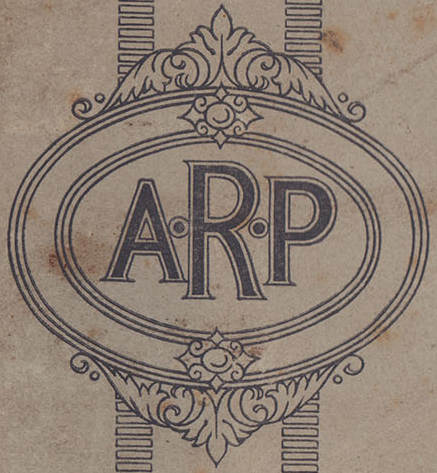

£[redacted] £2-50 BAB 331

AIR RAID PRECAUTIONS

An Album
to contain a Series
of Cigarette Cards of
National Importance

W. D. & H. O. WILLS

BRANCH OF THE IMPERIAL TOBACCO COMPANY
(OF GREAT BRITAIN AND IRELAND), LIMITED.

PRICE ONE PENNY

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A·R·P

Foreword by the Home Secretary

Home Office, Whitehall,
London, S.W. 1.

This series of A.R.P. cigarette cards shows in clear pictures some of the things that the Government and the Local Authorities are working out for the protection of the general public, and also some of the things that each member of the public can do for himself in time of emergency.

As Home Secretary I am responsible for a Home Defence Service which might affect the life of any person in the country, and I therefore welcome these cigarette cards for the manner in which they bring home to the householder and his family what they can do for themselves.

Air Raid Precautions are not mysterious. They are based on commonsense suggestions and the essential things recommended cost very little and demand ingenuity and improvisation rather than expenditure. Even some of the more elaborate recommendations can be carried out quite easily in co-operation with a neighbour.

I commend a study of these cards to your attention.

Samuel Hoare

RENDERING YOUR REFUGE ROOM GAS-PROOF. The red arrows in the picture show the danger points at which gas may enter; these must be sealed as instructed below. Cracks in ceilings and walls should be filled in with putty or pasted over with paper. Cracks between floor boards, round the skirting or where pipes pass through the walls should be filled in with pulp made of sodden newspaper. All ventilators and fire-places should be stopped up with paper or rags. Windows should be wedged firmly to keep them tight and the frames sealed round with gummed strip or paper. The cracks round doors should be covered with stout paper and the keyhole plugged. (No. 2)

CHOOSING YOUR REFUGE ROOM. The picture shows the rooms which should be chosen in typical houses as air raid refuge rooms. A cellar or basement is best of all. In a small house where there is no cellar or basement, the ground floor will be safest, because top floors are always to be avoided on account of the risk from small incendiary bombs. The fewer windows in external walls in a refuge room, the better, and a room of which the window is flanked by a building or strong wall is more advantageous than one having a completely exposed window. (No. 1)

A·R·P

MAKING A DOOR GAS-PROOF. A carpet or blanket should be fixed over the door opening as shown in the illustration. This should be kept wet and at least twelve inches allowed to trail on the floor. Such an arrangement reduces the risk of entry of gas when the door is opened for use. In addition, if there is a large crevice under the door, a wooden strip covered with felt should be nailed to the floor to make a gas-proof joint. The keyhole and all cracks must be stopped up. (No. 3)

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WINDOW PROTECTION. This illustration shows three methods of preventing fragments of glass flying into a room when the window is damaged by bomb explosion. (A) By two layers of transparent wrapping material gummed all over the inside of the glass. This admits light. (B) By mosquito netting gummed on the glass. (C) By stout paper pasted on the glass. Should the glass be completely shattered, then attach by means of thumbscrews to the inside of the window, a frame (D) in which there are two thicknesses of blanket with ¼ in. mesh wire netting on each side. Another simple method is represented by a curtain (E) which is let down and fixed round the edges by strips of wood nailed to the window frame. (No. 4)

TYPES OF SPLINTER-PROOF WALL. In the event of an air raid, steel splinters and fragments from high explosive bombs may cause many casualties. It is therefore important to take protective measures against such fragments. The picture shows three types of wall (including methods of improvisation) which will afford protection. The first (right) is of brick 13½ in. thick. The second (centre) consists of broken brick, rubble or shingle 2 ft. thick between corrugated iron sheets. The third (left) consists of these materials in boxes. (No. 6)

WINDOW PROTECTION AGAINST BLAST. Ordinary glass may be shattered by the blast effects of high explosive bombs, but there are various substitutes for ordinary glass which are more resistant. The left-hand panes in the picture are of a specially strengthened glass and the right-hand panes are of non-inflammable transparent celluloid 1/10 in. thick, reinforced on the inside by ¼ in. mesh wire netting. Both offer considerable resistance to blast pressure, although they may be penetrated by steel splinters from bombs. If this should occur, the holes and cracks in the damaged pane should at once be pasted over with stout paper to make the pane gas proof. (No. 5)

PROTECTING YOUR WINDOWS—A SANDBAG DEFENCE. Walls of sandbags or sacks filled with earth, sand, etc., are the best protection for window openings of refuge rooms on the ground floor. The picture shows how this should be done. Walls should be 2 ft. 6 in. thick at the top and should overlap the window opening by at least 12 in. all round; the base should be wider to prevent the wall collapsing. Such a wall will keep out splinters from high explosive bombs and protect the glass of the window from being shattered by blast. The window must still be sealed against gas. (No. 7)

EQUIPPING YOUR REFUGE ROOM—(B). In addition to those listed on Card No. 8, your refuge room should also contain the following articles: Washstand and basin, towels, soap, etc. Plenty of water in jugs for drinking, washing, fire-fighting, etc. Chamber pots, toilet paper, disinfectant. A simple hand pump for fire-fighting. A box of sand with a shovel. Overcoats, rugs, etc. for warmth. Mattress to lie on. Gum boots and mackintosh to go out in after raid. (No. 9)

EQUIPPING YOUR REFUGE ROOM—(A). Having chosen your refuge room and rendered it gas-proof (see Cards Nos. 1 and 2), you should furnish it with the following articles: Table and chairs. Gum and paper for sealing windows and cracks. Tinned food and a tin to contain bread, etc. Plates, cups, knives, forks, etc. Books, writing materials, cards, etc. to pass the time with. Wireless set, gramophone, etc. (A further list is shown on Card No. 9). (No. 8)

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A GARDEN DUG-OUT. The picture shows a dug-out which is gas-proof and will give protection from blast and splinters from high explosive bombs. The excavation is in the form of a trench 7 ft. deep and 6 ft. wide at the top and 4 ft. wide at the bottom. The earth sides are supported by corrugated iron sheets held in place by uprights as shown in the picture. The roof consists of corrugated iron sheets resting on wooden joists laid across the excavation. Inside the entrance is an air lock formed by 2 gas curtains. Outside the dug-out, steps lead down from one side to the entrance. (No. 10)

A GAS-PROOF BALLOON SHELTER (FRENCH TYPE). Our illustration shows an ingenious French device for providing quickly a gas-proof shelter during enemy air raids. This balloon shelter consists of an impermeable envelope inflated by a pneumatic machine, with the entrance arranged on the air lock principle. Some form of illumination is provided inside. The erection of such a balloon shelter might be relatively simple since there are no doors, windows or chimneys to be sealed up. Its cost, however, would have to be taken into consideration. (No. 12)

A VENTILATED GAS-PROOF SHELTER. The illustration shows a gas-proof shelter which is ventilated by air drawn in through a gas filter so that it is delivered inside the shelter for the occupants to breathe, free from poisonous gas. The filtration plant is normally driven by electric power, but if this should fail, filtered air can be drawn in by manual labour, worked on the same principle as in a sewing machine or a bicycle. The picture shows the latter method in operation. (No. 11)

INCENDIARY BOMB AND ITS EFFECT *(Fire started in Room)*. The 2 lb. magnesium bomb does not explode, its only object being to start a fire. It will probably penetrate no further than the attic or an upper floor, setting light to anything within a few feet. Vast numbers of these light bombs can be carried by a single aeroplane, and many more fires started than could be dealt with by fire brigades. Householders, with a little training and equipment, can deal with the incendiary bombs and so protect their homes and defeat the enemy's object. Instructions on how to deal with these bombs are given on Cards Nos. 14 to 17. (No. 13)

INCENDIARY BOMB COOLING DOWN *(Preliminary Fire Extinguishing with Jet from Stirrup Hand Pump)*. Much damage may be caused in an air raid by light incendiary bombs. The intense heat and smoke from such a bomb and the fire which it will have started make close approach impossible until the atmosphere has been cooled down and the fire partly extinguished. This is done with a jet of water from a hose not less than 30 ft. long. The stirrup hand pump (illustrated and described on Card No. 18) is recommended for this purpose. The girl in the picture is kneeling, as smoke is not so thick close to the ground. Note Redhill container in foreground (see Card No. 17). (No. 14)

CONTROL OF INCENDIARY BOMB *(Pouring on Sand from Scoop)*. The method of dealing with incendiary bombs is described on Cards Nos. 13 to 17. In this picture the girl has taken sand from the container and is pouring it on to the bomb with a long-handled scoop. Sand does not extinguish the magnesium bomb, but it controls it and reduces the heat, thus allowing near approach. Note the Redhill container (described on Card No. 17) placed on its side in such a way that full scoopfuls of sand can easily be withdrawn. After the first scoopful of sand has been placed on the bomb, the glare and heat are greatly reduced. (No. 15)

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EXTINCTION OF INCENDIARY BOMB *(Transferring the Bomb to the Redhill Container)*. In addition to this card, the method of dealing with incendiary bombs is described on Cards Nos. 13 to 16. The burning bomb is here being transferred from the scoop into the Redhill container, which can then be carried out of the house. The container is made strong enough to hold a burning magnesium bomb indefinitely, and is so designed that the heat of the bomb will not injure the hand of the person by whom it is carried. (No. 17)

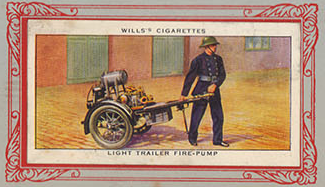
REMOVAL OF INCENDIARY BOMB WITH SCOOP AND HOE. The long-handled scoop illustrated is necessary in dealing with incendiary bombs. It is made in two sections, the scoop on one end and the hoe on the other, and when joined together is 7 ft. long. In the picture it is separated, the hoe being used to draw the bomb into the scoop, which is made strong enough to withstand the heat of a burning bomb. Further instructions on the method of dealing with these bombs are given on Cards Nos. 13, 14, 15 and 17. (No. 16)

A·R·P

THE STIRRUP HAND PUMP with a short length of hose is a most useful and inexpensive appliance for dealing with fires in their early stages. It can be worked from any available household water supply, e.g. a bath or a bucket. The length of hose enables the person directing the stream of water to approach close to the seat of the fire. This hand pump requires practically no attention when not in use, and is useful for other household purposes such as washing down a car, cleaning windows or watering the garden. (No. 18)

TWO-MEN PORTABLE MANUAL FIRE-PUMP IN ACTION. A portable fire-pump which can be operated by two persons by means of a specially designed handle is a useful appliance for dealing with small fires. The portable canvas tank from which a pump of this kind can draw water is easily replenished from any domestic water supply, such as a bath or tap. A sufficient length of hose should be available with the pump to enable the fire party to enter a building and approach the seat of the fire with the jet. (No. 19)

LIGHT TRAILER FIRE-PUMP. Under Fire Precautions schemes, the Home Office is issuing to many local authorities light trailer fire-pumps of the type illustrated. This pump has the great advantage of being very easily manœuvred; not only can it be towed behind any motor car, but it is also light enough to be man-handled. It is capable of delivering two useful fire-fighting streams of water, and can deliver 120 gallons per minute at a pressure of 80 lb. to the square inch. The pump unit can be unshipped from its chassis and carried to any convenient position where water is available. (No. 21)



A CHAIN OF BUCKETS. When using a hand pump, it is necessary to have a ready supply of water which can be contained in any convenient receptacle. In the illustration, a small canvas dam is being used and kept full by a chain of persons passing filled buckets from hand to hand, others returning the empty buckets to the source of supply. The illustration shows a small hand pump in use; water is being taken from the canvas dam and a line of hose led into a building on fire. (No. 20)

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LIGHT TRAILER FIRE-PUMP IN ACTION. Air Raid Precautions schemes will include ample provision for emergency fire-fighting. The Home Office is issuing to many local authorities light trailer fire-pumps, described on Card No. 21. The pump is here shown in action; it has been unshipped from the chassis on which it is usually carried for towing purposes, and is taking a supply of water from a garden pond, to which it has been carried by hand. The light trailer fire-pump can also work from a street mains supply, and is capable of delivering two useful fire-fighting streams of water. (No. 22)

MEDIUM TRAILER FIRE-PUMP. Medium trailer motor fire-pumps will be an important feature in emergency fire-brigade measures. These pumps are towed behind private cars or commercial vans (in which the firemen and additional fire-fighting gear may be carried), and can be man-handled over rough ground or debris impassable to ordinary fire-engines or motor cars. A pump of this type will give four good fire-fighting streams of water at high pressure. (No. 23)

MEDIUM TRAILER FIRE-PUMP IN ACTION. Any scheme of Air Raid Precautions must include the provision of a great number of special fire-fighting appliances. Pumping units of the type illustrated will be required in large numbers for use under air raid conditions. They are specially designed for trailing behind motor cars or light lorries. Crews of 4 or 5 trained firemen are required to man these fire-pumps, which are capable of delivering two or more streams of water at high pressure on to a fire. (No. 24)

EMERGENCY HEAVY PUMP UNIT. The illustration shows a high-powered emergency fire-pump, carrying a telescopic ladder. This unit, which has been designed by the Home Office, is capable of delivering over 1,000 gallons of water a minute at high pressure, and is able to supply a number of good fire-fighting streams. There is accommodation on the unit for both crew and necessary fire-fighting gear. The chassis on which the pump is mounted is extremely mobile, and can be manœuvred in a very small space. (No. 25)

THE CIVILIAN RESPIRATOR consists of a face-piece, to which is attached by means of a rubber band a metal box containing filters which will absorb all known war gases. The face-piece is held in position by means of web straps fitting round the head. When the respirator is properly fitted and the straps adjusted, it completely protects the eyes, nose, mouth and lungs. The strap should be pinned at the right tension, so that the respirator can be slipped on in an instant. This respirator will be issued free to the public. (No. 27)

HOSE-LAYING LORRY. For laying long lines of delivery hose, such as may be necessary at large fires for the purpose of utilizing distant water supplies, a special motor appliance is used. The lengths of hose contained in the appliance are joined together and specially packed as shown in the illustration, so that they pay out in one or more continuous lines as the appliance is driven ahead. Other fire-fighting appliances designed for use in Fire Precautions schemes are illustrated and described on Cards Nos. 18 to 23. (No. 26)

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THE CIVILIAN RESPIRATOR—HOW TO REMOVE IT. The picture shows the RIGHT way to take off a Civilian Respirator. This should be done by slipping the head harness forward from the back of the head. It is important that the respirator should be taken off in this way. The WRONG way to take it off is by taking hold of the metal box containing the filters and pulling the face-piece off the chin. By this method there is a danger of bending and cracking the transparent window. If this window is cracked, the respirator is useless. (No. 29)

THE CIVILIAN RESPIRATOR—HOW TO ADJUST IT. Great care must be taken to see that the respirator is correctly fitted and adjusted, in order that a supply of pure air, quite free from gas, is ensured for breathing. The respirator is made so that it fits closely round the face, and is provided with adjustable straps to hold it in the correct position. It is important that the respirator be tried on and the straps properly adjusted to the requirements of the wearer (see picture), so that it may be put on at a moment's notice. (See also Cards Nos. 27 and 29). (No. 28)

THE CIVILIAN DUTY RESPIRATOR is of stronger construction than the Civilian Respirator (illustrated and described on Cards Nos. 27, 28 and 29) and is intended for those who might have to work in the presence of gas and could not go to a gas-protected refuge room. The respirator protects the eyes, nose, mouth and lungs against all known war gases. The face-piece is of moulded rubber, and the eye-pieces are of strong glass. There is an outlet valve opposite the nose; the protuberance at the side of the face-piece can be used to fit a microphone for speaking on the telephone. (No. 30)

THE SERVICE RESPIRATOR is designed for the fighting services. It will also be used by members of those civil Air Raid Precautions services who might have strenuous duties to perform in heavy gas concentrations. This respirator gives the same protection as the Civilian Respirator (illustrated and described on Cards Nos. 27, 28 and 29) but for a longer period. It is designed so that the weight of the container portion is carried in the haversack on the chest, and the special face-piece allows heavy and accurate work to be performed without difficulty. (No. 31)

A HEAVY ANTI-GAS SUIT. The illustration shows members of a Decontamination Squad in oilskin suits, rubber boots and respirators; a hood is also worn, but this is not shown in the picture. This equipment will give complete protection against the liquid or vapour of mustard or other persistent gases. It is essential to have squads of men trained to work in this equipment so that they can deal with and effectually neutralize any contamination which may have taken place. Owing to the fact that no air can get into the suits, men cannot work in them for very long periods of time. (No. 32)

RUBBER CLOTHING. During an air raid the safety of the citizen may depend to a considerable extent on his knowledge of how to behave. Splashings from the liquid liberated from certain gas-bombs, or subsequent contact with it, produce a serious blistering of the skin. The Government provides each individual with a respirator which is complete protection for the eyes, throat and lungs. Prudent persons, if forced to go out of doors during raids, should provide themselves, in addition, with rubber or oilskin coats and hats, and rubber boots. (No. 33)

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AIR RAID WARDENS AND CIVILIAN VOLUNTEER DESPATCH-RIDER

AIR RAID WARDENS AND CIVILIAN VOLUNTEER DESPATCH-RIDER. Air raid wardens are volunteers enrolled by the local authority. They are specially trained to advise their fellow citizens on Air Raid Precautions and to act as reporting agents of bomb damages. In the event of an air raid, they would be stationed at "warden's posts," perhaps a quarter of a mile apart, or less. The picture shows wardens handing reports to a volunteer despatch-rider. All wear steel helmets and Civilian Duty Respirators (illustrated and described on Card No. 30). The wardens are also wearing armlets. Note the shading device on the lamp of the motor cycle. (No. 34)

VOLUNTEER MOBILE CORPS (OWNER DRIVERS)

A FIRST AID PARTY. The picture shows the four members of a first aid party running with a stretcher to a place where casualties have occurred. As gas has been used, they are wearing a light suit of protective clothing, with gum boots and Service Respirators (illustrated and described on Card No. 31). The scheme of Air Raid Precautions provides for the establishment of first aid posts in large numbers, so that they will be within easy access of any casualty. Such posts will be equipped to deal with minor injuries and casualties due to non-persistent gases. (No. 36)

A FIRST AID PARTY

VOLUNTEER MOBILE CORPS (OWNER DRIVERS). Patriotic owners of private cars throughout the country have offered their services and their cars free to local authorities engaged in schemes of Air Raid Precautions. Such action has materially helped in providing the necessary transport required for Air Raid Precautions services in many towns and urban districts. This picture shows the drivers of some fifty cars running to their vehicles during a practice alarm at a well-known seaside resort. From their place of assembly, these cars were driven to various strategic points in the town, including the Fire Stations and Police Stations, whence their services were utilized as required, in accordance with a pre-arranged plan. (No. 35)

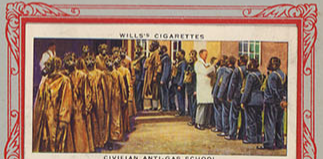
SUPPLY DEPOT FOR RESPIRATORS

SUPPLY DEPOT FOR RESPIRATORS. This subject shows the examination of respirators at one of London's Regional Supply Depots, of which there are now three in existence to serve the needs of the Metropolis. Ten similar Regional Supply Depots are being constructed in the provinces. Respirators, after being suitably packed for long storage at these Depots, are then to be moved to store centres. Each store centre is expected to house about 30,000 to 40,000 respirators, and its location is to be determined after consultation with local authorities. In the event of an emergency, respirators would be unpacked at the store centres, prepared for use, and issued to the public through distributing depots which would each handle about 4,000 respirators. (No. 37)

MOBILE GAS VANS. Home Office mobile gas vans, two of which are illustrated, are used for the testing of respirators and for the purpose of training men and women under the conditions of an actual gas attack. The vans are so built that a gas cloud can be put up in the body of the van; the white canopies at the back are air-locks to prevent the escape of the gas when the door of the van itself is opened. The picture shows a group undergoing training at Hendon Police College; the respirator in use is the Service type, which is described on Card No. 31. (No. 38)

A·R·P

MOBILE GAS VANS



CIVILIAN ANTI-GAS SCHOOL

CIVILIAN ANTI-GAS SCHOOL. The Civilian Anti Gas Schools are provided by the Home Office. The first to be inaugurated is at Eastwood Park, Falfield, Glos., while there is another at The Hawkhills, Easingwold, near York. The Schools train anti-gas instructors for the public service, for local authorities and others. Sixty students are taken at a time, and the course lasts two weeks. The picture shows postal workers undergoing training. Those on the left, wearing oilskin coats and Civilian Duty Respirators (see Card No. 30) are women telephonists. The men on the right are being fitted with Service Respirators (see Card No. 31) before going into the gas chamber. (No. 39)

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TESTING FOR GAS CONTAMINATION. The picture shows a member of a Decontamination Squad using an instrument for detecting whether the ground has been contaminated with mustard gas. The instrument is painted at the end with a special paint which, when brought in contact with mustard gas, will turn a different colour. The man is shown wearing protective clothing and his Service Respirator (illustrated and described on Card No. 31), but as he is working after the raid is over, he is not wearing his steel helmet. (No. 40)

DECONTAMINATION WORKERS IN TRAINING. Decontamination Squads, each consisting of six men, would be needed to neutralize or remove the liquid contamination caused by mustard gas or some other persistent gas on streets or buildings and so on. The picture shows some men in training for decontamination work. They are wearing Service Respirators (illustrated and described on Card No. 31), gum boots and full protective clothing, with hood, because their work would take them into the thick of the gas. Two are applying a paste of bleaching powder to a splashed wall. Another is holding a hose, since part of the work will be to wash contamination from streets. (No. 41)

THE AIR RAID PRECAUTIONS BADGE is made of silver and consists of the Royal Crown with the letters "A.R.P." underneath. All members of the following A.R.P. Services are eligible for the badge, providing they are serving on a voluntary basis in peacetime, have served for at least one month and are efficient members of the organization to which they belong; First Aid and Medical Services; Rescue and Demolition Services; Decontamination Services; Air Raid Wardens; Gas Detection Officers, when organized. Women volunteers are presented with a brooch carrying the badge. (No. 42)

PILOTS RUNNING TO MACHINES (INTERCEPTOR FIGHTERS) TO TAKE OFF. Aircraft are facing into wind, all ready to take off. Mechanics are waiting with the machines, ready to start up on the signal being given. Engines are run frequently to keep them warm and so ready to give full power at a moment's notice. Pilots remain in the "Pilots' Room" near which, if wind direction allows, the aircraft are ranged up. Pilots are partly dressed in their flying clothing. The Pilots' Room contains facilities for resting, and also maps, meteorological reports, and all the data that they require for their flights. The patrol leader may receive his orders before he takes off, or by Radio Telephone while he is in the air. (No. 44)

REPRESENTATION OF AIR DEFENCE CONTROL ROOM. All the elements of air defence are represented in the control room, including the commanders (or their representatives) of the anti-aircraft artillery, the searchlights, the balloon barrage, and the fighter squadrons. They sit in a gallery overlooking the large map table. The men round the map table receive reports of enemy raids by telephone from the Observer Corps centres, who in their turn receive reports from the posts dotted about the country. The raids are plotted on the map table so that the commanders in the gallery can see at a glance the numbers of the enemy, and by what routes they are coming in. On this information orders are sent out to the Fighter Squadrons telling them where to go to intercept the enemy. (No. 43)

GLOUCESTER GAUNTLET INTERCEPTOR FIGHTERS. Our picture shows one section of a squadron. Aircraft are in echelon left, with the leader nearest the camera, with flight commander's markings on the tail. Aircraft are equipped with Radio Telephone (the aerials can be seen in the picture) by which pilots can talk to each other and to the ground station. They can receive their orders while in the air, and these orders can be changed as necessary to conform to the reported movements of the enemy. All pilots keep their eyes "skinned," and search the sky above and below them for enemy. At night they watch for the tell-tale concentration of searchlight beams which indicates that an enemy has been found. (No. 45)

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REPRESENTATION OF BALLOON BARRAGE FOR DEFENCE OF LONDON. The balloon barrage forms an important part of the co-ordinated scheme—consisting of guns, searchlights, fighter aeroplanes and balloons—for the air defence of London. In time of war, the balloons would be disposed in a rough circle round the perimeter of London. Each balloon is attached by a steel cable to a winch on the ground by which it can be let up or hauled down to the required height. The balloon cables form a "death trap" to any enemy aeroplane colliding with them. The balloons are organized in flights and squadrons, the squadrons being on an auxiliary basis manned by volunteers with a small nucleus of fully trained regular personnel. (No. 46)

ANTI-AIRCRAFT SEARCHLIGHT. The duty of anti-aircraft searchlight units is to find and illuminate enemy aircraft so that they can be attacked by our own fighter machines or fired at by anti-aircraft guns. The searchlight has a glass paraboloid reflector 36 in. in diameter and an electric arc lamp which gives a light of many millions of candle power. In fine weather the searchlight has a range of over 5 miles. The complete searchlight detachment consists of 10 men who work the searchlight, a sound locator (illustrated and described on Card No. 48) and a generating plant which provides the necessary power for the arc lamp. (No. 47)

ANTI-AIRCRAFT SOUND LOCATOR. One sound locator is an essential part of the equipment of an Anti-Aircraft Searchlight Detachment and is used for directing the searchlight beam on to a target which can only be heard. It is manned by a crew of 3. Two of these are listening numbers, one uses the pair of trumpets which gives the horizontal direction of the target, the other uses the pair which gives the vertical direction. The third member of the crew uses the sight which makes an allowance for the speed of the target; this member telephones instructions to the searchlight controller, who then moves the searchlight beam so that the target is illuminated. Large numbers of these sound locators are used in the Air Defence of Great Britain. (No. 48)

AN ANTI-AIRCRAFT GUN must have a high rate of fire and be capable of following the movements of the fastest bombing aircraft. The 3-inch gun shown in the picture is mounted on a mobile platform for use with the Field Army. It can throw a 16 lb. shell to 20,000 ft. in 23 seconds and can fire 20 rounds in a minute. This gun has a crew of 8. It is towed by a tractor and has a road speed of 20 miles per hour. Territorial Units for Home Defence are equipped with this gun on a fixed platform. It is, however, now being replaced by larger and more powerful equipment. (No. 59)

THE HEIGHT FINDER is an essential part of the equipment of the Anti-Aircraft Gun Section, for on the skill of the men working it the whole success of the shooting rests. Our picture shows an instrument with a base length of 9 ft. being operated by its crew of 3, who are wearing gas masks. This is a modern instrument and is being issued in considerable quantities to Territorial Anti-Aircraft Units for Home Defence. (No. 49)

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