance basilicas as St. Peter's. Standing in the vast apse you look down the immense nave to the great bronze door at the threshold, an eighth of a mile away. The altar is built of precious marble, adorned with mosaics, encrusted with priceless gems. So perfect are the church's proportions it is difficult to feel its size. You read the text on the interior of the dome and can hardly believe that each stroke of the letters is taller than a man.

The air is hushed, but the silence is alive. The light is not dim and ineffectual, but soft and high and rich as floating gold. Masterpieces of sculpture mark the resting-place of Pontiffs and kings; one such graceful monument was erected by George IV to honour the memory of the fateful Stuarts. Down the nave an arcade of Corinthian pilasters and stupendous arches carry the eye on to the wonderful vaulted ceiling which seems like a second and golden sky. Over the high altar Bernini's magnificent canopy soars up to a height of 95 ft.—a hundred tons of wrought bronze taken from the roof of the Pantheon.

It is fitting that these places once rent by the death cries of Christian martyrs should be for ever thus enclosed and hallowed by public acts of religion. For Rome is principally the setting for a religious drama, the background against which are daily enacted the sacred rites of the Christian faith, ordered with a solemn ritual, made joyous with holy song.



The Roman Campagna: Country through which our armies must march to Rome.

Boots AND ALL

A KORERO Report

"BOOTS-BOOTS-BOOTS-BOOTS, marching up and down again" have always been a subject of especial interest to the soldier. In the days when Kipling wrote his well-known song—days when, despite Napoleon's metaphor an army marched on more than its stomach—they were often the subject of lurid comment. Indeed, Kipling suggests that hell is composed not "of devils, fire, dark or anything, but boots-boots-boots-boots." However, the complaint was levelled not so much at the quality of the boots (though here too there was caustic criticism) as at the quantity of them—the maddening monotony of endless lines of marching feet.

To-day there can be little complaint as to this monotony—mechanized columns have replaced the old "line of route"—and, as to quality, the modern soldier, still vitally interested in what goes on his feet, finds little wrong with the way the Army shoes him. In fact he often goes as far as to say that the Army boots are the most comfortable in the world. He has his likes and dislikes; one make he swears is better than another, and he wonders why, when he is attempting to obtain that parade-ground gleam that will reflect the face of the inspecting officer, one boot seems to polish better than its partner. Here the real remedy probably lies in the application of more elbow grease.

But he will admit that he is well shod and point proudly to his strong black "Bostocks"—"half-soled three times"—which, next to his rifle, he acknowledges as his best friends. True, he likes to relax in civilian shoes on leave, but when he's on the job his "Boots, soldiers, for the use of" are definitely hard to beat.

This general satisfaction with the quality of Army boots is explained by both the improved methods of manufacture and the more detailed examination of footwear carried out by Services inspectors before the boots are accepted. There are more boot-examiners in this war than the last, and they are more exacting. And, though the specifications have altered but little since the last war days of the "Bill Massey," the modern boot is truer to size and more solidly and comfortably constructed. Thus any soldier with normal feet can achieve his heart's desire—a pair of boots that fit him.

And there is quantity too. New Zealand factories have made, and are still making, hundreds of thousands of pairs of boots from New Zealand leather with New Zealand labour. Of all the articles of Army clothing the boot is unique in that it is almost wholly a New Zealand product. The lining, a fundamental part of your battle-dress, must be imported, but your boots, with the exception of the eyelets and the nails,

are "Well Made, New Zealand." Sheet steel for toe and heel plates is imported, but cut in Taranaki, and, though the cotton from which laces are made in Auckland must be imported, the leather thong that laces up the Army boot is as much a New Zealand product as the upper and sole leather.

Not only is the boot New Zealand made, but our production has been able to meet the demands of all the Services. This has required an amazing expansion and modification of the footwear industry. Ten or twelve factories produced industrial boots before the war. To-day thirty to thirty-five are making footwear of all types for the Services, and at their peak period were turning out 20,000 pairs a week. Even Mount Eden prisoners were producing Army boots at the rate of fifty pairs a week and making a good job of them. A trade school was established in Auckland (the centre of a third of our production) to train operators. The Services and the manufacturers were constantly in conference modifying old specifications and suggesting new ones.

Now the factories are making black boots for the rank and file, tan boots for officers, flying-boots (sheep-skin lined) for the Air Force, dress shoes for the Navy on leave, boots for the Women's Land Army, shoes for W.A.A.F.S., W.A.A.C.S., and W.R.E.N.S., sandals for the tropics, deck shoes for troop-ships, cooks' boots for Navy galleys, and field boots for the Marines. These are but a few of the varieties produced. In truth New Zealand's footwear production is effectively showing that our army marches on its feet.

Pattern knives, operated by a heavy press, cut out the soles. The odd pieces of leather, cut out by a similar process, provide the heel lifts.

The battle-scarred boots on the title page saw action in Greece and Crete. They were an odd assortment. This is the story of the new, shiny, creaky boots that replaced them and many another battered boot whose job had also been "Well Done, New Zealand."

The tanned hides come from the tanneries as half-skins each of about 20 square feet. The upper leather is from the same type of hide as the sole, but is more pliable because of different and more intensive treatment in the tannery. First to the clicking department, where the uppers are cut out with a sharp knife run round the edge of a steel-bordered pattern. This is skilled work, for not only must the cutter be able to use each hide to the utmost advantage, but he must also be able to pick flaws in the leather. Five years is the apprenticeship period, and even then many more years' experience are required to make the expert.

Three and three-quarter square feet of leather go into the uppers of each pair of boots, so that each half-hide produces about 6½ pairs. There are six patterns to each upper.

The men cut out twenty-four assorted pairs at a time, ranging from size 5 to size 10, and these are differentiated with colour markings.

In another department large presses are cutting out the sole and heel leathers from heavier hides. The outer sole is usually from the back hide of an ox, called a "bend." The shoulder and belly hides provide the inner and inner runner soles.

The bends are cut to different lengths by a guillotine and are graded as to quality and the size sole they will produce. Then a heavy pattern knife of varying size and shaped like a sole is placed over the leather. Down comes a heavy press, cutting out the sole. The odd pieces of leather, cut out by a similar process, provide the heel lifts.

To return to the uppers. Each of the six patterns is fed through a skiving-machine, which shaves off the edges so

that the sewing-seam will not be too thick and press on the wearer's feet. The next and most important process is assembling the patterns—a process known to the trade as "closing the uppers." Now the boot begins to take shape.

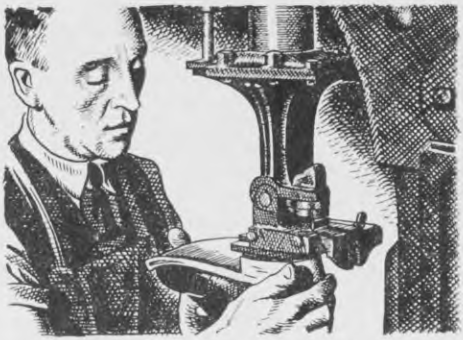
The work is done on large sewing-machines, mainly by women. First the two main quarters are sewn together. Then the tongues are attached and the inner lining of soft crome-tanned hide is sewn in. You don't see this lining in an Army boot. It's down under the tongue covering the fore part of your foot.

Now, as the upper is assembled, the eyelets can be put in. This is done by an automatic machine which drives the eyelets through at regular intervals. Heavy wax thread is run round the uppers below the tongue in double rows for extra strength and for additional water-proofing. As one sewing is completed another boot goes into the machine before the thread is cut.

The majority of the workers in this department are girls earning from £3 7s. 6d to £4 5s. per week. They take to the work very well according to the factory manager, and are very skilful in handling the machines. In this factory over one hundred girls are employed, and before the war there were even more of them. About two hundred and fifty men are employed whose wages range from £5 12s. 6d. to £7 per week.

On the next floor men are engaged handling the heavier machines which attach the soles to the uppers. A last is fitted into the boot and the inner sole temporarily tacked on. An amazing machine then takes over and tacks the front of the upper to the inner sole, slamming in tacks at the rate of 130 a minute. An even more complicated machine drives in the heel tacks twenty at a time, and with a clear run can handle twenty-four pairs of boots in five minutes.

The normal Army boot—"Rank and File" the trade call it—is of the screwed and stitched variety. This means that, after the inside runner sole has been tacked to the inner sole it is firmly attached with screw wire. Another machine drives these screws in and cuts



Fitting a heel to a boot.

them off from an endless thread. This is the strongest method of attaching soles known to footwear-manufacturers.

Last, the outer sole is tacked to the runner, heavily stitched and screwed for the last time.

After this second screwing the boots are fitted sole up on to lasts in a levelling machine which runs rollers round the sole edges and up and down the instep to reblock the boot into shape.

Next those important heels that never (or hardly ever) wear down. They arrive in one piece to be attached to the boot. Downstairs the four lifts have been nailed together and the heel-plate attached. Now the completed heel is fixed to the boot by a machine that does the job in one operation, driving in fourteen nails at a time and handling a thousand pairs a day.

The heel and sole edges are now trimmed on a revolving knife and smoothed with sandpaper. The important burnishing of the sole and heel edges is done, after they have been inked, with a hot iron plug whose oscillating motion prevents the heated iron from burning the leather. The heels are burnished with brush and pad.

The heel socks are put in and the dressing is painted over the finished boot. For the benefit of the unbeliever as much dressing is applied to the left as to the right boot, and *vice versa*. The boots are then placed on racks and wheeled away for packing.

That is the story of the birth of an Army boot. And if it sounds easy you had best remember that 150 operations go into the making of each boot you wear—150 complicated and skilled processes done by specialists who are so highly trained for the process they perform that they may not be able to handle the machine controlled by the man next door to them, a fact guaranteed to give any factory manager a headache, especially when trained staff is irreplaceable. The whole industry is highly mechanized, and so much so are the different departments dependent on one another that a glut in one section or a breakdown in another can throw the whole routine out of gear.

It is a tribute, then, to the manufacturers and their staffs that they have changed over to war production so smoothly and so efficiently. It is a tribute to the chrome-tanned leather they use that its soft, pliable strength is reckoned the finest in the world. But the best tribute to both tannery and factory is the shiny, creaky boot, comfortable and strong, which keeps New Zealand feet well shod the world over.

PHOTO RECONNAISSANCE

From *Flying*, October, 1943

AN OBVIOUS truth to Air Force commanders in all active theatres, is "better photography creates better bombing." They believe in photography as they believe in fire-power, for combat experience has shown that more than 80 per cent. of military intelligence is either obtained or verified by aerial photographic reconnaissance.

Effective use of air power depends upon the ability of reconnaissance to locate prime targets. Combat proved at the outset that the surest way to reduce an Air Force to impotence was to waste its power against inadequate targets. On the other hand, devastating effect was achieved when the total resources of planes and crews, fuel, and ammunition were hurled against a target of maximum opportunity.

Such targets are not located by chance. They result, in large measure, from ceaseless aerial photographic reconnaissance. Day and night camera planes probe deep into the enemy's territory to record his movements and unmask his plans.

Modern aerial technique demands an exact knowledge of targets, for the best way bomber crews can be satisfactorily briefed before a mission is to show them a picture of what they are going to hit.

Bombers do not leave the ground unless photographs prove the value of the mission.

From each theatre comes the cry for "more pictures." In combat operations one hundred prints may be distributed from each negative. The Air Force commander and his staff, the Navy, ground forces, and Allied airmen clutch at every scrap of photographic information.

Photographic planes streaking over bombed cities after a mission bring back exact answers to a commander's questions. What factories have been struck? What storage dumps remain intact? How long will railroad yards and switching-points be bottlenecked?

Camouflage is seldom effective. Modern photographic methods detect it instantly.

Daily sorties over the Channel ports told the British the exact status of Hitler's invasion plans. They merely counted the landing-barges, and when the prize looked worthwhile, they bombed them into splinters.

Following a practice copied from the British, American fighters with cameras come in at low altitude, get their pictures and return quickly to base.

Recently, after a test in America, a photograph taken from a Lockheed Lightning going faster than 300 m.p.h., as low as 300 ft., was so sharp that engineers could count the telephone wires which the plane had flown over.

Tests have been conducted with a "strip film" camera which makes a continuous picture on roll film.

Cameras are indispensable in searching out weak spots in our aircraft through recording take-off and landing characteristics, recording instrument dial readings during test manoeuvres, training pilots and testing various types of materials.

Typical of photography's triumphs in wartime is the story of one photo squadron. In April, 1942, nine officers and 60 men disembarked in Australia with four Lightnings modified for photographic use.

With no more than five airplanes in the air at any one time, the squadron flew 457 missions in an eight-month period. One photographic flight over Buna eventually cost the Japs 83 airplanes. Quickly processed pictures told a story which sent a swarm of U.S. fighters streaking for the enemy airdrome. Seventy-nine were caught on the ground and four more were picked off in the air. Photographs showed that they had landed to refuel.

One morning the Squadron Commander received a rush request for complete aerial mapping of Guadalcanal and adjoining islands. The mission was beyond the range of the Lightnings, stripped down though they were. A Boeing B-17 Flying Fortress was equipped as a mapping airplane. Flying just beneath a high cloud ceiling along the hump of the central range, the big plane, carrying a wide angle camera, completed the mapping in three passages, then went on to Florida and Tulagi Islands. The job was done in one afternoon.

Soon afterwards the first American offensive in the South Pacific was launched. We made our early gains with minimum loss because the photographic reconnaissance made on this flight had supplied the maps.

Aerial photography also helped turn back the Jap land assault on Port Moresby from the Gona–Buna area along the Kokoda Trail. Once the enemy had crossed the Owen Stanley Range, they were confident of smashing through to the Allied base at Moresby. But photographic aircraft made a forty-five minute daily flight along the length of the trail, spotting supply dumps and encampments. When the Japs had cached supplies at forty-seven installations on the trail's length, Allied aviation attacked the targets.

Eleven days of bombing left the Jap forces with neither ammunition nor food. Photography had previewed this action, and photography recorded each step in the Jap defeat.

Technical difficulties arose from the extreme heat, humidity, and dust. But these photo experts learned to overcome climate as well as enemy. They stripped the cameras after each mission and coated moving parts with a thin film of oil. Thanks to this, the squadron had only one

camera failure in eight months. Exhibiting further initiative when the oblique camera installations broke down, pilots dipped their wings, thus elevating the aerial camera to the required tilt. These low altitude obliques were eagerly sought after for surface vessel identification, and "dicing" techniques were soon perfected by resourceful pilots.

North-west Africa combat operations led Lieut.-General Carl Spaatz to praise photographic reconnaissance as one of the most valuable tools available to him. Major-General James H. Doolittle, commanding the Strategic Air Force, was quick to concur. "Working without photographic reconnaissance," he said "is like working in the dark."

Operational procedure followed in North-west Africa sets a pattern for the manner in which photography supports strategic bombardment.

An operations officer of the Strategic Air Force sent by messenger a daily list of the objectives to the Photographic Wing indicating the priority, the location, and the reason for requesting the desired coverage.

After checking available airplanes and the weather, the next day's missions were set up by the Wing Commander. By 1900 (7 p.m.) a copy of the missions was sent back to the headquarters of the Strategic Air Force for entry on their operations board.

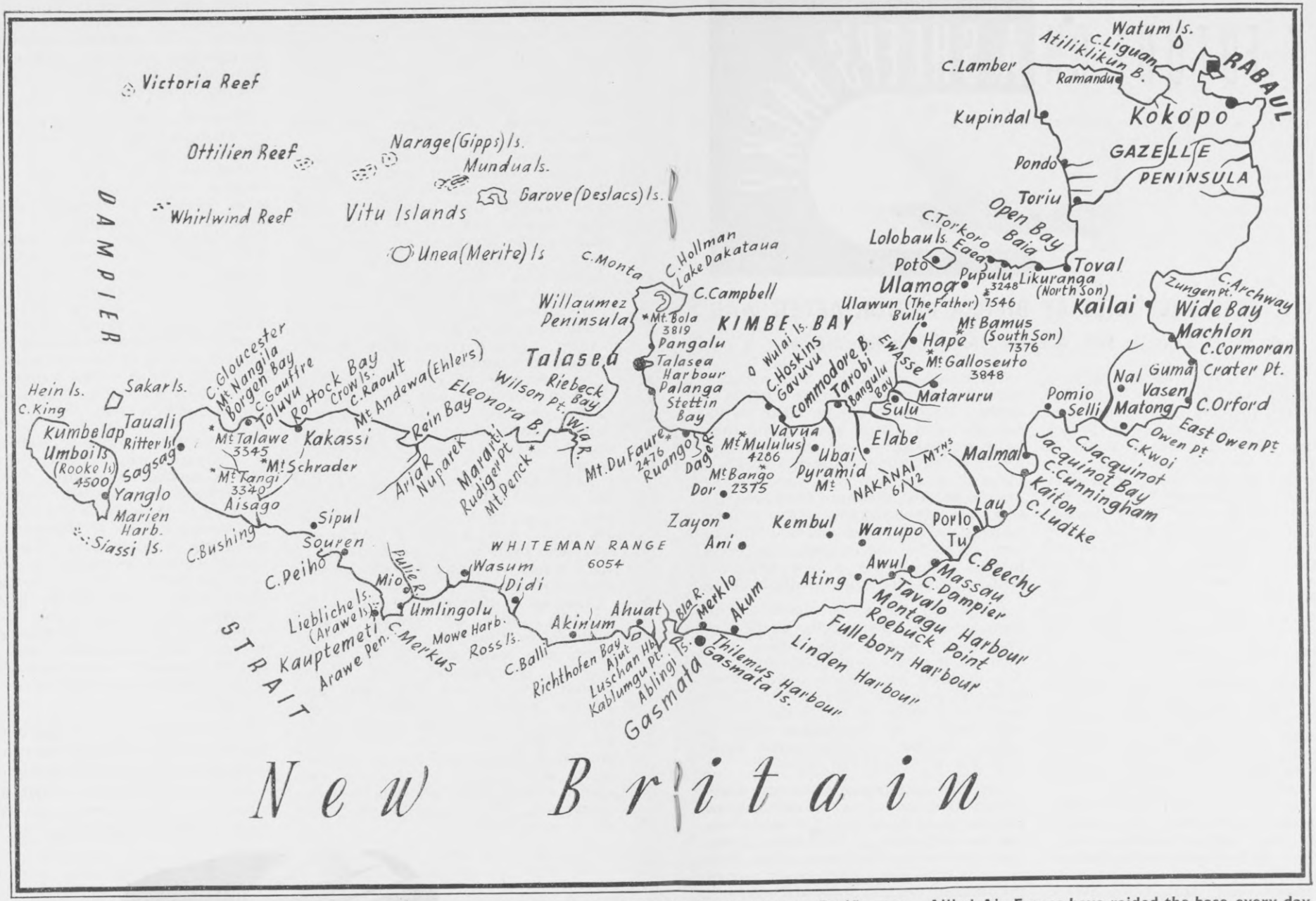
Assigned missions were flown the folowing day. All planes usually returned to their base by 1000. Dry prints were made, and the first photographic interpretation was accomplished. Prints were then sped back to the Strategic Air Force, usually arriving at 1200 and were used as a basis for the afternoon's raids. Photographs secured in the afternoon were delivered in the same manner by 2000 and were used as a basis for the following morning's operations. Thus, round-the-clock operations were assured.

Each theatre poses its own problems. In Alaska, for example, the below-zero weather on the mainland calls for aerial photographic equipment different from that required by the milder but foggier weather of the Aleutians.

Extremely difficult flying and weather conditions are prevalent west of Dutch Harbour. Very rarely is it possible to photograph from higher than 5,000 ft. Because of the relatively concentrated areas occupied by enemy installations, large-scale photographs are needed. High shutter speeds are necessary to stop motion and get the needed overlapping exposures at low altitudes. Cameras must be specially sealed against volcanic dust. Because weather conditions change so rapidly after take-off, pilots are now able to control the diaphragm opening of their camera shutters from the cockpit. This enables rapid adjustments for the varying light conditions they will meet.

To obtain more than a small fraction of information which photographic aviation is capable of securing, intelligent co-ordination is required. An understanding of the mission and capabilities of photography by all elements of the command is necessary. The photographic Group Commander is generally best qualified to act as photographic officer on the staff of the Air Force Commander. As such, he advises his Commander on mapping and photographic missions and co-ordinates all photographic aviation to insure peak efficiency of the various interlocking uses to which it is put.

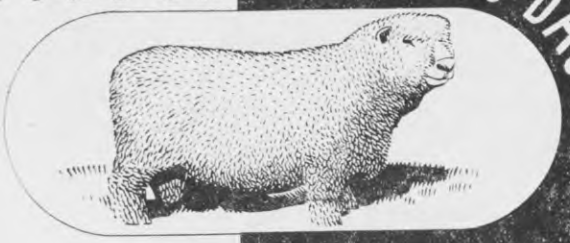
For every minute of the day and night the Air Force Commander wants to know these things: What is the enemy doing? What is his strength? What are his intentions? And photographs tell the story with unerring accuracy.



New Britain

Rabaul, on the northern tip of New Britain, has been one of Japan's major bases in the South-west Pacific area. Allied Air Forces have raided the base every day this year that the weather has permitted. During January they destroyed, according to official figures, more than 500 Japanese planes and sank or damaged four cruisers, eight destroyers, and a gunboat, and about 125,000 tons of enemy auxiliary shipping. The latest step in the reduction of Rabaul and Kavieng, the base in New Ireland north of New Britain, has been the invasion by New Zealand and American Forces of Nissan Island, north of the Solomons and 135 miles east of Rabaul. Landings in New Britain had previously been made at Cape Gloucester, on the south-west tip of the island, and Arawe, on the south coast.

ANY FUTURE ON A SHEEP'S BACK?



ARTIFICIAL FIBRES WILL BE BIGGER FACTOR AFTER WAR

By W. R. LANG, in *Salt*, Australian Army Education Journal

SAY YOU are a shopkeeper, selling a number of lines, one of which makes up over half your total sales. If your customers begin to tell you that somebody else is selling a substitute at half the price, you begin to ask questions about your own product and about the substitute. This is the Australian woolgrowers' worry to-day. Australian wool formed about one-half of all Australian exports. Australians have been hearing rumours about synthetic fibres. They have been forced to use them because of war conditions in the wool textile trade. Now they are beginning to ask questions about wool and these synthetic fibres.

Until sixty years ago the whole textile field belonged to the "natural fibres"—wool, silk, cotton, flax, hemp, and so on. In 1884 Chardonnet, a Frenchman, produced the first artificial fibres from nitrocellulose. This was the first of the rayons (or cellulosic artificial fibres), now common in stockings.

Cellulose is a very cheap raw material, forming part of the walls of vegetable cells, in trees, cotton, bamboo, hemp, straw, &c. In bulk production cheapest sources of the rayons are wood pulp and cotton linters (very short cotton fibres). To produce them the wood pulp or cotton linters are transformed into chemical solutions of cellulose, which are pressed out through tiny holes into spinning baths, or warm air, forming threads of rayon. Rayons have been called "artificial silk" and "wood wool." But their basis is cellulose, whereas silk and wool are "protein." Gradually scientists found that cellulose had very definite limitations, and attempts were made to coat the fibre surface with protein material, to get better effects. This in turn led to the use of cheap sources of protein material for a new group of artificial fibres—the protein artificial fibres.

Protein is the solid constituent of animal tissues, plant cells, and other products of animal and plant. Like cellulose, it occurs in many cheap forms. Among these are fish-oil, soya beans, castor-oil, corn-meal, milk casein. "Milk wool" was made by the Italians from milk casein; its best-known form is called "Lanital." These protein fibres were evolved only in the 1930's.

The manufacturers of these new fibres argued this way: we haven't got the pastures and the sheep, or the silk-worms and the mulberries, or the cotton plantations, but we can turn some of our other resources into fibres, and so get around the difficulties of geography and economic boundaries and, at the same time, make some of our own cheap or useless materials pay handsome dividends.

This is sound logic. And they did not just talk about it, but gathered teams of well-trained chemists, physicists, and engineers, backing them with the necessary finance (which means equipment and facilities) and turning them loose on the problem. The Du Pont firm in U.S.A. spent several million dollars over a decade on sound fundamental research, one of whose fruits was the new fibre group, known as the "nylons," announced in 1937. Already any Australian woman will tell you how good nylon stockings are, and how she wishes she could get some now. They are made from air, coal, and water—raw materials easily obtained.

The Germans produced another of these resinous or plastic fibres from coal and chalk. A still more recent development is a cellulosic fibre made in England from seaweed.

Summarized briefly, the field of competitors in the textile stakes of the world is :—

Natural fibres—
- Animal origin : Wool, silk, animal hairs.
- Vegetable origin : Cotton, flax, hemp, jute, ramie, &c.
- Mineral origin : Asbestos fibre.

Artificial fibres—
- Cellulosis origin : From wood-pulp, cotton linters, seaweed, &c.
- Protein origin : From milk casein, soya beans, fish-oils, castor-oil, corn-meal, &c.
- Resins and plastics : Nylons, &c. (from coal, air, water, chalk, &c.).
- Other : Glass.

The price, availability, and the fact that some artificial fibres are best for certain jobs, has had much to do with the great increase in production of these new fibres. Because cotton (average cost, 8d. (Australian) a pound raw) is so cheap it finds its way into fabrics as a linen, wool, or silk substitute. Since silk sold pre-war at about 10s. (Australian) a pound on the average, the artificial fibre manufacturers have tried many times to imitate its properties.

In 1937 raw wool in Australia averaged 12½d. a pound and an average flax on world markets brought 12d. a pound after treating. But the natural fibres need preparation before they pass into manufacture. In the case of wool, this means that of the 1,000,000,000 lb. sold greasy in the present Australian clip, the clean wool obtained after washing or scouring is about 550,000,000 lb. Hence, when Courtauld's staple fibre is priced at around 12½d. (Australia) a pound needs no cleaning, and can be turned out at the required staple length, it has many advantages over the natural fibre.

The production of these new fibres has therefore gone ahead by leaps and bounds. Natural-fibre growers are shaken to hear that world production has approached that of the world wool clip (although it is no more than the greatest fluctuation between annual world cotton crops). The conclusion : artificial production is impressive ; artificial fibres are here to stay.

* * *

What is likely to happen in the textile world after the war ? Sir Robert Pickard, Director of Research of the British Cotton Industry Research Association, sees "that the trend of textile products is toward mixtures of fibres," and that textile science suggests that, for any specific purpose, there is an ideal fibre or mixture of fibres. If so, should we in Australia sit back and squeal every time we hear about artificial fibres and do our best to decry them ? Or should we show some fighting spirit and, besides examining and studying the economic and scientific aspects of the production of our own fibre, also delve into the subject of blending wool with these artificial fibres, so that justice is done to wool in a world of "mixed-fibres" textiles ?

Because wool has some remarkable characteristics which so far have not been successfully imitated by its textile competitors (and which the customer will pay for), dishonest manufacturers and shopkeepers often foist on the customer the inferior substitute cloth, under the blessing of the name wool, or merino,

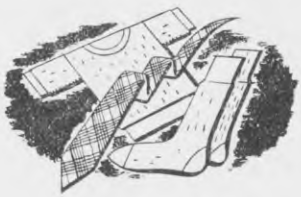
or other words. For instance, there is a school of thought that likes to think that cloth containing 3–5 per cent. of other fibres can be labelled " All Wool," and so on. This must be combated and proper labelling enforced. Testing of fabrics for fibre content is a specialized chemical, physical, and microscopical matter; the provision of such facilities will be necessary.

What HAS wool got that the other fibres have not got? And *vice versa*? Wool has a remarkable elasticity; it absorbs moisture; it " felts " well, and, because of its wavy nature, forms yarns, which enclose air readily—that's why woollen fabrics hold heat in cold weather and provide insulation in hot weather. Many of the artificial fibres are highly inflammable, but wool burns with difficulty, and can be considered reasonably fire-resistant. Wool is very soft and light, dyes readily and evenly, and will withstand rough treatment—witness the Army overcoat.

But wool has what its supporters call a " tickle " and its enemies call an irritation. A method of removing this has been worked out. The felting power of wool can be removed by one of a number of treatments, and in hosiery, underwear, and flannel this has already been proven in use.

The rayons, on the other hand, tend to be very weak when wet, but the fact that they dye differently from wool means that they can be used to produce fancy effects. Their lustrous appearance is very attractive to women. The cellulose synthetic fibre from seaweed absorbs moisture remarkably well. Some of the new resinous fibres are immune to attack by acid and alkali, can be moulded while hot, or are waterproof.

When we speak of textiles, we mean anything from suitings and frockings to woolpacks and tarpaulins, from parachute fabric to insulation and upholstery, from tent-cloth to industrial filters. It is a very wide field. Given fair treatment in international politics in the post-war period, and given reasonable scientific support to enhance its special characters, wool will come through.



Why Sea-water is Dangerous to Drink

Everybody knows that sea-water should not be taken to quench thirst, but do you know why? The amount of salt in sea-water is equal to a teaspoon of salt in a 6 oz. cup of water. This is three times as much salt as there is in the bloodstream. If you drink sea-water when fresh water is not available, your body water will be used up to dilute the extra salt; and then your thirst is increased, you suffer from retching and cramps, fever comes on, and finally you go out of your mind.

However, British medical authorities point out that the experience of survivors from shipwreck, as well as the results of experiments, suggest that sea-water in small quantities is valuable for moistening the lips and for moistening the mouth as an aid to swallowing food. It is stated that if the total amount of sea-water consumed daily in this way is not more than 6 oz., no harm is likely to result in the course of a lifeboat voyage of at least ten days. Taken in quantities, however, sea-water is very dangerous.

To keep yourself in good physical condition, you need at least 18 oz. of water a day—that is, 2 oz. more than a pint. But a healthy man can live from eight to twelve days without any water. One important thing to remember if you have no water is, don't eat. If you do eat, the water in your body will be used up in digesting and assimilating the food. Don't drink liquor, either—it will make you sick and delirious.

THE MASSAWA MIRACLE

By Biddle Dorcy, as told to Barrett C. Kiesling for *Collier's Magazine*

EARLY IN 1942 the British in Egypt were dangerously short of supplies, guns, ammunition, trucks, fuel. Rommel was battering at their lines. Axis air fleets based on Pantelleria practically cut off Allied shipping from England and America to Egyptian ports. The Suez Canal and parts of the Red Sea were within bomber range of the enemy and it was hazardous to use them.

So supplies for the Allied armies had to go around the Cape of Good Hope, and then up to Djibouti or Massawa. Massawa, in Eritrea, was by far the most vital. It was a short land passage from the port over a paved highway to Asmara; from there there was a British military road up to Khartoum and then up the Nile Valley to Cairo.

War cargoes couldn't, with any chance of success, be taken farther north than Massawa—and at Massawa nine sunken ships blocked the way. They were sunk, bow to stern, in the south harbour entrance, the tops of their masts, rigging, and stacks sticking out a few feet above the surface of the hot, oily swells. The retreating Italians had bomb-blasted them from inside when the British drove them from the port—and what got by these ships and up to the docks was a trickle.

* * *

The British had been trying to get some of the ships up, but they couldn't get the proper equipment or the skilled divers. They had been working on one ship for seven months—and she was still on the bottom. Rommel was getting his supplies across the Mediterranean, and the British weren't getting any supplies to amount to much from anywhere.

Meanwhile Rommel was advancing eastward, and the prophets were predicting he would soon overrun the Middle East, join with the Japs—and the war might be lost.

A look at the facts of the case seemed to make the prophets right, for once.

At this interesting moment I got a call from one of the big hotels in Los Angeles to meet a representative of the contracting firm of Johnson, Drake, and Piper—and before long I found myself with a deep-sea diving contract. I thought: Well, probably it's in Central or South America somewhere; it won't take long. But no one would tell me where the job was; all I learned was that my boss would be Captain Edison D. Brown, a veteran salvager. He'd just got back from raising the sunken German steamer "Eisenach" at Puntarenas, Costa Rica.

I didn't know then that the British had sent in a hurry call to the United States to get those sunken ships at Massawa out of the way in jig time—or else. I didn't know, either, that I'd been hired because Captain Brown had insisted to my employers that, although I was a "movie actor," I was no cream puff.

* * *

After I left Stanford University at Palo Alto, California, I did some commercial diving in the Philippines; coming back home I made a living as a stunt man in the movies. I swam the rapids in "North-west Passage"; I fought a giant squid for Ray Milland in "Reap the Wild Wind"; I dived endlessly off masts and cliffs.

Well, Captain Brown had been a "movie actor," too. He'd skippered tugs in "Mutiny on the Bounty" and "Captains Courageous"—in between putting in twenty-five years of salvage work all over the world.

When the British SOS came in there was no salvage vessel available anywhere in the United States. So one was built at Port Arthur, Texas, in twenty-six days. She was a steel tug, 97 ft. long, Diesel-electric driven and equipped with all the diving and salvage gadgets anyone could think of. She had been completed and run her trials only a few days before her crew piled aboard—

officers, deckhands, divers, tenders, and engineers. Few of us had seen one another before; none of us knew where we were going. All we knew was we were aboard a tug called the "Intent" which boasted a seven-ton icebox full of good food. Her fantail was only a couple of feet above the water, and people began to predict she would be half under water if she ever got out of the harbour.

They were right.

As we headed out into the Gulf the waves swept over the "Intent" in every mild breeze, and luckily none of us knew just what it would be like before our scratch crew had fought the little ship the 15,000 miles from Port Arthur to Massawa across stormy oceans, dodging German and Jap subs.

* * *

Massawa was a mess. The hills ringing the bay were bleak and barren in the sun glare. The heat ranged from 100 to 128. A yellow haze of desert dust hung over everything. Nine ships were sunk in the main channel. Two drydocks and seventeen other ocean-going vessels were under water all over the harbour.

The British were yelling for supplies, and the headlines in the little Asmara newspaper said: Axis within fifteen miles of Tobruk in big advance.

Supply ships from England and America lay off the closed port. A trickle of supplies got ashore in lighters and small boats. Here was the war's worst bottle-neck.

Captain Brown waved his hand toward the line of sunken ships. "There they are, boys," he said. "Bounce 'em!"

"Bouncing her," I may say, is underwater slang for raising a sunken ship. Two days after we got to Massawa, we had the equipment broken out, the pumps rigged, the suits tested and were at work on the 10,000-ton German freighter "Liebenfels."

* * *

We worked in black, oily water at a temperature of 95 degrees. The ship had been blown open by time bombs and inside she was a fantastic nightmare of torn steel, twisted timber and assorted

wreckage. We worked mainly on our hands and knees, crawling painfully around—divers stride gaily about only in the movies. It was a nerve-racking and physically exhausting job.

By the time I had on two suits of heavy underwear, heavy socks, short overall pants, shoulder pads and tennis shoes I was sweltering. Then my tender, Tom Dee, hung on my breastplate and canvas pants to protect the rubber dress. The minutes were sheer hell; sweat could not evaporate in the suit. The heavy helmet went on, the seventeen-pound iron sandals, the forty-pound belt. Then I tested my air and phone lines, and went down.

Every day was a battle to live. We could not use soap to wash because every tiny chafe turned into a running sore. We suspected there might be booby traps in the ships, and every time our hands touched wire, down below, we expected to be blown sky-high.

Ashore for recreation were an American commissary, a couple of English canteens, and the Turino Club. This haven was on the roof of Massawa's tallest skyscraper, five stories above the dusty street. You could get a cool drink there,

sometimes, to take your mind off the "hostesses." The Italian waiters had all been stewards or sailors on the sunken ships. We Americans treated them as human beings and they were pathetically grateful.

The Italians were starved for cigarettes. Each of us got a pack a day and I shared mine with my favourite waiter. It paid off. One evening when we were working on the "Liebenfels" this waiter took me aside in the darkness and said, more or less: "Look, Signor Dorcy, you have been kind to me; I do not want to see you killed. So I tell that the sabotage officer who sunk all those ships, he rigged up booby traps in each ship."

"Where?" I asked, anxiously, thanking my lucky stars we had not yet "found" any.

"He was a methodical man, without imagination," said the waiter. "He put bombs in each ship near the bulkhead between Holds One and Two and Holds Four and Five. And he put booby traps thus and so, in each ship. If you turn a certain valve—boom! No more ship."

"And no more Dorcy," I murmured.

* * *

I got a pretty good idea just where the fatal valve was, and where the booby-trap bombs were. We managed to find them and make them harmless. But it seems to me a cold fact that, had this waiter not told me how to find these infernal machines, the whole salvage operation probably would have failed, or at least been delayed long enough to allow Rommel to take Egypt.

On July 1 we bounced the "Liebenfels." We had set a world record of twenty-nine working-days. A tug put a line on the raised ship and lugged her out of the channel. The bottleneck was partly open. A small tanker slid in and tied up at the docks. Other ships followed. The flow of material into the harbour grew from a trickle into a modest stream.

Two other ships had to come up the—"Frauenfels," a sister to the "Liebenfels," and the "Tripolitania," a small Italian coaster. And then there was the Italian ship "Brenta," close by. We didn't have to get the "Brenta" up—but we had to pull her sting. Deep in her holds were twenty-eight big mines and twenty-six torpedo warheads. They were all alive, and we could not take the chance of a passing ship setting them off. The explosion would have wrecked the whole harbour.

* * *

Finally, we bounced the "Frauenfels" and the "Tripolitania." Working blind, we got every mine and warhead out of the "Brenta." The raising of three ships and the destinging of the fourth opened the channel completely. Supply ships streamed in. Soon the long road through Asmara and Khartoum and up toward the caving Allied front was alive with trucks and guns and tanks, hurrying northward. Soon the radio and newspaper reports began to look a little better. On October 25, General Montgomery made his historic break-through at El Alamein—with the supplies the "Intent" the "Resolute," a sister tug, and the "Chamberlain," a steam schooner, let in through the uncorked bottleneck.

TARGET: GERMANY

This condensed version of *Target: Germany*, the official United States Army Air Force's story of the 8th Bomber Command's first year over Europe, was published in *Life*, November 29. The article gives an interesting account of how American bombers collided for the first time with the massed strength of the Luftwaffe.

THE LAST week of July, 1943, was not a good one for European dictators. To one it brought political annihilation, abrupt and ignominious. To the other it brought the greatest sustained aerial offensive yet mounted by the 8th Bomber Command.

Out in force five times, the Fortresses hit sixteen major industrial targets. They made their longest flight—1,900 miles—when they attacked the German U-boat base at the Norwegian port of Trondheim, not far from the Arctic Circle. They achieved their deepest penetration into Germany when they struck an aircraft factory at Oschersleben, only eighty miles from Berlin. In those seven climactic days they claimed 296 enemy fighters destroyed. Eighty-eight Fortresses were lost.

The best picture of the destruction attendant on a massed air battle such as the one that took place over Regensburg was given by an officer who served as co-pilot of a Fortress in the last Group of the formation, a Group that consequently was hit harder than any other:

"At 1017 hours, near Woensdracht, I saw the first flak blossom out in our vicinity, light and inaccurate. A few minutes later, two FW-190's appeared at one o'clock level and whizzed through the formation ahead of us in a frontal attack, nicking two B-17's in the wings and breaking away beneath us in half rolls. Smoke immediately trailed from both B-17's, but they held their stations. As the fighters passed us at a high rate of closure, the guns of our Group went into action. The pungent smell of burnt powder filled our cockpit, and the B-17 trembled to the recoil of nose and ball-turret guns. I saw pieces fly off the wing of one of the fighters before they passed from view.

"Here was early action. The members of the crew sensed trouble. There was something desperate about the way those two fighters came in fast right out of their climb without any preliminaries. For a few seconds the interphone was busy with admonitions: 'Lead 'em more' . . . 'short bursts' . . . 'don't throw rounds away' . . . 'there'll be more along in a minute.'

"Three minutes later the gunners reported fighters climbing up from all around the clock, singly and in pairs, both FW-190's and ME-109's. Every gun from every B-17 in our Group was firing, crisscrossing our patch of sky with tracers. Both sides got hurt in this clash, with two Fortresses from our low squadron and one from the Group ahead falling out of formation on fire with crews bailing out, and several fighters heading for the deck in flames or with their pilots lingering behind under dirty yellow parachutes. I noticed an ME-110 sitting out of range on our right. He was to stay with us all the way to the target, apparently reporting our position to fresh squadrons waiting for us down the road. At the sight of all these fighters, I had the distinct feeling of being trapped. The life expectancy of our Group suddenly seemed very short, since it appeared that the fighters were passing up the preceding Groups in order to take a cut at us.

"Swinging their yellow noses around in a wide U-turn, the twelve-ship squadron of ME-109's came in from twelve to two o'clock in pairs and in fours, and the main event was on.

"A shining silver object sailed over our right wing. I recognized it as a main exit door. Seconds later, a dark object came hurtling through the formation, barely missing several props. It was a man, clasping his knees to his head, revolving like a diver in a triple somersault. I didn't see his chute open.

" A B-17 turned gradually out of the formation to the right, maintaining altitude. In a split second the B-17 completely disappeared in a brilliant explosion, from which the only remains were four small balls of fire, the fuel tanks, which were quickly consumed as they fell earthward.

" Our airplane was endangered by falling debris. Emergency hatches, exit doors, prematurely opened parachutes, bodies, and assorted fragments of B-17's and Hun fighters breezed past us in the slip stream.

" I watched two fighters explode not far beneath, disappearing in sheets of orange flame, B-17's dropping out in every state of distress, from engines on fire to control surfaces shot away, friendly and enemy parachutes floating down, and, on the green carpet far behind us, numerous funeral pyres of smoke from fallen fighters, marking our trail. The sight was fantastic; it surpassed fiction.

" I watched a B-17 turn slowly out to the right with its cockpit a mass of flames. The co-pilot crawled out of his window, held on with one hand, reached back for his chute, buckled it on, let go, and was whisked back into the horizontal stabilizer. I believe the impact killed him. His chute didn't open.

" Ten minutes, twenty minutes, thirty minutes, and still no let-up in the attacks. The fighters queued up like a bread-line and let us have it. Each second of time had a cannon shell in it.

" Our B-17 shook steadily with the fire of its ·50's, and the air inside was heavy with smoke. It was cold in the cockpit, but when I looked across at the pilot I saw that sweat was pouring off his forehead and over his oxygen mask. He turned the controls over to me for a while. It was a blessed relief to concentrate on holding station in formation instead of watching those everlasting fighters boring in. It was possible to forget the fighters. Then the top turret gunner's twin muzzles would pound away a foot above my head, giving a realistic imitation of cannon shells exploding in the cockpit, while I gave an even better imitation of a man jumping 6 in. out of his seat.

" A B-17 of the Group ahead, with its right Tokyo tanks on fire, dropped back to about 200 ft. above our right wing and stayed there while seven of the crew successively bailed out. Four went out the bomb bay and executed delayed jumps, one bailed from the nose, opened his chute prematurely, and nearly fouled the tail. Another went out the left-waist-gun opening, delaying his chute opening for a safe interval. The tail gunner dropped out of his hatch, apparently pulling the rip cord before he was clear of the ship. His chute opened instantaneously, barely missing the tail, and jerked him so hard that both his shoes came off. He hung limp in the harness, whereas the others had shown immediate signs of life after their chutes opened, shifting around in the harness. The B-17 then dropped back in a medium spiral and I did not see the pilots leave. I saw it just before it passed from view, several thousand feet below us, with its right wing a solid sheet of yellow flame.

" After we had been under constant attack for a solid hour it appeared certain that our Group was faced with annihilation. Seven of us had been shot down, the sky was still mottled with rising fighters, and it was only 1120 hours, with target-time still thirty-five minutes away. I doubt if a man in the Group visualized the possibility of our getting much further without 100 per cent. loss. I know that I had long since mentally accepted the fact of death, and that it was simply a question of the next second or the next minute. I learned first-hand that a man can resign himself to the certainty of death without becoming panicky. Our Group fire-power was reduced 33 per cent., ammunition was running low. Our tail guns had to be replenished from another gun station. Gunners were becoming exhausted and nerve-tortured from the prolonged strain.

" One B-17 dropped out of formation and put its wheels down while the crew bailed out. Three ME-109's circled it closely, but held their fire, apparently ensuring that no one stayed in the ship to try for home.

" Near the I.P., at 1150 hours, one hour and a half after the first of at least 200 individual fighter attacks, the pressure

eased off, although hostiles were still in the vicinity. We turned at the I.P. at 1154 hours with fourteen B-17's left in the Group, two of which were badly crippled. They dropped out soon after bombing the target and headed for Switzerland.

"Weather over the target, as on the entire trip, was ideal. Flak was negligible. The Group got its bombs away promptly on the leader. As we turned and headed for the Alps, I got a grim satisfaction out of seeing a rectangular column of smoke rising straight up from the ME-109 shops.

"The rest of the trip was a marked anti-climax. A few more fighters pecked at us on the way to the Alps. A town in the Brenner Pass tossed up a lone burst of futile flak. We circled over Lake Garda long enough to give the cripples a chance to join the family, and we were on our way toward the Mediterranean in a gradual descent. The prospect of ditching as we approached North Africa, short of fuel, and the sight of other B-17's falling into the drink, seemed trivial matters after the vicious nightmare of the long trip across southern Germany. We felt the reaction of men who had not expected to see another sunset.

"At 1815 hours, with red lights showing on all the fuel tanks in my ship, the seven B-17's of the Group which were still in formation circled over a North African airdrome and landed in the dust. Our crew was unscratched. Sole damage to the airplane: a bit of ventilation around the tail from flak and 20 mm. shells. We slept on the hard ground under the wings of our B-17, but the good earth felt softer than a silk pillow."

NAURU

A KORERO Report

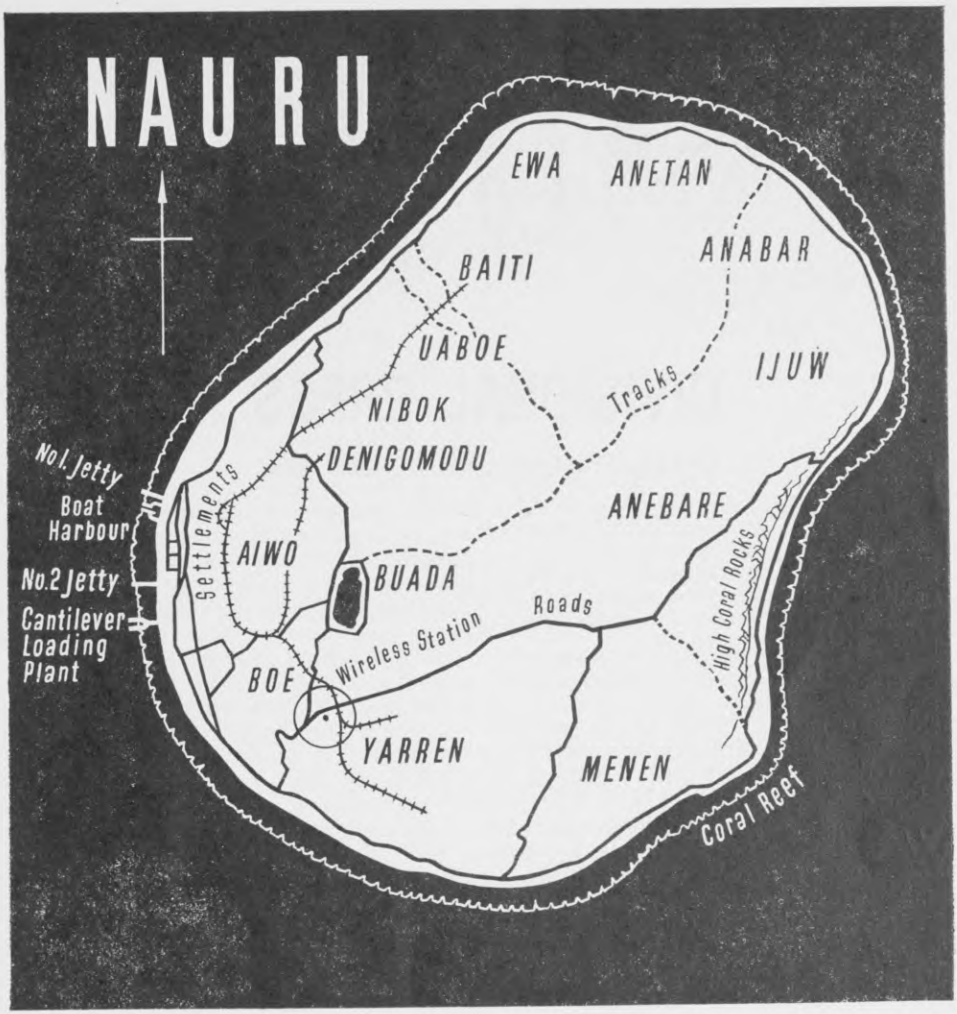
"ALL THAT the Jap. still holds between these two areas (the Gilberts to the Solomons) and which he might use to advantage against us is Nauru Island. All I will say about Nauru is that it is not logical to expect us to permit him to occupy this salient much longer." These two sentences, from the outline of future Pacific strategy given recently by Rear-Admiral Robert B. Carney, Chief of Staff to Admiral Halsey, focus attention upon a small island which is of particular importance to New Zealand.

Situated 26 miles south of the Equator due north from New Zealand and midway between the Gilbert Islands and the Northern Solomons, Nauru has been occupied by the Japanese since August, 1942. They are now using it as an air base, menacing the Allied Forces advancing in the neighbouring island arcs.

Until three years ago, when a German raider flying Japanese colours shelled and wrecked the installations, New Zealand and Australia received all their phosphate from Nauru. This was quarried by a Commission representative of Great Britain, Australia and New Zealand who had held the island under mandate from the League of Nations since 1920. These three countries shared the export of phosphate in the proportion of the capita each had contributed to the plant—Great Britain, 42 per cent.; Australia, 42 per cent.; and New Zealand, 16 per cent. Since the commencement of operations, however, Great Britain has never required her full quota, while New Zealand has always exceeded hers. In 1940 New Zealand received 404,000 tons, 32·4 per cent. of the total output.

Nauru is an oval coral atoll about 3½ miles long and 2½ miles wide. With the exception of a narrow fertile coastal belt, the island consists of phosphate deposits overlaying a bed of coral limestone. This forms a central plateau rising in places to 200 ft. A conservative estimate of the phosphate rock available is 84,000,000 tons, equal to 168,000,000 tons of super-phosphate sufficient to top-dress the farms of Australia and New Zealand for many generations. The quality of this phosphate, which comprises four-fifths of the island, is very high, averaging 85·4 per cent. tricalcic phosphate and 3·4 per cent. calcium carbonate.

The most spectacular feature of Nauru Island in peace was the elaborate and costly machinery which handled the phosphate rock. All stages of produc-



tion were completely mechanized. From quarrying to loading, through the crushing and drying processes, the rock was carried by cableways, railways, and electric belt conveyors.

The method of loading the phosphate ships was unique, being evolved to suit the local conditions. The island is completely surrounded by a coral reef beyond which the sea-bed slopes sharply down at an angle of 45 degrees to a great depth. It was impossible to build either a harbour or a dock, so in 1930 a cantilever conveyor was constructed at Yangor.

From massive pillars on the coral reef two 172 ft. cantilever arms swung out to the phosphate ships and electric belt conveyors loaded both fore and after holds simultaneously at the rate of a thousand tons per hour.

To-day all this complicated equipment is probably just a mass of twisted steel. The phosphate, however, is still there. When the island is once more in Allied hands exports of this valuable fertilizer will no doubt be resumed as soon as possible. It plays an important part in the farm economy of both New Zealand and Australia. At present shortage of fertilizer is limiting our supply of foodstuff to Great Britain.

DIVISIONAL PRESS

Mobile Printing Unit in Last War

Printing presses with the forces in forward areas are not uncommon in this war. Men who have served in the Pacific and in the Middle East will be familiar with publications produced by the Army for the troops in these theatres of war. In the last war, the New Zealand Division had a mobile printing outfit for printing Divisional Orders and anything else "from a louse ticket to a short catalogue." A. B. Clark, who established this mobile press, tells about it in this article, reprinted from "A History of Printing in New Zealand."

WE WERE AT FLEURBAIX, and at six a.m. I had come in from the "listening post" after a night of vigil in the cold, cold snow. I was hailed with the greeting: "Hey, Nugget, you have to go down to Divisional Headquarters for the duration." My disbelief was cut short by a sergeant who advised me to have a shave and "get going."

Two hours later I appeared at Laventie, and was immediately brought before General Russell, Lieutenant-Colonel H. G. Reid (Assistant-Adjutant and Quartermaster-General), and other officers. After some preliminary questioning Lieutenant-Colonel Reid explained that the Divisional Officers desired to have a printing outfit, and asked me what would be the size and cost of a plant. I estimated £160 and the assistance of four men. This was agreed to, and the four men were sorted out.

This business completed and a list of my requirements drawn up, I was instructed to proceed to London the next day, and on arrival at the city to call on Brigadier-General Richardson, who might give me some assistance. It was eight p.m. when I arrived at the paymaster's office, and the following conversation took place:—

"Don't you know this office closes at four p.m.?"

"Yes, sir, but I have just received my instructions."

"Where's your pay-book?"

This was produced and elicited that there was no credit.

"There's nothing to come," said the paymaster.

"Well, I cannot accumulate on 1s. a day."

"I suppose you will have to have some cash, here is £10." Subsequently the officers gave me another £10, which was both welcome and appreciated.

On arrival in London I proceeded to Brigadier-General Richardson's office. He was very hazy about the business, saying: "I do not know where you are going to obtain this stuff, whether from the pawnbroker, the bank, or the dump; but you had better get it."

Armed with authority my next call was to Stephenson, Blake, Ltd., where I secured a new Arab platen, three series of type eight to thirty-six point, coat-of-arms, and various other items neces-

sary. My mission was now completed, but before I could return to headquarters I received a cable to remain in England and hunt up some cases of goods that had gone astray and were urgently needed at the Front. It took six weeks to find these goods, the last case turning up at Ashley.

On my return to Boulogne I discovered that my printing-plant had disappeared. Frantic questioning in bad French elicited nothing more tangible than four contradictory alternatives.

Finally the Admiralty informed me that the ship had gone back to Folkstone without putting in to Boulogne on account of the Germans laying mines during a fog. This, however, was also incorrect, for when I arrived at Divisional Headquarters wondering how they would take the story of the delay, I was surprised to find that the plant had preceded me and the staff were already at work. In this fashion the only mobile printing outfit in the Great War of 1914–18 came into being.

The printing-plant was first set up in a shed in the beautiful grounds of a lovely chateau. This did not last, unfortunately, and we were shifted about all over the line, sometimes in snow and mud. In some places we only stayed a day, but always so long as the New Zealand Division was in the line we were with them.

Sometimes we occupied a partly-demolished building, or a stable, or a conservatory, any old place at all. On one occasion we set type in the open air. Only once did we miss the Orders. This was at Ypres when the troops left Passchendaele. All transport was urgently required, and our truck was commandeered. Stranded on the banks of the canal we printers were accompanied by the Sanitary Squad, a Sergeant-Major, and the cook. We were there three days, and picked up the division at Haasebrook.

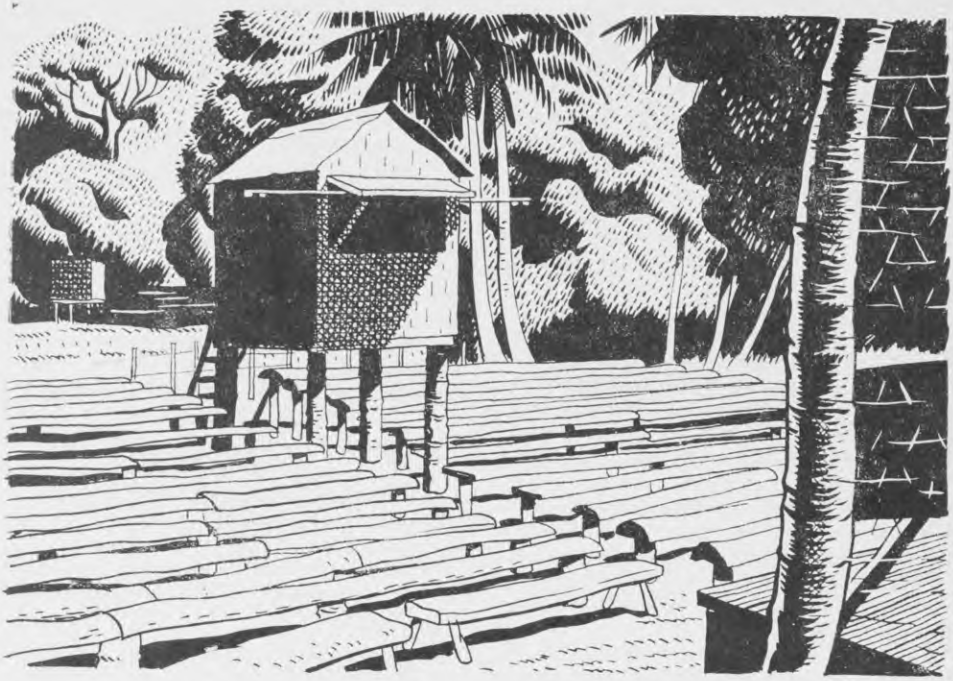
In addition to Orders we printed everything from a "Louse Ticket" to a short catalogue.

Life on the press was not without its exciting moments. On one occasion just prior to the Battle of Messines we were billeted at Westhoef Farm, together with members of the headquarters staff, when one night a stray shell burst in our midst, killing half a dozen and wounding a like number. For the rest of our stay there we slept out in the open.

At Ypres, too, we had another shock. Just as the lorry with the plant arrived at the back of the canal, plomp came a shell, which, fortunately, landed in the mud. I interviewed the Colonel to ascertain if we were to carry on, and he replied "Certainly." Everybody else was under cover.

We occupied an old building with two walls demolished, and put up scrim to keep out the light on the open side. We started to print Routine Orders when a Major's body was passed through the printery to the sand-bagged dressing shed at the back. The Ford driver had switched on the lights to negotiate a corner at Ypres and a Fritz airman had got him.

Through having their own press the New Zealand Division had this advantage: Once the appointments and promotions were printed and published the positions and salaries became effective immediately. General Godley, who had his Orders printed in London, was always a fortnight behind the Division.



FILMS IN THE ARMY

A KORERO Report

THE DRAWING above shows a picture-theatre of a type now familiar to thousands of New Zealand servicemen in the Pacific. Indeed, wherever a sizeable body of troops establishes a camp which is something more than a bivouac, a picture-theatre of sorts usually comes into being. The minimum requirements are a shelter for the projector and two trees for hoisting the screen.

The development of the 16 millimetre projector, which can be carried round almost as easily as a portable typewriter, has in this war enabled the cinema to go with troops right up to the combat zones.

Films have three uses in the Army: training, education, and entertainment. Training films are the concern of "G" Branch and are distributed by it through the A.E.W.S. film organization. Educational films—mainly documentaries and news reels—are the concern of A.E.W.S. In New Zealand few entertainment feature films are available in 16 millimetre, but in the Pacific 16 millimetre entertainment films are made available for showing to New Zealand units by the American Special Service Division. The National Patriotic Fund Board also has some 35 millimetre entertainment films and maintains three 35 millimetre projectionists in the Pacific.

The A.E.W.S. films staff have been trained at a course at Army H.Q. and have qualified by examination to hold appointments as 16-millimetre projectionists. In accordance with the practice of the British Army, the projectionists receive certificates of qualification in three grades. Only small classes are taken, and the syllabus covers a wide range, the object being to give each operator a good background of knowledge on the history of the film and methods of teaching by visual aids.

THE BATTLE AGAINST DEATH

A KORERO Report

DURING THE year ended March 31, 1943, nearly 30,000 battle casualties were admitted to hospitals in the Middle East. The total deaths were 611, a percentage of 2·1. The mortality percentage in hospitals in Egypt and Palestine during the last war was 7·44. Towards the end of the last war one British hospital in France had 1,300 severely wounded patients; of these, 113 died. In the Tunisian campaign a similar hospital had 1,500 severely wounded; only 5 died.

These two facts give ample proof of the strides made in the British medical services between the two wars and during this war. Medical and military authorities attribute this steep decline in deaths among the wounded to three things:—

(1) Increased facilities for speedy treatment of the wounded either by moving mobile operating theatres as near as possible to the front line, or by swift evacuation of casualties by air.

(2) The use of the sulphonamide group of drugs and extended facilities for blood transfusion.

(3) Improved technique in training medical orderlies.

Surgeons, specialists, and nurses now work closer to the front line than ever before. Often they operate with bombs and shells dropping round them, because every hour of reduction of the time-lag between being wounded and being operated on increases a man's chances of recovery.

The importance attached to medical facilities as near as possible to the front line is stressed in the creation of parachute field ambulances, surgical units which drop with British paratroops. Flying surgeons and N.C.O.s train with the paratroop battalion, and with them when they jump goes their equipment ranging from operating tables to safety-pins.

The first parachute ambulance unit dropped with the force of paratroops which landed behind the German lines at Beja in Tunisia and captured the town in advance of the oncoming British forces. The Surgeon Major of the unit, Charles Granville Robb, fractured his shin bone and rammed the bone into the knee-cap when landing. In spite of this he assembled his unit and in all performed 160 operations on German prisoners, native air-raid casualties, and British personnel. He periodically drew the fluid off his swollen knee and gave himself injections. Finally, when a blood transfusion was urgently needed, he gave a pint of his own blood to the patient on the table. He was the first paratroop doctor to win the Military Cross.

The alternative to operating in the front line to save the time-lag between the wound and the operation is the swift evacuation of casualties by aircraft.

During the North African campaign more than 15,000 casualties were evacuated by air. The R.A.F. and the U.S.A.A.F. conveyed by air from Sicily to North Africa 14,898 sick and wounded. Both air ambulances and transports adapted to take stretchers were used.

The aircraft do not only carry the wounded back to safety and care; they also carry doctors and medical equipment forward. During the Tunisian campaign the R.A.M.C. flew an entire hospital to the Americans when a severe battle produced an abnormally high rate of casualties. In a single day the hospital equipped with 200 beds was flown up and set running behind the American lines.

The use of the sulphonamide group of drugs (the famous M. and B. 693 and others) has revolutionized military medicine. Sprinkled on the wound in powder form they reduce enormously the danger of sepsis.

An even more potent weapon, though it is available only in small quantities, is the wonder drug penicillin. This has already produced astonishing results in curing bad wounds and severe cases of wound poisoning.

Blood transfusion has proved one of the war's miracle developments. In the

campaign in France in 1940 whole blood, which in refrigeration could be stored for between two and four weeks, was available. To-day plasma, or blood in dried form, is sent from Britain and can be kept for any length of time without refrigeration.

Transfusion of blood is the initial agent in saving the lives of men suffering from severe shock or who have lost a lot of blood from a wound. So vital and valuable is blood transfusion that trained teams have crawled forward to wounded men isolated in battle areas and saved their lives by administering transfusions on the spot.

The surgeon who comes to grips with wounds and death, like the battleship which comes to grips with the enemy, is a spectacular figure in military medicine. But just as important, like the ships which only do convoy work, are the doctors who maintain the health of the Army at a high level. In the tropics and sub-tropics the efficiency of the forces depends first and foremost on the hygienist. And the day-to-day work of the medical officers and orderlies is contributing as much to the better health and greater resistance of the forces as is that of the surgeons who perform miracles under fire.

AIRFIELD ISLAND

A KORERO Report

FEW PEOPLE are aware of the colossal effort which enables the R.A.F.'s bombers to be marshalled from forty to fifty airfields for a single attack against Germany. This effort is illustrated by the following facts partly included in a recent issue of the *Times*, London.

The average R.A.F. airfield is 2 to 2½ square miles in area, surrounded by a 5-mile perimeter track 50 ft. wide. Inside are three runways: one of 2,000 yards, two of 1,400 yards, all 50 yards wide. The larger airfields have four runways, 3,000 by 100 yards.

The total area of the runways and perimeter tracks of British airfields is nearly 160,000,000 square yards, equivalent to 9,000 miles of road 30 ft. wide. The total area of all British airfields is 250,000 acres, equivalent to 196 airfields of the average type described. The average airfield costs £1,000,000 to £2,000,000. The total cost to date is £615,000,000, of which £497,000,000 has been spent on R.A.F. airfields, and the rest on lend-lease to U.S.A.

To build these airfields cost Britain an immense effort. The runway concrete averages 9 in. thick. This required 30,000,000 tons of materials for all airfields, partly supplied from bomb-rubble. London alone supplied 1,250,000 tons of hard core for this purpose.

The materials needed for the airfields built for the U.S.A.A.F.—over 100 in number—would fill a lorry convoy 22,000 miles long: the vehicles actually hauling the material covered over 25,000,000 miles, the equivalent of a thousand times round the world.

In addition, airfield buildings required 18,000,000 cubic feet of wood and 1,000,000 tons of steel and cast iron. Six of the U.S. airfields required over two thousand buildings. British factories contributed 336,000 miles of cables and nearly 7,000 electrical transformers.

E. V. PAUL, Government Printer, Wellington