VIRTUTE INDUSTRIA

THE JET

Bristol's AFS Magazine

3d.

MAY

THE JET

Bristol's AFS Magazine

VOL. I. No. 5. MAY, 1940

WITH the sudden moving of the theatre of war, as indicated by recent developments in Norway, we cannot ignore the possibility of surprise air raids occurring over this country. The watchword of the A.F.S. should at all times be " preparedness " : if, and when, the testing time should come, this Service must not be found wanting. Perhaps the knowledge that we are fully prepared for defence against large-scale aerial bombardment may account for the fact that this country has not yet been subjected to such an attack. Just as the old fire office brigades provided a safeguard to the various companies by whom they were employed, let us think of the Auxiliary Fire Service as Britain's insurance against incendiarism from the air. Efficiency and vigilance in this Service are of prime importance, and may prove a decisive factor in the final issue.

Last month's *Jet* reached the record circulation of over 3,500, largely through the energetic salesmanship of a few Stations. In view of the rising cost of paper and printing, it is hoped to maintain and even improve on this figure in order to avoid putting the price up.

An estimate for binding covers is being obtained, and in connection with this I would again remind readers to keep their copies clean and intact. Apart from being an invaluable reference book on many branches of fire fighting technique, the twelve months' copies bound together will form a unique souvenir of the part played by the A.F.S. in the defence of Bristol's civilian population during the war.

J. J. Kirkup

EDITOR

FIRE FIGHTING HINTS

OBEY the orders of your superior officer to the letter.

Avoid sharp bends and kinks when running out hose, and make certain that the washers of the female couplings are in position.

Remember to face the source of water when breaking hose couplings.

Before shipping the valve standpipe, ascertain that the lugs are screwed right down and that the washer is in position.

In the case of the plug standpipe, keep the wheel valve *open* until after it has been shipped ; otherwise water pressure from the main will make it almost impossible to keep the standpipe in position, especially in some parts of Bristol.

Treat all fire appliances with great care. Many of these are constructed of brass and can easily be rendered unserviceable by careless handling. Untold damage can be caused through dropping loose couplings or branchpipes, and defects may pass unnoticed until connections are attempted—often unsuccessfully.

When there is a fire inside a room, keep the door closed until appliances are ready to operate.

Few people realize the importance of keeping doors closed. An ordinary panelled door will keep a fire at bay for quite a considerable time.

Many fatalities are caused through people who are trapped by fire flinging open the door of the bedroom, and then being met by a wave of flames and smoke. If they are not immediately overcome their first action is generally to throw open the window, thus creating a through draught from the staircase which may set fire to the whole room almost at once.

Never open the door of a room in which there is a fire and walk straight in. If the door is hot to the touch, it is a good plan to place your foot a few inches away from the opening edge and press against the door with one hand : then stand well back and open it gradually. You will thus be shielded from the rush of smoke, flames and fumes which might easily overcome you, and if necessary the door can be shut again without trouble.

When entering a smoke-filled room, keep your mouth as near the floor as possible. By this method a person can enter a room in which it would be impossible to walk upright without being overcome. Small, shallow breaths are preferable—gasping for air merely fills the lungs with scorching smoke. Self-contained breathing apparatus should be used if it is necessary to work in dense smoke for some time.

Take one end of a line with you when entering a smoke-filled building. This will enable you to find your way back to the entrance

without difficulty, especially if you are on strange premises where it is quite possible to lose your bearings (e.g., large warehouses, store cellars, etc.).

Keep to the sides of a room if there is fire raging below. The centre of the floor is generally the first part to give way, and even if this does happen, the ends of the rafters remaining around the sides will often provide a certain amount of support.

Another point to remember when working at a fire where dense smoke is encountered is to make quite certain that water is reaching the seat of the fire. There may be a wall or partition between the fire and the branch, in which case the jet would not reach the actual fire.

When using the staircase in a burning building, keep as close to the wall as possible.

To rescue an insensible person from a smoke-filled room, first tie his hands together with a piece of cord. Then place your head through the loop formed by his arms, straddle the person and crawl out as shown in the illustration. Alternatively, a short piece of rope with a bowline at each end can be used. One loop is placed under the armpits of the person to be rescued, who is lying on his back, the other under the armpits and around the waist of the rescuer.

Never allow persons whose clothes are alight to remain standing Roll them at once in a coat or blanket, and if they start running, trip them up. Under no circumstances should flames be allowed to reach the chest or head.

Premises that have been on fire should be examined carefully to make sure that there is no possibility of fire breaking out afresh. This sometimes occurs when fire spreads unnoticed behind lath and plaster walls, matchboarding and wainscoating, and between ceilings and wooden floors above.

It is extremely dangerous to enter burning premises for the following reason. Fire in an enclosed building causes the temperature of the atmosphere to rise, and it becomes impregnated with carbon monoxide gas given off by the burning materials. Opening a door or breaking a window causes an in-rushing of fresh air (charged with combustion-supporting oxygen) which combines with the heated gases inside the building to form a highly-combustible explosive gas, and a " back-draught " explosion becomes imminent.

Fireside Corner

IF THE CHIMNEY CAUGHT FIRE AT HOME— WHAT WOULD YOU DO?

First exclude the draught by shutting doors and windows. Then throw common salt or powdered brimstone on the fire and hold a wetted blanket or other article before the fireplace to exclude the air completely.

The gas given off by the salt or brimstone ascends the chimney and eventually extinguishes the fire, unless it is particularly fierce.

WHY NOT FIREPROOF YOUR LINEN?

Children's dresses, curtains, etc., can be rendered non-inflammable (or so slightly combustible that they will only smoulder slowly on contact with fire) in the following manner :

Add one ounce of alum, or sal ammoniac, to the last rinsing water. Strong borax water can also be used.

Remember that this process must be repeated after articles have been washed if it is to remain effective.

DO YOU GROW BROAD BEANS?

If so, remember that the pods are edible as well as the beans themselves.

Select young pods and slice them up in the same way as you would runner beans. They are then cooked in the usual manner.

HOW I ESCAPED THE SCAFFOLD

Auxiliary Fireman Describes his Experience Flirting with Death

In an exclusive interview to *The Jet*, the hero described his terrible experience when the hose-tower at Redland D.H.Q. was blown down by the wind.

When asked to say a few words, he declined, but was eventually persuaded to remark, with characteristic modesty, that " It came away in me 'and."

FILTON A.F.S.

Extraordinary Coincidence

Ting-a-ling-ling ! The telephone bell rang urgently in the A.F.S. Watchroom at 20.36 hrs. on March 14th.—" Hello "—" Fire at Charborough Road "—" Come on, jump to it ! " said the Officer-in-Charge. In less time than it takes to tell the A.F.S. were on the way.

On nearing the scene of the fire one of the Auxiliaries suddenly exclaimed, " It's my house ! "

It was his house. Happily no extensive damage was done.

NOT 'ARF !

The following query has been received :

" According to the teaching of the A.F.S. :—

(1) A vacuum is an enclosed space devoid of all substance., i.e., solid, liquids or gas.

(2) A perfect vacuum is equal to 30 inches of mercury.

(3) When a pump is working, its suction pipe, pump casing and delivery pipe are all full of water.

(4) When using a pump with its maximum positional lift of 28 ft. 6 ins. a reading is shown on the compound gauge of 28 ins. approx., this being on the suction side.

Does this mean that the suction side of a pump and its suction pipe are freaks of nature in so much that they are empty when they are full and full when they are empty ? "

" DROWN YOUR TROUBLES WITH THE A.F.S."

Sic Transit Gloria Gospo

Sport & Social

CENTRAL.—A team from Headquarters visited Bedminster on April 24th ; results of the various matches are given in the Bedminster notes. Despite their defeat, Central are still throwing out an open challenge—especially at Darts ! S/O Nutt is also anxious to avenge his defeat at the hands of S/O Stallard.

Association Football. — North Bristol Station " A " Platoon played a team of " part-timers " on the Downs on April 17th. Result was a conclusive win for the Biscuiteers by 5 goals to nil.

Another match was played on April 24th against Redland " B " Platoon (see Redland notes).

Table Tennis.—Durdham Down Adult School visited North Bristol on April 16th, but no result is available as the match had to be curtailed through exercises.

Skittles.—April 12th a combined team of part and whole time men from Horfield played the City Foresters, losing by 28 pins.

A match was also played against the *Fellowship* on April 24th, when North Bristol A.F.S. again suffered defeat.

Whitehorns Station " A " Platoon played a Darts match against the " part-timers," resulting in a win for the whole time men by 7 games to 1.

REDLAND. — Association Football.—D.H.Q. "B" Platoon were by no means flattered when they registered their first win over a team from Central Division on April 24th. The match provided plenty of thrills—especially in the goalmouth!

" A " Platoon played the A.A. Signals on the Downs on April 18th, result being a win for the Army by 3 goals to 2.

Table Tennis.—A needle match took place on April 19th between the two Platoons. " B " Platoon were eventually beaten by 70 points and 18 games to 7 after keen duels.

Snooker.—A team from Redland "A" Platoon wiped the floor with St. George D.H.Q. on April 27th. Although Glebe Road managed to win two out of the four games (owing to their home advantage), the issue was never in doubt and Redland won by 7 points.

BEDMINSTER.—Another Dance in aid of the A.F.S. Wool Fund was held at St. Aldhelm's Hall on April 10th, organized by Sub-Officers Heal and Southard, together with members of South Central Station. Mrs. J. Y. Kirkup, Mrs. R. Hopkins, D/O Duggan and S/O Stallard were guests of honour.

Music was provided by the A.F.S. Dance Band, and the result of a very pleasant evening was that the Fund benefited by £4 2s. 0d.

Association Football.—An enjoyable match between "A" Platoon, Bedminster Station, and Hemplow House was played on April 3rd. With Hemplow winning 2 goals to 1 ten minutes from time, the ball burst and, according to Bedminster, prevented them from winning by 3 goals to 2 !

A very pleasant evening was spent at Bedminster D.H.Q. on April 24th, when a team from Central visited us and played Snooker, Darts, Table Tennis and Skittles matches. Bedminster won three of the four events.

Skittles.—A match with the "Specials," under Inspector Horton, was played on April 25th. Bedminster A.F.S. lost by 15 pins, but are hoping to avenge their defeat in the future.

Snooker and Table Tennis matches were also played this month against St. George, home and away. Honours even.

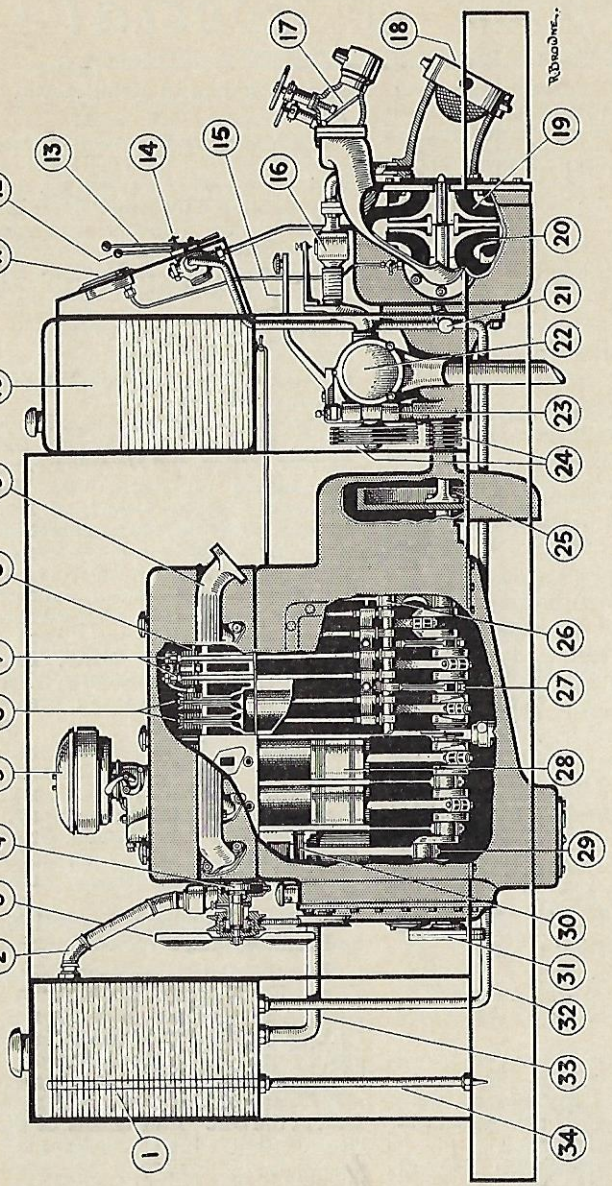
Cricket.—Bedminster has full kit, and challenges any Station or Division.

ST. GEORGE.—Glebe Road thoroughly disgraced Redland " A " Platoon at Snooker on April 18th, tanking them by 15 points and 3 games to 1. Redland were also overwhelmed at Table Tennis and Darts.

It is realized that this match was a flash in the pan. Full details of the return match, which indicates more accurately the strength of the opposing team, are included under the Redland notes.

St. George played Kingswood A.F.S. at Snooker and Darts on April 19th. For results see page 146.

LEYLAND HEAVY PUMP showing Essential Parts



1—Water Tank.
2—Engine Cooling System Outlet Pipe.
3—Fan.
4—Water Pump Impeller.
5—Carburettor.
6—Overhead Valves.
7—Push Rods to Overhead Valves.
8—Oil Pipe.
9—Exhaust Manifold.
10—Fuel Tank.
11—Pressure Gauge.
12—Throttle Control Lever.
13—Ignition Lever.
14—Filter Control for Cooling System.
15—Priming Lever
16—Priming Valve between Inlet and Exhauster Pump.
17—Delivery Valve.
18—Suction Inlet.
19—Impeller (First Stage).
20—Impeller (Second Stage).
21—Gland Packing Adjusting Mechanism.
22—Exhauster Pump.
23—Exhauster Pump Spring-loaded Frame.
24—Exhauster Pump Friction Drive.
25—Flywheel.
26—Camshaft.
27—Crankshaft (with seven bearings).
28—Piston.
29—Big End Bearing.
30—Gudgeon Pin.
31—Crankshaft Damper.
32—Supply Pipe for Engine Cooling.
33—Engine Cooling Inlet Pipe.
34—Cooling System Waste Pipe.

LEYLAND HEAVY PUMP

By Transport Officer Powell

TWO Leyland pumps are at present in service in Bristol, each of which is mounted on a fire float. No. 1 Fire Float has a 30 h.p. six-cylinder engine, and No. 3 a 50 h.p. engine.

The Leyland engine has an " open " cooling system, whereby water from the main pump is used for direct cooling instead of through a coil immersed in the radiator tank. It is imperative that the cooling system is filled up before starting pumping operations ; the main pump must not be relied upon to fill the radiator tank and cooling system.

Leyland pumps are of the two-stage centrifugal type. Water from the first or low-pressure rotor is directed through channels in the pump casing to the second or high-pressure rotor, thence to the delivery valves. The two-stage centrifugal pump is a feature of the Leylands, and is undoubtedly very efficient in the higher horse-power class, as the Regular Fire Brigade appliances bear witness.

Priming is by a separate two-cylinder reciprocating pump fitted with rubber valves for inlet and delivery. It is of the utmost importance that the engine should not be running fast when this priming pump is being used, as serious damage may result. The vibration is terrific if the engine is raced with this pump in operation ; one reason is that it is not balanced for high speeds.

In draining the cooling system during frosty weather, particular attention should be paid to the cooling circulating pump at the front of the engine which is driven by a belt. There is a small plug underneath for the purpose of draining this pump, as it is not affected when the usual drain tap is opened.

Propelling power for No. 1 Fire Float is provided by an 80 h.p. Kermath marine engine, which is of American manufacture. This is a six-cylinder with battery and coil ignition. No. 3 Fire Float is driven by a 40 h.p. four-cylinder Kelvin, an English make of engine with magneto ignition only which can be adapted for running on paraffin.

These marine engines are cooled by a circulating pump drawing water from the harbour which is passed around the water-jackets and through a jacket cast around the exhaust manifold, thence to waste.

In conclusion, I should like to take this opportunity to express my thanks to P/O Wiltshire and A/F R. Browne (No. 5 Station, Bath Buildings) who have been responsible for the excellent illustrations accompanying this series of articles on the A.F.S. pumps.

With the W.A.F.S.

FIREMAN'S LIFT AND ALL THAT

(Reprinted from the W.A.F.S. Magazine)

"COME on," I said to my sister, "I've learned all about getting suffocated people out from a fire and I want to practice on you."

"Must you?" she asked dubiously.

"It's very important. And if I show you, then you can practise on me."

Incited by this Margaret fell in a beautifully limp heap on the hearth-rug. I couldn't get at her, but rather than disturb her realistic pose I pushed the table further away, and removed one chair complete with cat.

"I will now demonstrate the world-famous Fireman's Lift, I said confidently.

I took up my stance across her body, turned her over correctly face downwards, but with her head carefully placed sideways and her toes pointing neatly outwards. I then transferred myself to her head end, put my arms under hers and proceeded to heave—I mean to lift her.

"Oh!" she cried, "You're tickling!"

"Don't be absurd!" I gasped. "You're unconscious, anyhow."

Margaret subsided. I heaved once more. And then some. Finally, with tremendous effort I raised her six inches—then dropped her, nearly falling on top of her myself.

"Have you got it quite right?" she asked mildly.

"Of course I have! But you're all wrong somehow, and it won't work."

When I had got some breath back I took courage again.

"Let's leave that one for now. Here's another method. Lean over the table—flat—as if I'd picked you up unconscious and flopped you down. Then I'll kind of creep under you and hoist you on my shoulders. It's quite easy that way."

Margaret meekly followed my instructions. I then endeavoured to burrow under her body. Result: one bruise on my forehead where I hit the table edge. She remained exactly as put.

"That doesn't seem quite right either," she remarked when allowed to stand up.

"Well, there's a third way," I answered, not to be daunted. "I'll get you out of a smoke-filled room and down the stairs. It's the most exciting of the lot. Come on upstairs and I'll show you how that's done."

"How?" she enquired suspiciously.

"I just tie your hands together, loop them over my head, and drag you out backwards. That is, I go backwards from the room, on my knees probably, and then on down the stairs."

"What's happening to my feet?"

"Oh, they're all right. They just bump down after us. It doesn't hurt. He said so!"

"Let's practise the room part down here first."

I agreed reluctantly. So Margaret resumed her pose face downwards on the hearthrug while I knelt in front of her, head on, as it were. I had nothing with which to tie her wrists so she clasped her hands tightly and flung them over my head. I then proceeded backwards with great skill, dragging her after me. At least, that was the plan. As a matter of fact, neither of us budged so much as half a yard.

Breathless, we both succumbed on the floor.

I have now decided that if my sister is suffocating in a burning house and depending on me to rescue her, she'll just have to suffocate. A pity!

MARY PITCAIRN

• • •

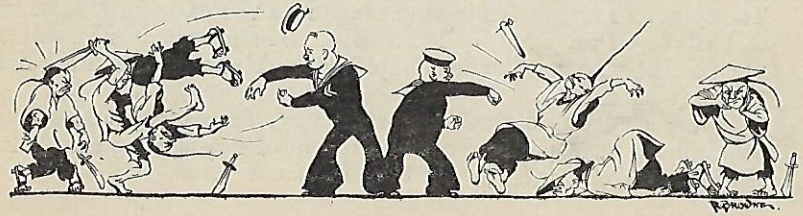
OH SERGEANT!

THE Sergeants rave and fuss,
But that doesn't worry us;
For we are the legend-breakers
Who foster no love for fakers.

Their tales of the "Chinese Wall"
We think are rather tall,
So often we retire,
To avoid calling someone "liar."

To the Navy they both did belong,
In fact, the Admiralty were wrong
To dispense of their services (clever?),
Or did they sigh "Dumb-bells for ever!"

Their far-fetched tales of adventure
Would hardly get past the Censor,
In fact their inventive fame
Would put Dr. Goebbels to shame!



"STEAMERS"

By Geoffrey Bennett

A glimpse of the days when flames were fought by flames and horse-drawn engines raced through the streets amid a shower of sparks

Reminiscences of Sergeants Wilkins and Smith

THE first steam fire engine made its appearance in London in the year 1829. It was built by Messrs. Braithwaite and Ericsson, and could throw a fire jet ninety feet in the air. The 7-inch diameter steam piston and 6½-inch diameter water piston of this 6 h.p. engine were attached to one beam and worked alternately. Output was approximately 900 gallons an hour. John Braithwaite, born 1797, was one of a famous engineering family, and it was his father who made one of the first diving bells.

According to contemporary accounts, Braithwaite's steam fire engine was a great success. When a fire occurred at the Argyle Rooms in February, 1830, it proved far superior to the manual engines, working for five hours without a hitch. The same year this engine was used at the English Opera House fire, and in 1834 at the great fire at the Houses of Parliament.

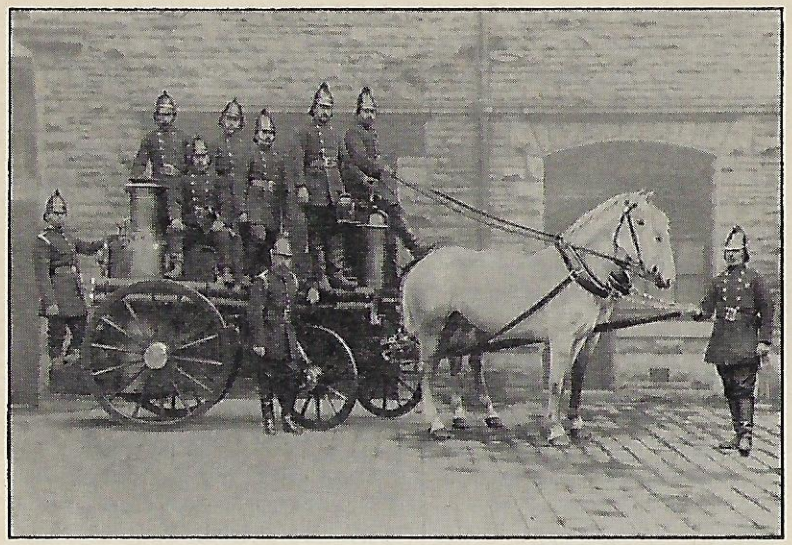
The significance of steam in the history of the fire engine lies in the fact that up to this time manual engines were the only appliances available. A large manual required anything up to sixty men (working in relays) to operate it—the steam engine one man. The prospect of crews being thrown out of employment through the introduction of steam may account for the bitter prejudice which existed against this first steam engine. Even when it had proved its efficiency at the fires mentioned above, Braithwaite's engine was eventually destroyed by an angry mob.

In 1852 the Thames fire-float was converted to steam by Messrs. Shand Mason, who also sent a steam engine to St. Petersburg. Another steam appliance was hired by the London Fire Engine Establishment in 1860 : although it proved its worth, only two steam engines were employed at the great Tooley Street fire, June 1861, which raged for a month before it was finally extinguished.

An important competition was held at the Crystal Palace in 1863 which gave the steam fire engine an opportunity to come into its own. Competitors were the various firms specializing in fire-engine construction, and the first prize in the large class was won by Messrs. Merryweather and Sons, the second going to Messrs. Shand Mason and Co., who also took first prize in the smaller class.

" Steamers," as these fire engines were called, soon became popular. The system of pistons for driving the pumps was exactly the same as that employed on a railway locomotive. The air-chamber principle was precisely the same as that employed on Newsham's manual fire pump (see page 65).

I was chatting to that inseparable pair, Sergeants Wilkins and Smith, both of whom have a grand record of fire-fighting service in Bristol to their credit.



Sergeant Wilkins told me that the first Central Fire Station comprised a yard, engine house and stables, and was situated upon the site of the present yard at Bridewell. He even remembers when the Imperial Fire Office had a station for their manual pumps in Nelson Street, where the entrance to the Police Station is now.

The accompanying photograph, taken prior to 1880, shows one of the earliest horse-drawn steamers used by the Bristol Fire Brigade. The brass cylinder at the front of the engine is the air-chamber, which was a conspicuous feature of these early steamers ; the pumps were fitted horizontally. Standing at the horses' heads is the driver, or coachman as he was called, while at the back is the " steam man " or engineer, who was in charge of the engine at the fire. The officers generally rode on either side and manipulated the brakes.

In those days directly a call of fire was received, the switch for the bells and lights was raised and a lever pulled which opened the doors of the engine house. The two horses were led out from their stalls to alongside the centre pole of the engine, and instantaneous-coupling collars, with traces attached, were clipped around their necks.

Water in the boilers of these old steamers was always kept at a high temperature by means of a gas-burner, and a fire was always kept laid in the fire-box (pitch pine sticks, shavings, etc.). Directly a call of fire was received, the burner was removed and the fire lit with a torch of oily waste ignited from a gas jet, or fusee matches. Even when a false alarm was received the same action was taken, and the fire had to be re-laid immediately on return.

A thrilling sight indeed as the engine raced through the streets, with smoke pouring from the funnel of its highly-polished brass boiler, and sparks flying from the fire-box ! People used to think that these sparks were caused by the horses' hoofs on the cobbles ! The draught

brought about by the speed of the engine was quite sufficient to draw up the flames under the boiler, and a good head of steam would generally be raised within five or six minutes. Specially-prepared coal fuel was used at the fire.

Sergeant Wilkins remembers when leather hose from the old manual pumps was used up for repairing brake-shoes of the engines and making washers for riveting canvas hose. In those days, he said, four firemen lived outside the Station in Silver Street (which was then inhabited by foreigners, chiefly Italians). When an alarm was raised, these firemen would dash into the Station—and cause a great commotion if the gates had been accidentally shut !

A famous steamer in Bristol for many years was the " *Cabot*." Built by Merryweathers, it was the pride of the Brigade, and gained a great reputation for trojan work at many a fierce blaze. It was first stationed at Central, and later transferred to Bedminster. Sergeant Wilkins mentioned that the last time he saw this fine old engine in action was pumping out dykes during construction of the Bridgwater road.

Another interesting feature of the days of the horse-drawn steamer was the " dropping harness." Directly above the centre pole of the engine were suspended the collars and traces, held at intervals by quick-release clips. The whole affair was counterbalanced.

" Immediately the alarm was heard, a handle was pulled in the watchroom which released the catch on the stable doors," Sergeant Smith told me. " The horses were cleverly trained to trot out from their stalls at the rear of the engine and take their places alongside the centre pole, a pull would bring the harness directly over the horses, the bridle was inserted, and a turn-out effected in less than a minute." Incidentally, these horses were used for police purposes as well as fire brigade work.

Even in these early days collapsible canvas dams were used at fires if water from a static supply was not available. These were of 300—400 gallons capacity, and were either filled with goosenecks, or a length of hose from the hydrant was coupled direct to a male coupling fitted into the side of the dam.

Bristol Museum has recently acquired an ancient steam fire engine, built *c.* 1890 by Messrs. Shand Mason for the private brigade on the Badminton estate. Also on view are the brass and leather firemen's helmets bearing the crest of the Duke of Beaufort. A very similar type of engine to this—the " *Gem* " (Merryweathers)—was used in Bristol.

By the early 1900's steam fire engines were capable of raising 180 lb. pressure of steam, and delivered anything between 350 and 1,000 gallons of water per minute. Horse-drawn steamers were replaced by steam or petrol-driven motors, and oil burners heated the boilers instead of wood and coal. But although to-day the old steamers have given place to powerful motor appliances, the romantic days of galloping horses, smoking funnels and flying sparks will never be forgotten.

Letters to the Editor

(All Correspondence in connection with this Magazine should be addressed to the Editor, A.F.S. Headquarters, Rupert Street, Bristol, 1.)

SIR,—" In a communication from Coventry Climax Engines, Ltd., your excellent article on their pumps in *The Jet* was mentioned.

Having read one of your copies I consider it a grand effort which should be appreciated by readers in Bristol, and I here and now extend to you our best wishes for its success from Plymouth.

Yours truly,
A/F GEORGE VOSPER"
Editor of the *Collector*,
Plymouth A.F.S.

SIR,—" My father, who is an old fireman, wrote the enclosed article many years ago. I sent him the April issue of *The Jet*, and the article entitled " How Fire Brigades Began " put him in mind of this old cutting.

Yours truly,
D. HEYDEN (Mrs.)"
Bedminster Report Centre.

(The article is entitled" A Short History of Fire Brigades," and was written by Robert Turner, late of the Rushden Brigade.—EDITOR.)

SIR,—" In the article ' How Fire Brigades Began,' in the April edition of our magazine, Mr. Bennett mentions a famous fire office named the ' Hand in Hand.'

It is rather interesting to note that in the March edition of *Fire*, in an article on ' Technical Progress in the Fire Service ' by the Principal Officer of the Cork Fire Brigade, the Hand in Hand is also mentioned, as follows :

' Following quickly on the great fire of London in 1666, came the first fire insurance company, formed by a Dr. Barbones . . . This opened an era of fire fighting in England, because other insurance companies sprang into being . . . and each had its fire brigade composed of Thames watermen . . . In the brigade of the Hand in Hand was a fireman named Tozer, destined to be the first of a long line of distinguished fire-fighters. I had the honour to serve under his great-great-grandson, Mr. A. R. Tozer, O.B.E., who is still chief of the Birmingham Fire Brigade, with a son as deputy-chief to continue the Tozer tradition. In the museum of the Birmingham Fire Brigade is the blue fire tunic worn by the first fire fighting Tozer. The scarlet braid is twinged by time, but there, for everyone to see, is the badge of the Hand in Hand —one hand clasping another—embroidered skilfully on the left arm.

Yours faithfully,
H. C. WILTSHIRE "
P/O 587, No. 5 Station.

SIR,—" Will you kindly accept my thanks for the wool garments I received this morning. I appreciate this very thoughtful act of kindness very much indeed, and wish you to convey my heartfelt thanks to all the ladies who have spent their time knitting these articles in order to add to our comfort while serving in His Majesty's Forces.

Yours sincerely
C. H. CHOULES."

SIR,—" I am writing this on behalf of Private G. J. Jones and myself, to tender our very sincere thanks to you and all the wives and friends of members of the A.F.S. who have taken the trouble, and provision of funds, to make our lives a bit more comfortable by sending the knitted garments.

Not only ourselves, but for thousands of others like us, it is the first time we have been parted from the ones we love, and when all of you who are left behind show that you are thinking of us by sending such gifts, we feel that we will go on to the bitter end, and with a much more willing spirit.

Good luck and good health to you all.

Yours very gratefully,
C. J. MANNING,"
Royal Army Pay Corps.

And Yet I don't know—

So that's where our ping pong ball went !

It has been rumoured that new additions to the families of Auxiliary Firemen are arriving by Beresford Stork.

* * *

A Jew and a Scot went into business together. They went blind watching each other.

* * *

Why is Winston Churchill like Bernard Shaw ?

Because they both have long flowing beards, except Winston Churchill.

" I want a gold ring, if ye plaze," said Pat, whispering confidentially in the jeweller's ear.

" Eighteen carat ? " asked the jeweller.

" No," said Pat, " spring onions."

* * *

Just before the increase on the tobacco tax came into force, a friend of mine told me that he had managed to purchase 500 cigarettes.

I was smarter. Before May 1st I bought £5 worth of postage stamps.

He says he wants to be rescued by a real fireman.

" Has your son's college education proved helpful since you took him into the firm ? "

" Rather ! Whenever we have a conference he mixes the cocktails."

* * *

A customer in an Irish draper's shop wished to purchase a shroud, but the price she was asked seemed exhorbitant.

" I could buy it for half the price in Dublin " she complained.

" Yes," replied the draper. " And the corpse would have his knees through it in a week."

Really, Featherstone, this is carrying things too far !

It must be force of habit !

An Auxiliary Fireman has been enquiring what is the perfect fruit salad.

We suggest that it is a date with a peach.

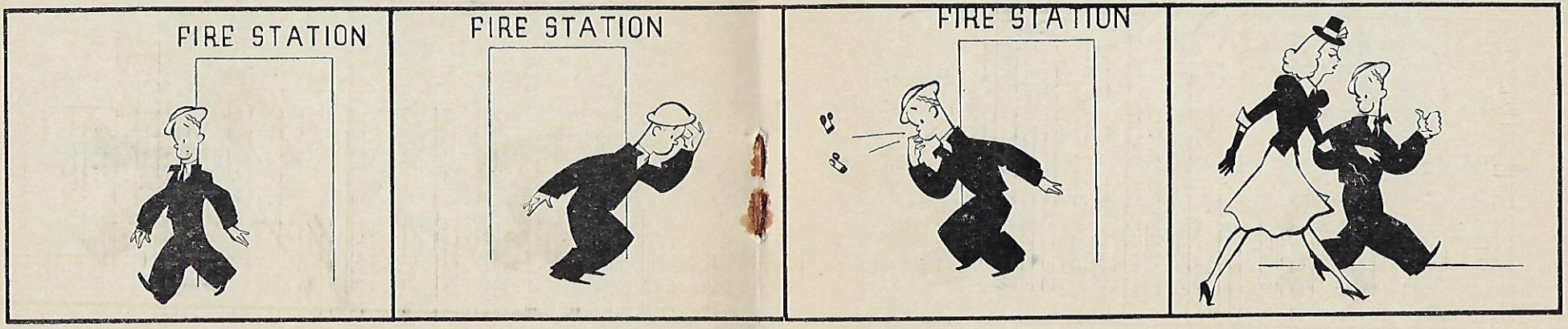
* * *

Teacher asked the small boy what were the chief minerals of Britain.

" Lemonade and ginger beer, sir," the boy replied.

" SMOKEY " DOES SOME PICKING-UP DRILL

By Allan Baird



BRISTOL'S WATER SUPPLY

(IV) CHEMICAL AND BACTERIOLOGICAL CONTROL

By F. P. Hornby, B.Sc., F.I.C.,

Bristol Waterworks Company

WATER delivered into the distribution system has been subjected to certain purification processes and is not in the same " raw " state as when it was collected from the sources. In this article some of the chemical and bacteriological problems of water analysis and purification are touched upon.

Up to the middle of last century no " purity " control of any kind was exercised over water supplies, and as many of these consisted of raw river waters, the danger to the consumers from drinking them can be imagined. Lucky were those communities which had access to springs or wells.

Following the findings of a Royal Commission, the more advanced undertakings began to have regular chemical analyses made on their supplies, in order to determine, as far as possible, the type and degree of pollution and thus the necessary purification required. In order to ascertain whether pollution was taking place it was usual to determine the amount of ammonia present, both saline and in combination with organic material, the oxygen absorbed from a solution of permanganate, and the amounts of nitrates, chlorides, and total solid suspended matter. If all these figures were high then it was reasonably certain that the water was seriously polluted, while further information as to the nature of the pollution was provided by the ratio between the figures resulting from these tests.

These were all chemical tests, and similar ones are performed to-day and yield valuable information. However, with the growth of bacteriological science, it came to be realized that a water might pass satisfactorily all these chemical tests and yet be bacteriologically impure and a source of danger to consumers. As a result, bacteriological tests are used nowadays

in addition to chemical tests. Their main purpose is to ascertain whether the water has been polluted by sewage, and the tell-tale organism Bacillus Coli is sought for. This organism exists in enormous quantities in sewage, and all natural waters, except those from deep springs or wells may contain from four to five of them to 100 c.c. (one-fifth pint) up to some thousands per 100 c.c., depending on the degree of pollution. These bacteriological " counts " can indicate the presence of a minute quantity of sewage in, say, 100 gallons of water.

After the water has been submitted to the necessary treatment, such as filtration and sterilization, B.Coli should be absent from 100 c.c.s of the water, and this is the standard that a modern water supply should reach and maintain. Bristol water is tested regularly before and after purification.

Other bacteria capable of living in water include the Bacillus Typhosus, the cause of typhoid, the separate test for which is difficult and tedious. However, as this organism would never be present in natural circumstances, except in association with much larger numbers of Bacillus Coli, the test for the latter is used as the index of pollution.

Stringent precautions are taken by the Waterworks Company to prevent secondary contamination of " purified " water in the distribution system, and it is not generally known that all employees called on to execute repairs to service reservoirs, etc., have all satisfactorily passed a blood test to guard against infection by typhoid carrier.

GREATLY MAGNIFIED VIEWS OF BACTERIA

Bacillus Typhosus

Bacillus Coli

KNOTTY KNOWLEDGE

CONTINUED

SIX knots are in common use by the fire brigade. Full details of their formation are not included in this article, as practical demonstration is by far the better method of learning, but it is hoped that the following notes may be of interest. Always remember that knots should be tied tightly, correctly and without hesitation, even in the dark. Continual practice is essential.

REEF KNOT.—So called because it is used for reefing sails. It is the simplest of all knots, and is used to tie two ropes together, especially if they are under strain. If this strain slackens, however, there is a possibility of the knot working loose. Always be certain that the standing parts of each rope lie on one side of the knot, and the running ends on the other (Fig. 1); otherwise you have tied a Granny or Thieves' Knot, which will slip.

Fig. 1

SHEET BEND (Fig. 2).—Used to join ropes of unequal thickness together. A bight is taken on the thicker rope, and the thinner rope rove through it to form a half hitch.

DOUBLE SHEET BEND is more secure, and is used when the ropes are wet or of very unequal thickness. Its formation is the same as the single Sheet Bend, with the addition of an extra turn taken by the thinner rope (as shown by the dotted line in the illustration).

Fig. 2

BOWLINE.—A non-slip knot forming a loop which has many uses. It can be used for lowering a person from a building by tying fairly tightly around the body beneath the armpits, although the Chair Knot is the more correct and convenient fireman's method of lowering, especially if the person is struggling or unconscious. A person can also be lowered into a ship's hold or basement by means of a bowline, the foot being placed in the loop and the hands holding the standing part.

Fig. 4

The easiest method of tying a bowline with the standing part away from you (*e.g.*, if the loop is to be around your own body) is to place the running end on top of the standing part with your finger on top (Fig. 3). Twist the running end inwards, towards the body (pushing the standing part in front of the running end), and it will be found that this action will form a loop in the standing part with the running end through it. The knot can then be completed as shown in Fig. 4.

Fig. 3

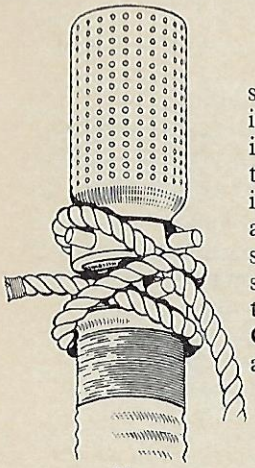


Fig. 5

CLOVE HITCH.—To secure a rope to a pole, spar or similar object, and also to another rope. It is a most useful knot in the fire brigade, and is used in conjunction with a hitch to make a rope fast to the end of a length of suction hose while the pump is being operated from a dock or stream. The knot actually consists of two half hitches, and these should be tied one each side of the lugs of the suction and copper strainer as a precaution against the latter working loose and falling off (Fig. 5). A Clove Hitch is also used to haul a length of hose to an upper storey or roof.

CHAIR KNOT (Fig. 6).—Used for lowering persons from a building. One loop fits under the armpits and the other beneath the knees. The knot should be tied near the centre of the rope, one end of which is used for lowering and the other to keep the rescued person clear of the building. Roughly speaking, the knot is formed by placing two loops through one another and securing the two resulting loops with half hitches. It should always be tied with both arms extended outwards at full stretch: two loops are then provided, each being the correct size for placing over a person's shoulders and fitting under the armpits, or at the back of the knees. The knot receives its name from the characteristic "seated" attitude of a person who is slung between the two loops.

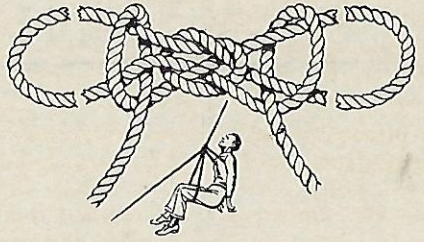


Fig. 6

It is interesting to note that the strength of a rope which is slung over a hook, or two ropes fastened together by a knot, is decreased by approximately 30%. This is due to the fact that the strain on the fibres is not uniform, and some of the outer fibres are therefore liable to fail.

FIRST AID TO THE INJURED

CONTINUED

By Section Officer Elson

THE TREATMENT OF FRACTURES

IN continuation of the last article, before commencing immediately with treatments, it should be apparent to all that to render first aid successfully the following rules must be strictly followed :—

FRACTURED SPINE.—It is with great diffidence that I suggest treatment in the brief space allotted in this article, realizing the care and attention required to successfully remove a patient suffering from a fractured spine. The patient is paralysed below the seat of the fracture, and if this should be in the cervical region all four limbs are paralysed, if below the vertebrae of the neck the legs would be paralysed, and the patient in any event would have no control over the excretions of the body.

Treatment is to—

(1) Warn the patient to lie still.

(2) Place a figure-of-eight bandage round the ankles (*i.e.*, round the back of the ankles), cross over on top of the feet and tie off under the insteps ; a broad bandage round the knees and another round the thighs.

Now comes the most hazardous task : that of transport. If unconscious, and the position of the fracture doubtful, the patient must be removed face upwards on a boarded or reinforced stretcher. The same method of removal applies should the patient be conscious and suffering from a fractured neck ; a pad placed each side of the neck to prevent rolling is the only addition. Should the patient be conscious and a fracture of the thoracic or lumber regions be suspected, by reason of paralysis of the legs, the patient should be transported face downwards on an unboarded stretcher. The secret of lifting on to a stretcher is in keeping the patient flat without causing any flexion to the spine. From a fireman's equipment could be taken two ceiling hooks, which could be rolled lengthways into a carrying sheet or blanket, which may be placed under the patient by carefully rolling down from head to feet. It will then be possible, with the assistance of four helpers facing each other, to hold the ceiling hooks at the head, buttocks and knees, ensuring a rigid and level lift.

At a recent exercise the author felt very sorry for one patient, supposed to be suffering from a fractured lumber region, who was removed from a building by the Fireman's Lift, while his comrade with a fractured pelvis received little better treatment. The writer can only suggest that if a greater danger is present than the injury (*e.g.*, danger in a burning building), there is only one thing to do :— endeavour to get your patient from the danger alive as comfortable as circumstances allow. Should there be two or more rescuers the main consideration would be to hastily, but carefully, lift the patient on to

anything flat that will prevent the fatal curving of the spine ; if only one person is present, there is no option but to drag patient to safety.

FRACTURED RIBS.—When the ribs are fractured (often the sixth to the ninth, midway between the sternum and the spine), should they be simple, two broad bandages tied round the chest away from the injured side, and the arm on the injured side placed in a large arm sling, will be all that is required. Should the fracture be a complicated one, recognized by the expectoration of bright red frothy blood, no bandage must be applied. The patient must be laid down inclined to the injured side, ice given to suck, and the arm placed in a sling.

FRACTURED PELVIS.—Lie the patient flat, apply a broad bandage round the pelvis, a figure-of-eight round the feet, and a broad bandage round the knees.

FRACTURED HUMERUS.—When the arm is broken near the middle, as often happens, a small-arm sling is applied to the forearm, and three splints placed from the shoulder to elbow, on the outside, back and front of the arm. These are secured by a bandage above the fracture and one below. In the accompanying illustration only two splints are shown.

Should the fracture involve the elbow joint, a right-angle splint is made by tying two splints together at right angles, and placing the angle at the elbow, or the least injured side of the arm. Bandages are then tied off : 1, above the fracture ; 2, on the forearm ; 3, a figure-of-eight round the thumbs and wrist, and the forearm placed in a small-arm sling.

FRACTURED FOREARM.—Take two splints long enough to reach from elbow to finger tips, and tie off two bandages—1, above the fracture ; 2, below the fracture as a figure-of-eight around the wrist. Then place the whole in a large-arm sling.

FRACTURED LEG, comprising either a fractured tibia, fibula, or worse—both. A great danger is that, if not already a compound or complicated fracture, it can be turned into one easily by careless handling, owing to the nearness of the bone to the skin.

Take two splints long enough to reach from thigh to foot and place one each side of the injured leg. Next, five bandages are tied in the following order : 1, just above the fracture ; 2, just below the fracture ; 3, above the knee ; 4, a figure-of-eight around both feet, and 5, a broad bandage round both knees (see illustration).

Dressings, injuries to the head and the treatment of shock will be dealt with in a later article.

AUTOMATIC SPRINKLERS

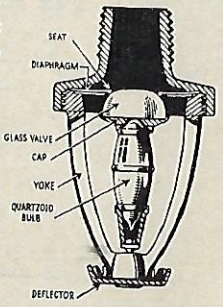
By R. S. Littlewood

THE idea of an automatic method of extinguishing fires was first thought of many years ago, and experiments were made with various types of fusible plugs, none of which proved a practical proposition.

It was not until the year 1874, when Mr. Parmalee (an American) introduced his sprinkler head into this country, that insurance companies recognized the value of sprinklers as protection against fire in industrial risks.

The first sprinkler installation in the British Isles was erected in 1881 at the Edinburgh Rubber Works, although installations had been erected in America prior to this date. On the introduction of the "Grinnell" sprinkler in 1882 the modern sprinkler installation was born, and the general principle of sprinkler protection evolved which fundamentally remains the same to-day.

The original "Grinnell" head had several disadvantages, and in 1891 was superseded by the "Grinnell" Glass Valve type, in which the valve holding the water back was made of glass, flat on one side and rounded on the waterside. This valve fitted into a ½-in. outlet in a flexible metal diaphragm, and was held in position by a metal strut consisting of three parts, soldered together with a low melting point solder. This type of head gave an excellent account of itself for many years, and many are still in service and efficient to-day. It was found, however, that in places where corrosive influences were present in the atmosphere, the solder holding the strut together tended to deteriorate, and the sprinkler heads had to be replaced at fairly frequent intervals. This led to the introduction in the early 1920's of the "Grinnell" Quartzoid Bulb sprinkler head illustrated, in which the soldered metal strut was replaced by a Quartzoid Bulb filled with a highly-expansible liquid which at a predetermined temperature exerted sufficient pressure to shatter the bulb and allow the valve to fall clear.



It is interesting to note at this point that records are in existence of over 50,000 fires having been dealt with throughout the world by the "Grinnell" Sprinkler, with an average loss through fire and water of only £60 a fire, and of these fires:—

35% were extinguished by 1 sprinkler only,
50% " " " 2 sprinklers only,
75% " " " 6 sprinklers, or less,

and in more than half the reported fires the damage has been too small for any claim to be made on the insurance companies.

A sprinkler installation is composed of four main parts :—1, Water Supply ; 2, Installation Controlling Valves ; 3, Installation Pipework, and 4, Sprinkler Heads.

WATER SUPPLY—The first essential of a water supply for a sprinkler installation is that it should be practically unlimited and of adequate pressure ; where available, connections from the town's water mains form the best supply. As an alternative, automatic pumps drawing water from reservoirs or rivers may be used, and these pumps can be driven either by steam, electric motors, petrol or diesel engines, all of which can be arranged to start automatically immediately a sprinkler operates.

A reserve supply, in the form of either a connection from a second town's main or an air pressure tank, is frequently installed in case the primary supply should at any time be out of action.

CONTROLLING VALVES.—The controlling valves are fixed at a point where the combined water supplies enter the sprinkler installation proper, and are usually situated on the ground floor of the building in a position easily accessible from the outside—indicated by a metal plate fixed on the outside wall of the building.

These Controlling Valves consist of a Main Stop Valve and Alarm Valve, as well as the Drain and Testing Valves, Pressure Gauges, Alarm Motor and Gong. When a building is unheated, and there is consequently risk of frost, an Air Valve is added, thus enabling the installation to be charged with air pressure above the Controlling Valves, by which means the water is held back until the sprinkler head opens.

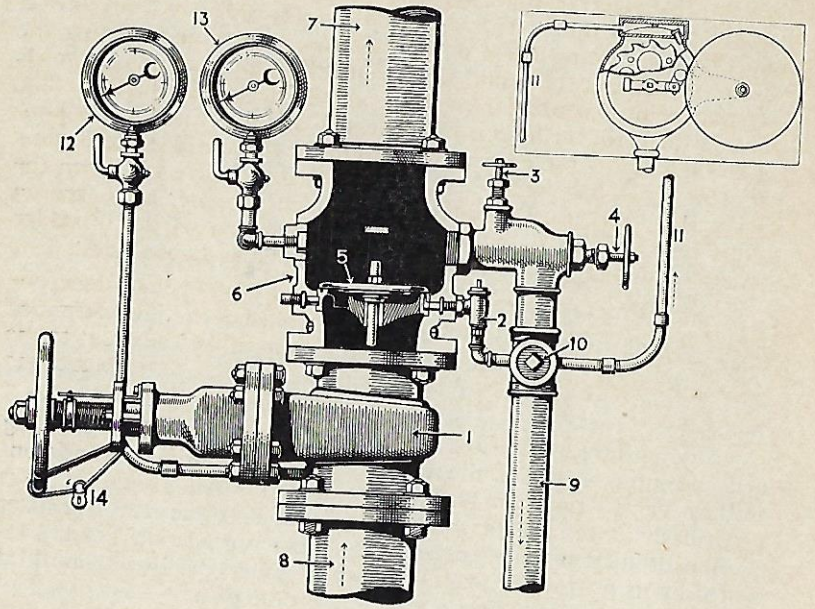
The Main Stop Valve, which is kept strapped and padlocked open, controls all water to the sprinkler heads. In the event of heads operating through fire, it is of vital importance to remember that only when it is certain beyond all doubt that the fire has been completely extinguished should the Stop Valve be closed, in which case the strap is cut and the Stop Valve shut down. The senior Fire Officer present generally shoulders this responsibility.

The Alarm Valve, which is fixed above the Main Stop Valve, is a non-return valve with an annular groove in its seating, onto which the clack closes. From this groove a ½-in. pipe is taken to a water motor arranged to turn the hammer of the Alarm Gong, which is fixed on the outside of the building ; when a sprinkler head, or heads, open, water flows through the Alarm Valve, thereby lifting the clack and allowing water to pass into the groove and so to the Alarm Motor, which continues to operate as long as water is flowing through the clack. The Alarm Motor itself is a small water wheel coupled direct to the hammer of the Alarm Gong ; it is tested once a week by opening a ½-in. drain valve (fixed above the Alarm Valve clack), this being equivalent to one sprinkler head opening, and the Gong is allowed to sound for a few seconds to ensure that it is in working order. As this test is of short duration it cannot be mistaken for a fire alarm ; in the latter case the Gong would sound continuously.

INSTALLATION PIPEWORK.—From the Controlling Valves a system of pipework extends throughout the building, and is graduated down in diameter according to the number of sprinkler heads fed. This pipework is fixed at the ceiling or roof, and covers all parts of the premises, including concealed spaces.

AUTOMATIC SPRINKLERS

INSTALLATION CONTROLLING VALVES



1—Main Stop Valve.

2—½-in. Angle Plug Cock (Alarm Cock).

3—½-in. Test Tap (for testing Alarm).

4—2-in. Waste Valve.

5—Alarm Valve Clack.

6—Alarm Valve.

7—Main Feed to Sprinklers.

8—Main Water Supply to the Installation.

9—Drain Pipe.

10—Inspection Cover for Drip Union

11—Feed Pipe to Alarm Motor.

12—Water Pressure Gauge *below* Main Stop Valve.

13—Water Pressure Gauge *above* Alarm Valve.

14—Strap and Padlock to secure Main Stop Valve open.

INSET (top right-hand corner)—Alarm Motor and Gong.

(Illustrations by courtesy of Messrs. Mather & Platt, Ltd.)

SPRINKLER HEADS.—These are screwed into the installation pipework, and are spaced on the basis of approximately one to every 100 sq. ft. of floor area throughout the building. It will therefore be realized that wherever a fire may start in a protected building there is a sprinkler head within a radius of 5 feet. Immediately a fire breaks out the temperature above it rapidly rises, soon either melting the solder, or causing the liquid in the Quartzoid Bulb to expand to its bursting point, according to the type of sprinkler head installed. The valve of the sprinkler head is thus released, and water issues in a ½-in. jet and impinges on the serrated deflector of the sprinkler head, thus diffusing into a fine spray both onto the ceiling above and upon the fire below. The usual temperature at which sprinkler heads are set to operate is 155 deg. F., but this may be increased to 360 deg. F. under special conditions (sprinkler heads installed in boiler houses, etc.).

A point to remember is that each sprinkler head operates independently when the temperature in its vicinity reaches the predetermined degree ; consequently only the sprinkler or sprinklers adjacent to the fire come into action, thereby localizing water damage to the seat of the outbreak.

In all sprinkler-protected premises a framed Block Plan is hung near the entrance, and on this plan is marked the position of the Controlling Valves, Location Plate or Plates, and Alarm Gong. This is particularly necessary in extensive premises where the sprinkler equipment may be divided up into several installations, each controlled by its own set of valves ; in these cases the area controlled by each set of valves is clearly indicated on the plan.

• • •

DO YOU KNOW YOUR COINAGE?

Before dipping into your pocket, answer the following questions :

1. King George V penny—Which way does the King face, left or right ?
2. What is Britannia holding with her right hand ?
3. If you stand a sixpence on edge, how many pennies would it take piled up alongside it to reach the same height ?
4. How many edges has a new threepenny piece ?
5. Which has the larger diameter :
   A farthing or a sixpence ?
   A shilling or a halfpenny ?
   A penny or a half-crown ?
6. What is the inscription around the King's head on a half-crown ?

Now you can see if you were right—providing it's Friday !

"THE BEST LAID PLANS"

By Mervyn Millward

OUR Divisional Officer is one of the best ; looks after the troops' inner man as well as seeing that they do their job properly. That's why he has a meal with us now and then ; just to see that the grub's all right. That's O.K. by us, but old Thistlewhistle's frequent calls at tea-time are not so good.

About once a week he just pops into the Station, at tea-time, just to see how we're getting on. At first, as a gesture of politeness, we asked him to take a cup of tea. He did, and helped it down with about twelve pieces of bread and butter and half a sultana cake ! Then it became a habit and, for the past two months, every Friday he has depleted our rations.

" Huh ! " grunted Phyllis, yesterday, " I suppose that blue pencil old blighter, Thistlewhistle, will be here again this afternoon. He's a darned nuisance," she continued, " eating up all the boys' bread and butter and, now the butter's rationed——"

" Give him margarine," I interposed, " then he won't come so often."

" How could we do that ? " she asked. " Besides, the D.O.'s here to tea to-day."

" That all the more reason why he shouldn't be robbed of his rations," I said firmly. " Now you leave this to me. Fix up a separate table at the end of the messroom for the D.O., Thistlewhistle, you and me. How much bread and butter do we usually have ? Four pieces each ? Right ! Then cut twelve pieces of bread and butter and four pieces with margarine. Pick out some good strong tasty stuff, too ! "

" But I say," protested Phyllis, " we couldn't do that ! It would look just too bad to have a separate plate for Mr. Thistlewhistle and——"

" Who said anything about a separate plate ? " I demanded. " It will all be placed on one plate, but I shall do the placing. First margarine for old fishface, then three pieces of bread and butter. Then another margarine for the old trout and so on. Now, come on. Jump to it ! " I concluded. " All good W.A.F.S. obey the orders of a superior officer without question ! "

Phyllis was dubious. The D.O. was even more doubtful when I explained the matter to him. But eventually they both agreed that something should be done to discourage old Thistlewhistle.

. . . . . .

" Come along Mr. T., make yourself at home," I invited, passing him the plate.

" After you, Sir," he said, handing it on to the D.O.

" Er—oh no ! After you, Mr. Thistlewhistle," he returned, backing hastily away.

" My word ! How polite we all are to-day," tittered the old twerp, *taking a piece from the middle of the plate.*

The Divisional Officer, who hadn't noticed this accidental avoidance of the top piece, then took it, despite my frantic glances of mute warning.

" Have some jam, Mr. Thistlewhistle," suggested Phyllis who, busy with the teapot, hadn't noticed anything either.

" No, thank you," he replied. " Why, it would be wicked with this lovely butter. I've never tasted anything so nice. Don't get it at home, you know ! "

" *I'll* have some jam, if you please," boomed the D.O., after taking a small bite from his piece and favouring me with a very special look.

" My word ! This is nice butter," twittered old Thistlewhistle, helping himself to another piece before anyone else had finished the first. " Come along, sir," he continued, passing the plate to the D.O., " you aren't getting on very quickly."

" Thank you," replied the latter, closing his eyes and taking a piece at random. He carefully cut it, placed a small piece in his mouth, and then favoured me with the sort of smile that Hitler would bestow upon Mr. Churchill. That margarine certainly was a bit high !

" Er—um—jam, Sir," I suggested.

" No, thank you ! " he snapped, and with the air of one who knows that he is shortly for another world, he masticated his second piece of bread and margarine.

Things were growing desperate. I sized up the remaining contents of the plate, while that insufferable old Thistlewhistle took and, with evident relish, ate two more pieces. After careful study, I became confident that the bottom piece really was bread and butter. I picked up the plate, pushed the bottom piece forward, and offered it to the D.O. Yes, you're quite right. Go on, laugh ! Strike me with a standpipe if I wasn't wrong again !

FIRE PREVENTION AND CAUSES OF FIRE—CONTINUED FROM PAGE 84

IN continuing this subject of fire, its prevention and causes, mention must be made of two articles—" Dust Explosions " (page 51) and " Spontaneous Combustion " (page 115)—which were contributed by members of the Regular Fire Brigade to earlier numbers of this magazine. Although not ranking among the common causes of fire, a number of disastrous fires have been attributed to these causes, which might have been prevented if a more thorough knowledge respecting risks of this nature had been gained.

A branch of fire brigade work little known to the general public is that of fire prevention. Trained firemen are on duty at theatres, cinemas and other places of entertainment to ensure that the essential regulations are carried out. Advice is also given to owners of business premises, etc., on fire prevention measures likely to be useful in war and peace time. This includes problems of building construction—the installation of fire-resisting doors, fire escapes, automatic sprinkler installations, etc.—and it is intended to publish articles on this subject at a future date. In this connection an interesting article on Automatic Sprinklers appears on page 138.

Attention should be paid to the following miscellaneous causes of fire :—

FIREWORKS.—Every 5th November numerous instances of injury, often of a serious nature, are reported in the press. It should be unnecessary to mention that children and irresponsible people should on no account be allowed to handle fireworks, except under adult supervision.

Great care should be taken to keep fireworks well away from sources of heat.

Under this heading can be mentioned sparks from bonfires and bonfires which have got out of control, which account for large numbers of fires.

DECORATIONS.—Especially at Christmas time, decorations account for many fatal fires. Accidents can be avoided if care is taken to keep all decorations away from lighting fixtures, electric or otherwise. Candles should only be used on Christmas trees under careful supervision. Holly is another form of decoration which is readily inflammable, especially when dry.

Paper decorations which have been treated to render them non-inflammable can be purchased, and these should be used instead of the ordinary variety.

FRICTION.—Machine bearings often become overheated due to friction, and sparks are also caused. Stringent precautions are taken to eliminate defects in machinery installations, especially in flour mills, coal mines, etc., where the presence of a spark would be quite sufficient to cause a dust explosion. It is difficult to prove conclusively that a fire has been caused through over-heating of bearings due to friction, but there is no doubt that this has been the explanation of many mysterious outbreaks. When an explosion, accompanied by a disastrous fire, occurred a few years ago at a cork grinding mill, one of the reasons put forward was that a spark from the machinery had been sufficient to cause an explosion of carbonaceous dust.

SUN'S RAYS.—It is common knowledge that intense heat is generated when the rays of the sun pass through a magnifying glass or lens, and should these rays become focussed upon inflammable material, a fire may easily result. Such fires generally occur in the summer months, and huge tracts of country are laid waste, often through the carelessness of picnic parties—a discarded glass bottle being quite sufficient to act as a lens and set fire to dry grass or other highly-combustible material.

LIME is not infrequently a cause of fire. If unslaked lime is stored in bulk and comes into contact with water, sufficient heat is generated to ignite surrounding materials.

SPARKS FROM LOCOMOTIVES account for numerous fires, especially in country districts. These are not always confined to embankments and fields, but sometimes involve timber yards and rail-side buildings.

This problem of preventing the emission of sparks from locomotives has been the subject of extensive research by railway engineers, the object being to obviate the danger from flying sparks without impairing the efficiency of the engine. The risk is kept within limits by spark arresters, which are fitted in the smoke-box, trapping the sparks without interfering with the draught of the engine.

Railway companies purposely set fire to grass embankments and cuttings in certain areas (under strict supervision, of course) with a view to eliminating the danger of an uncontrolled outbreak as far as possible.

(This article will be concluded in next month's " Jet ")

KINGSWOOD A.F.S. NOTES

Regional Reinforcement Exercise

Kingswood's part in this exercise, which took place on the 17th March, was as follows :—

At 10.10 hrs. orders were received to send a large trailer pump unit to Station No. 23, Glebe Road, St. George. A crew under Leading Fireman A. T. Blann immediately turned out and on reporting were ordered to proceed to Blackswarth Road, where they came under the charge of Incident Officer Sergeant Brown.

Our crew were given the task of relaying water from the River Avon, where the pump was situated, to the old lead works in Blackswarth Road. Mangotsfield and Swindon A.F.S. were also present at this incident and five pumps were used. Water was relayed from pump to pump and hose had to be run out over various obstacles, such as walls, etc., and up a gradient of 1 in 9, and six jets were eventually concentrated on a building containing old timber, sleepers, rubbish, etc., which had been set on fire.

Those engaged on this incident, which lasted one-and-a-half hours, were provided with dinner at Carlton Park School, and afterwards conducted to Durdham Down. Here units were inspected by the Regional Commissioner, General Sir Hugh Elles, as reported in last month's *Jet*.

Social Events

On the 5th April a party from Chippenham A.F.S., consisting of Superintendent Phillips, Station Officer Beaven and ten men, were present at the Kingswood Station, where a most enjoyable evening was spent. The proceedings started with a Darts match, in which we beat Chippenham by 8 games to 4. Following supper—the thanks of all are due to the cooks—a singsong was held, which included an admirable entertainment at the piano by A/F Holly, of Chippenham.

Following our open challenge, a match was played on Friday, 20th April, with Glebe Road, St. George. This consisted of games of Table Tennis, Darts, Billiards and Bagatelle. Glebe Road managed to win at Bagatelle, but the other three games were undoubtedly ours. Our challenge is still open, and we shall be pleased to receive acceptances from any other station who would care to endeavour to avenge the Glebe Road defeat !

Departures

Our best wishes go to those of our members who have recently left us to take a more active interest in the war—S. F. Hearle, who has recently written to us, E. Peach, whom we have seen since he joined up, and G. Smith, who left us only this week.

Things We Should Like To Know

Who is the privileged man who is always on night duty when our lady telephonist is present ?

Is there any other station in the area that can boast a Mr. Gold and Mr. Flake ? (Ups-a-daisy, Sergeant !)