IN THIS ISSUE

On the second day at Gettysburg Colonel Isaac Avery, son of North Carolina and the University of North Carolina, was shot down while leading his men in a charge on Cemetery Hill. He lived long enough to write on a piece of paper crimson with his blood this message:

"Major, Tell my father I died with my face to the enemy"

After the battle, Isaac Avery's negro body servant found this message clutched in stiffened fingers and took it to his people who later gave it to the North Carolina Historical Commission at the State Capitol. Ambassador Bryce saw it there years afterward and said:

"The message of that soldier to his father is the message of our race to the world."

-From "The Cause for Which We Fight," page two.

Guides to Civilian Protection THE CAUSE FOR WHICH WE FIGHT WHAT IS THE USE OF CIVILIAN PROTECTION? AIRCRAFT WARNING SERVICE AND AIR RAID WARNING SYSTEM WEAPONS OF AERIAL WARFARE: BOMBS-...INCENDIARIES-..-GASES CIVILIAN PROTECTION ORGANIZATION SUGGESTIONS TO LOCAL DEFENSE CHAIRMEN ESPIONAGE AND SABOTAGE



POPULAR GOVERNMENT

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DEFENSE ISSUE

POPULAR GOVERNMENT

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Guides to Civilian Protection

Prepared for the use of local instructors and volunteers in the basic training courses in the cities, the counties, and the state of North Carolina

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Institute of Government in the War



Institute of Government in the War

Message from the President of the United States

"The Institute of Government, its purposes and its organization, as conceived and established in North Carolina, has and will render fine service to the State and the Nation. It is my hope that other States will recognize the leadership of North Carolina in what it is doing through this Institute and that States having no comparable agency will accept and follow your leadership."

Message from the Governor of North Carolina

"The Institute of Government has already rendered the State of North Carolina great service in respect to matters of law enforcement and other essential governmental processes. Its usefulness has been demonstrated in a hundred different ways, and in the public interest. At this crucial time in our state and national life the work of the Institute is even more important than ever before.

"The State looks to the Institute of Government to give leadership in these essential undertakings. Every county and municipality will do well to encourage the fullest cooperation in the work of the Institute, to the end that we may together go forward to a higher degree of proficiency in law observance and law enforcement, and thus render our contribution towards the enhancement and preservation of democracy in North Carolina and in America."

The Institute of Government is suiting action to the words of the President of the United States and the Governor of North Carolina.

Institute staff members are fighting on the battlefront: in the Army, the Navy and the Air Corps. One of its Student Advisory Board has given his life in the Pacific Coast Patrol: Lieutenant Foy Roberson, Jr. loved by his family for himself, loved by his associates for his inconquerable fellowship and undefeated faith, loved by his country as only a country can love him who is faithful to her even unto death.

Institute staff members are working day and night with the Federal Bureau of Investigation. Charged by the President of the United States to fight sabotaging efforts of the enemy within our gates which can win an Axis victory as surely by cutting supply lines running from field and factory to shipping points as submarines can win it by cutting these same lines extending from Atlantic and Pacific shipping points to London and Murmansk, to Chinese and Australian harbors.

Institute staff members are in the war effort on the home front: one of them serving on the instruction staff of the FBI National Police Academy instructing law enforcing officers in the investigation of espionage, sabotage and other subversive activities; two of them organizing and conducting statewide and district Training Schools for instructors in Civilian **Protection** sponsored by the State Defense Council in cooperation with the War Department: another serving as Consultant to the Governmental Requirements branch of the War Production Board; another serving as Consultant on the staff of the **Regional Director of Civilian Defense** for the Fourth Corps Area; all of the Institute staff and all Institute resources of building, library and clearing house of information are in alleut work with the cities, the counties and the state of North Carolina in local, state and national defense.

The home front staff of the Institute of Government does not need to pledge to its comrades in the fighting forces and those who are yet to go, that our sweat shall follow your blood, that the hours of our toiling shall match the hours of your fighting, that your dangers shall be equalled by our anxieties and that both dangers and anxieties shall be overcome in overwhelming efforts to give you the stuff of war to match the spirit of fight in men who are closer to us than brothers and nearer than hands and feet. In this revealing moment we begin to understand just how and why it is that the "unforgetting affection of the world is reserved for those men who, careless of fame and self-aggrandizement, have thrown their lives at the foot of a great cause; for men who will give their lives for a bit of paper if that paper means freedom; for a murmured prayer if that prayer means truth; for a flower if that flower means love; or for a trifle of flag if that flag means home."

The Cause for Which We Fight



By ALBERT COATES

Staff Member, Institute of Government

Opening Lecture in the Civilian Protection School Sponsored by the State Defense Council and Conducted by the Institute of Government

"A frequent recurrence to fundamental principles," says the North Carolina Constitution, "is absolutely necessary to preserve the blessings of liberty." It is equally necessary to the preservation of civilian morale in a day when people too often follow the example of Lord Ronald in Stephen Leacock's story who "flung himself upon his horse and rode off madly in all directions." We do not deny the tonic effect of dinners and dances and entertainment in all its inspiriting forms when we say that after the dinners are digested, the dances are ended, the last notes of entertainment fade away and we are alone with our thoughts, the secret of civilian morale as of military esprit de corps will be found, if found at all, in the cause for which we fight.

The Old Scholar and the Young Prince

The cause for which we fight has been stated by many men in many ways. In the end, if not in the beginning, everyone must state it for himself. I find the starting point of my own statement in the words of an English scholar to an English prince, four hundred years ago. The old scholar wrote a series of lectures to acquaint the young prince with the laws and customs of his country. In the course of these lectures he asked the prince this question: "Who has the most power, the King of England or the King of France?"

The prince replied: "The King of France, of course. He has the power of life and death over all his subjects. He can put his heel on any man's neck. There are no limits to his power. But here in England my father, the King, is hedged in with all manner of restrictions. He has to ask permission of Parliament before he moves. His power cannot match the power of the King of France."

The old scholar came back with the answer that is the basis of my belief in popular government—the basis of my belief that popular governmental institutions will be here long after Nazi and fascist institutions have perished from the earth: "You are wrong," he said. "A King has no more power than is in the people behind him. In France, as you say, the people are serfs, slaves, under the heel of the King, with their initiative, energy and resourcefulness cramped and stifled. But in England every subject of the crown has a margin of freedom. Within that margin of freedom the initiative, energy and resourcefulness of men develop to the point that when the King of England speaks, he speaks with the combined power of a free people."

Widening Margins of Freedom

This margin of freedom has steadily widened for English speaking peoples. The Magna Carta in the year 1215, the Petition of Rights in 1628, the English Bill of Rights in 1689, the Declaration of Independence in 1776, the American Bill of Rights in 1791, the Atlantic Charter in 1941 are milestones in the long, unbroken struggle through which men and women have slowly fought and climbed their way from serfdom to freedom, from absolute monarchy to constitutional law. They are blazes on the trail of liberty which has led from the day when the crude hand of arbitrary power could reach without warning in the light of day or out of the dead of night and drag any man into a dungeon without accounting to him, his family or his friends, to the day when William Pitt could declare in the English Parliament: "The poorest man may in his cottage bid defiance to all the forces of the crown. It may be frail, its roof may shake; the wind may blow through it; the storms may enter, but the King of England cannot enter; all his forces dare not cross the threshold of the ruined tenement."

Trails of Liberty

This trail of liberty has led from the day when men might be burned at the stake for worshiping God according to the dictates of their own conscience, arrested for speaking their mind on platform or in pamphlet, thrown into prison for assembling to protest against the wrongs of rulers, to the day when they could write into their constitution that neither congress nor the states shall make any law: (1) prohibiting the free exercise of religion, (2) abridging the freedom of speech or of the press, or (3) the right of the people peaceably to assemble, and to petition the government for a redress of grievances.

It has led from the day when men could be arrested without a charge and their houses ransacked and plundered without warrant, to the day when they could say to their rulers: "The right of the people to be secure in their persons, houses, papers and effects, against unreasonable searches and seizures, shall not be violated."

It has led from the day when men could be imprisoned without trial and condemned without hearing on a ruler's whim or fancy or caprice, to the day when they could say, "the accused shall enjoy the right to a speedy and public trial by an impartial jury, . . . be informed of the nature and cause of the accusation, and be confronted with the witnesses against him."

It has led from the day when men could be put to torture with the thumbscrew or the rack, or held in jail without bond, to the day when they could say: "Excessive bail shall not be required, nor excessive fines imposed nor cruel and unusual punishments inflicted."

We have been the heirs of this tradition, you and I, as here in North Carolina, history has repeated itself in the lives of our mothers and fathers. In 1774, when the Royal Governor refused to call the Colonial Assembly to send delegates to Philadelphia, Speaker John Harvey invited the lightning to strike by calling the assembly on his own responsibility, and the delegates were sent to unite with other colonies in curbing tyranny of the crown. In 1775, colonists in Charlotte stood up to be counted in the Mecklenburg Resolves, declared that all commissions granted by the King were "null and void," suspended "all former laws," and provided for a local government of their own. In 1776, colonists on the alert stopped the Loyalists at Moore's Creek Bridge; authorized their delegates "to concur with the delegates of the other colonies in declaring Independency"; joined in the declaration "that these United Colonies are, and of right ought to be, free and independent states." In the years that followed they suited action to their words by sending soldiers to the front—with Washington at Brandywine, Germantown and Monmouth, Valley Forge and Yorktown. They wrote into their first constitution at Halifax the declaration "that all political power is vested in and derived from the people, is founded upon their will only, and is instituted solely for the good of the whole.'

In the spirit of this declaration: in the first part of the last century they rubbed out the property line which stood between the citizen and the ballot box and permitted men without property to hold office and to vote; around the middle of the last century they rubbed out the color line which stood between the negro and the ballot, made them citizens and declared that "the right of citizens of the United States to vote shall not be denied or abridged by the United States

or by any state on account of race, color, or previous condition of servitude"; in the opening decades of the present century they rubbed out the sex line which stood between women and the ballot and declared that "the right of citizens to vote shall not be denied on account of sex." These are not vacant landmarks filled with empty phrases: look into them and you will see the stains of sweat and grime from successive generations that have gone before; listen to them and you will hear and feel the aches and pains and exultations of unnumbered human beings struggling forward up the long incline; cut them and you will see them bleed with the blood of men who fought at Moore's Creek Bridge, King's Mountain and Guilford Courthouse; at Gettysburg; at Chateau Thierry, Belleau Wood, Vichy Ridge, Verdun and the rest; at Wake Island, Bataan, Corregidor, Burma and Rangoon. Every one of these advancing landmarks has brought more people to participation in their government and has correspondingly increased their power of control; and standing on the shoulders of those who fought these fights through the swing of centuries, we can look back upon a thousand years of struggle to transfer the power to govern from the King to the people. Today in hunger, thirst, and tumult, like a bell from distant hilltops we can hear their names, ringing out to us the spirit of a people which sees in disaster only a challenge the brighter to burn, and which when darkness hedges it about, builds in itself a dwelling place of light.

Narrowing margins of freedom.—Against this backbround of ever expanding freedom we look across the world today and witness freedom cut to the quick and core by deadly foes stemming from three separated points and uniting in a great objective.

Across the Pacific, freedom died aborning in the Land of the Rising Sun, as the ruling class took the trappings but not the pulsings of democracy and in their feudalistic spirit allowed the peoples of that far



off land to sip but not to drink the springs of freedom.

Across the Southern Atlantic on the shores of the Mediterranean Sea, the Roman Fascist reappeared in the form of an Italian Duce to trample underfoot the liberties won by Mazzini, Garibaldi and the rest, until in 1930 he could boast to the applause of men no longer free: "We have buried the putrid corpse of liberty."

Across the North Atlantic on the North and Baltic Seas a German Fuehrer in the 1930's revived a Kaiser's dreams of empire, gave to them a Nazi bent and purpose, told his followers that the German masses "would sooner be dominated than supplicated," and that they would not understand the "barefaced intimidation practiced upon their minds or the violent outrage committed upon their human liberty by the doctrine of ruthless force," when applied by installments to small to fight about one by one, and too late to fight about altogether when the Gestapo had pocketed their liberties and left them without the power to resist.

Liberty Lost in Neighboring Lands

True to this technique, feudalistic forces which had stifled freedom in Japan flew out from their island bases to sink a vulture's talons in Formosa in 1894; Korea in 1910; Manchuria in 1931; China in 1937; Indo-China, Wake Island, Guam, Pearl Harbor in 1941; Manila, Singapore, Sumatra, Java, Rangoon upon the road to Mandalay, with Australia in the offing in 1942.

True to this technique, fascistic forces which had stifled freedom in Italy flew out from Italian bases to sink a vulture's talons in Ethiopia in 1936; Albania in 1939; Greece in 1940; until with all their dark and doubtful booty they felt a greater talon's clutch cast them in the pit of their own digging, and there they now lie drowning in their own body juices. True to this technique, the Nazi forces which had stifled freedom in Germany flew out from German bases in a dove's disguise to sink a vulture's talons in Austria in 1938; Czechoslovakia and Poland in 1939; Norway, Denmark, Holland, Belgium, France in 1940; Russia in 1941—and there today in 1942 Russia, Germany and civilization itself are trembling in the balance.

Birds of a Feather

In the closing days of 1941, these birds of a feather flocked together: the Japanese "sphere of influence" in the Pacific, the Italian "sphere of influence" in the Mediterranean, the German "sphere of influence" in Europe, became interlocking "spheres of influence" in a global plan of conquest. Berlin, Rome, and Tokyo united in an axis on which they seek to turn the earth like a pig on a spit; seek to cut the life lines flowing from America to Britain, China, Russia and Australia as part and parcel of a plan to separate and conquer. Espionage and sabotage within the gates, submarines and destroyers on the sea, bombers in the sky and armies on the land all fit into their bold and daring dash for world dominion.

Clash of Systems

This world cannot exist half slave and half free, shouted Hitler to his Nazis in the Krupp munitions works, therefore we will enslave all men and nations. This world cannot exist half slave and half free, said Churchill and Roosevelt in the Atlantic Charter, therefore we will set all men and nations free. Thus the traditions of freedom and fascism have met and clashed. The wave of the past and the wave of the future have come to grips. Toe to toe and blow for blow they fight today: in the seven seas, on the wings of the morning, and in the uttermost parts of the earth.



INSTITUTE OF GOVERNMENT, CHAPEL HILL, NI



China saw the issue long ago: in Formosa, in Korea, in Manchuria and in the "China incident" at the Marco Polo bridge in 1937. England saw it at Dunkirk in 1939. Russia saw it on the dawn the Nazi army crossed the Russian border in 1941. America saw it at Pearl Harbor in 1941. And those of us who even now see it as through a glass darkly are destined to see it face to face as taxes soar, tires wear out, sugar shrinks on ration cards, gasoline evaporates under the wand of OPA, and necessity pinches with a thousand fingers.

The issue of slavery or freedom will come home to us as we come to see that yesterday in Axis countries even proud possessors of the "sacred Nordic blood" could not go to bed in the evening without a haunting fear that in the dead of night their own government might come to break the locks upon their doors, drag them out of beds and out of homes to concentration camps, without a notice save the crashing of the gates and without a hearing save the deafened ears of judges whose minds were made up in advance; as we come to see that what yesterday was true in Axis lands, is true today in Axis-dominated lands, and may be true tomorrow in lands today within the Axis shadow; as we see the sands of freedom running swiftly in the hour glass of time and hear the oft-recurring charges of "too little and too late"; as we see the Axis powers

"Bring the old dark ages back without the faith, without the hope,

Break the home, the church, the school and roll the ruins down the slope."

This issue of life and death will come home to us with all the stinging freshness of demonstrated truth as the suction power of war draws our brothers and neighbors from their home fires to the campfires of the nation, and as on distant seas, in distant skies, in distant lands wherever the battle line is drawn they "give death their beautiful youth in redhanded trophy of their courage"; as in Paris and London, in Vichy and Dunkirk, Pearl Harbor and Bataan, and on the long and wavering line from Leningrad to the Black Sea there is revealed the epic paradox; he that saveth his life shall lose it and he that loseth his life shall find it; as our own lives cast up again the age-old question, what doth it profit a man to gain the whole world if he lose his own soul; as we come to see that the only things worth dying for are the things that make life worth while, and catch a glimpse of how and why it is that men will "give their lives for a piece of paper if that paper means freedom, for a murmured prayer if that prayer means truth, for a flower if that flower means love, or for a trifle of flag if that flag means home."

The Call of the Prophet Nahum

Four hundred years before the birth of Christ the prophet Nahum called out to his people in the hour of danger: "Keep thy feasts; O Judah, perform thy vows, keep the fortress, watch the way, make thy loins strong, fortify thy power mightily, draw the water for the siege, go into the clay and tread the mortar, make strong the brick kiln." Twenty four hundred years afterward the prophet Churchill called out to his people in the hour of danger: "Come then: let us to the task, to the battle, to the toil—each to our part, each to our station. Fill the armies, rule the air, pour out the munitions, strangle the U-boats, sweep the mines, plow the land, build the ships, guard the streets, succor the wounded, uplift the downcast, and honor the brave. There is not a week, nor a day, nor an hour to lose." It takes neither a prophet nor the son of a prophet to hear this call to the colors coming from the quick and core of America's being today; turned and fashioned by the necessities of the guns, the men behind the guns, the men behind the men who man the guns.

"He Which Hath no Stomach for This Fight, Let Him Depart"

And when this faith finds its footing in our hearts as it will and as it must,—to those who used the argument that America was in no danger as an excuse for not preparing, and now use the argument that we are not prepared as an excuse for not fighting, and point to well nigh overwhelming odds as a reason for being afraid to fight,—we will rise up and say to them in the words of Harry the King at Agincourt, replying to Westmoreland's futile wish for needed help they didn't have and couldn't get: "O! do not wish one more: rather proclaim it through my host, that he which hath no stomach for this fight, let him depart; his passport shall be made and crowns for convoy put into his purse; we would not die in that man's company who fears his fellowship to die with us."

We will then blot out the propagandists, spies, and saboteurs who now hide low behind the Bill of Rights for safety while they gnaw like termites at the very constitution which protects them. We will plant the seed, plough the field and reap the harvest; dig the coal, pump the oil, and fire the furnace, make the bullets, planes and tanks and guns; build ships to transport soldiers and supplies to battle fronts wherever free men hold the line; "sight the submarine and sink the same," and keep supply lines open and expanding till they flood the seven seas.

We will man the aircraft warning service and the air raid warning system and organize the local forces of civilian protection, and train them to the point that they will minimize the damage from bombers when they come upon their deadly mission.

We will mobilize all the latent forces of civilian defense and point them to compelling tasks as they arise in the dislocating circumstances of industrial transactions from the usual business of peace to the unusual business of a war. In city halls, county courthouses, state departments and federal agencies throughout the length and breadth of North Carolina we will keep government of the people free from the hands of dictators and demagogues alike. And thus in our own day and our own way, we too will "keep the fortress, watch the way, . . . draw the water for the siege, go into the clay and tread the mortar, make strong the brick kiln . . . fortify our power mightily." For every hour is a zero hour and there is no time to lose.

The Gage of Battle

When this call to the colors echoes in our hearts we will pick up the gage of battle in spirit and in truth. We will pick it up in the spirit of the barons who seven hundred years ago at Runnymede picked up

the gauntlet thrown down by King John; in the spirit of Hampden, Pym and Cromwell who three hundred years ago in the English Parliament picked up the gauntlet thrown down by Charles I; in the spirit of thirteen colonies who nearly two hundred years ago at Concord, Lexington and Moore's Creek Bridge picked up the gauntlet thrown down by George III; in the spirit of Roosevelt and Churchill who a year ago in the Atlantic Charter picked up the gauntlet thrown down by the Axis powers and proclaimed to the world: that the rights of Englishmen in England, broadening through the centuries into the rights of Americans in the United States, broadening further into the rights of men in the Dominions overseas, should become the rights of all men everywhere; and that freedom of religion, freedom of speech, freedom from want and freedom from fear of aggression should become the common heritage of all mankind.

After the wind, after the earthquake, and after the fire, the still, small voice of the human spirit throughout the centuries calls out to us in accents we can recognize and understand: that the years 1215, 1689, 1776, 1941 are not isolated but connecting years in the steady flow of time; that Magna Carta, the Bill of Rights, the Declaration of Independence and the Atlantic Charter are not separated but united by the intervening years in the as yet unbroken flow of human liberty; that through succeeding centuries men and women of every generation have thrown the torch of steadily accumulating liberties to their successors until today, from failing hands to us they "throw the torch. Be ours to hold it high."

"... With My Face to the Enemy"

That spirit has found expression in every generation through the ages. It found expression in a son of North Carolina and of the University of North Carolina, shot down while leading on his men at Gettysburg, and living long enough to write on a piece of paper crimson with his blood this message: "Major, Tell my father I died with my face to the enemy. I. E. Avery." His negro body servant on the morning after the battle found this message clutched in his stiffened fingers and took it to his people who later gave it to the State Historical Commission. Ambassador Bryce saw it there in Raleigh years afterward and said: "The message of that soldier to his father is the message of our race to the world."

The message is as old as the legend of Old Siward when told his son was killed and brought off the field of battle. "Had he his wounds to the fore?" Old Siward asked. "Aye, on the front," came back the answer. "Why then, God's soldier be he.... I could not wish him to a fairer death." It is as young as the marines on Wake Island and the "smoke begrimed men covered with the marks of battle, in the fox holes of Bataan and the batteries of Corregidor."

It is as old as Henry of Navarre scorning the disguise of anonymity and leading his men into battle at lvry near six hundred years ago with the stirring call: "If you lose your standards, my comrades, rally to my white plume. You will find it on the road to victory and honor." It is as young as General MacArthur under the fire of Japanese dive bombers, saying to his associates: "You may take every normal precaution for the protection of headquarters, but let's keep the flag flying."

It is as old as Valley Forge and as young as Dunkirk; as old as the "valley of despair" and as young as the hope "that springs eternal in the human breast."

The spirit of this message is not the private property of a Nordic "master race"; it is shared alike by Angles, Saxons, Slavs, Dutchmen, Filipinos and the half naked Igorots who rode atop the thundering tanks to battle, guiding American drivers by the firing of automatic pistols as they closed in deadly struggle with the foe. It runs like a silver stream through the lifeline of humanity, and in times of stress and strain it flashes with volcanic force into the sunlight to remind the race of men they are the sons of God and not the sons of Baal, and made in His and not in Hitler's image.

The spirit of man cannot stand up against the blows of rubber truncheons, Hitler says. This is not the first time in human history that "the fool hath said in his heart, there is no God." And out of the whirlwind the Lord of Hosts gives back the answer: "Who is this that darkeneth counsel by words without knowledge: Where wast thou when I laid the foundations of the earth? Wherefore were the foundations thereof fastened? or who laid the cornerstone thereof, when the morning stars sang togther, and all the sons of God shouted for joy?"

"For there is a spirit in man." It has drunk the hemlock and overcome it. It has been nailed to the cross and survived it. It has been burned at the stake and risen from the ashes. It has faced the torture chamber and the firing squad and come forth unbroken and undying. It lives and moves and has its being on the earth today.

> "Though the cause of evil prosper, Yet 'tis truth alone is strong, Though her portion be the scaffold, And upon the throne be wrong,— Yet that scaffold sways the future, And behind the dim unknown, Standeth God within the shadow, Keeping watch upon His own."

Long ago the ancients found that secret writings of invisible inks on parchment paper could be brought to light by heat of fire. Now we know that fire can do the same for flesh and blood and spirit; that the fires of Dunkirk, London and Bataan are bringing out the elemental character in men and nations, character so long and often hidden from their eyes that they had lost their vision of it in the light of day, and hardly knew they had it in them save in the restless stirrings of their dreams. In the light from Axis fires men throughout the world are seeing at long, long last that freedom's hand

"with a flaming coal

Has writ its name in their heart and their soul." The glowing fires in Dunkirk skies, in London streets, in Bataan jungles, are showing us once more the "light that never was on sea or land." And in that light, please God, we yet shall live to see freedom's Calvary become its mount of Transfiguration, and to find in that Transfiguration the way, the hope and the life of the world that lies beyond.

What Is the Use of Civilian Protection?

By ALBERT COATES, Staff Member, Institute of Government Second in the Series of Civilian Protection Lectures

Many of the problems of civilian defense are readily apparent to the eye: (1) the problems of selective service and the resulting gaps left in essential governmental services, industrial and agricultural pursuits essential to the war production effort; (2) problems of worry, food and shelter left behind by soldiers going from the home fires to the camp fires of the nation; (3) problems of finding homes for families moved by hundreds from the sites of army camps; (4) problems of housing, sanitation, health and welfare, police and fire protection, water supply and sewage disposal, growing out of the quick and sudden concentrations of men and women in war production and defense areas; (5) problems growing out of the shift from peacetime to wartime activities, the resulting curtailment of many businesses and employments and the cutting out of others altogether, leaving many people stranded in their homes without the means of livelihood; (6) problems growing out of the shortages of war materials leading to priorities, rationing and allocations, turning luxuries into necessities and necessities into forbidden fruits; (7) problems of salvaging scrap metal, old rags, old rubber and waste paper for making and shipping munitions of war; (8) problems of transportation growing out of the rationing of rubber and gasoline, and the increasing absorption of existing transportation facilities by military shipments of men, munitions and supplies. Problems of this sort have existed in wars throughout our history.

The Civilian Protection division of the civilian defense effort is organized on the theory that hostile air attacks on American cities and towns have long been possible, are fast becoming probable, and may become certain in the sudden, rapid shifts of total war. Never before have the American people faced this possibility; they still see it as through a glass darkly, not face to face. I invite you to examine this theory in the effort to find out whether it is founded in fancy or in fact; whether the cities, the counties and the state of North Carolina should do anything about it, and if so, what.

I

In this war, civilian populations are in danger as they have never been before in modern times. This is due in part to Nazi theories of warfare, in part to changing weapons of war, and in part to increasing civilian contributions to the sinews and the steel of fighting men.

Nazi Theories of Warfare

According to one theory, no more force should be used in war than is necessary to overcome the enemy in battle; therefore the civilian population should not be attacked. According to another theory, force used to bring opposing military units to their knees is not enough. It should strike behind the enemy's battle lines to supply lines, to farms and businesses of people, in the effort to bring civilian populations to their knees, and thus compel their governments to sue for peace and their military forces to surrender.

These two opposing theories of war have grown and flourished side by side throughout the history of men and civilizations. The theory and practice of total war is as old as Attila and Ghengis Khan and as young as the Japanese in China and the Germans over London. North Carolina and other southern states got a foretaste of it in the Indian Wars of Colonial days. They got another taste of total war in Sherman's march to the sea in 1865, as he suited action to his words: "We are not only fighting hostile armies, but a hostile people, and must make old and young, rich and poor, feel the hard hand of war." They got still another taste of total war in Sheridan's ravaging forays, giving more truth than poetry to his boast that "a crow flying over the valley would have to carry its rations." Italy in Ethiopia, Japan in China, and Germany in Europe have treated civilian populations to a taste of total war beyond the powers of invading forces to inflict in former wars. They have brought the theory and practice of total war farther, faster in the last six years than in six hundred years before. If Nazi theories of war provided the will, changing weapons of warfare pointed the way.

Changing Weapons of War

Ancient methods of defense against attack included walls, reinforced with towers and surrounded by moats. Illustrations may be found in Hadrian's Wall which the Romans built across Britain in defense of their frontier, and the Devil's Wall between the Danube and the Rhine; in the continuous stone wall of China-20 feet high, 20 feet wide, and 1,400 miles long; in the walls around cities and towns throughout the middle ages. This psychology of protective walls and moats and trenches lasted into the present century until it collapsed on the western front in the spring of 1940. Ancient defenses had become antiques, but defending forces did not know and could not learn it. Like the ostrich which buried its head in the sand, the French leaders buried the French armies in the Maginot line, and there all France lies buried till the day of Resurrection comes.

From battering rams to bombards.—These ancient walls protected civilian populations from attacking forces until weapons were devised to breach them. The battering ram, the catapult, the trebuchet began the breach. Gunpowder in the thirteenth century widened the breach. "Bombards," used by Germans against Italian cities in the fourteenth century, and the heavy artillery which followed on its heels, marked the end of frontier walls, city walls, and castle walls. The smoke of powder thus compelled civilian populations to organize standing armies and send them out in front of city walls to keep attacking armies and artillery out of shooting distance. This fighting pattern lasted through the centuries till the airplane came.

Wings over Armies

Planes were in the minds of men long before they flew upon the earth. Schoolboys learn the legend of Icarus who flew from the island of Crete into the sun until, according to the poet:

"With melting wax and loosened strings

Sunk hapless Icarus on unfaithful wings."

Benjamin Franklin prophesied in a letter to a friend in 1784 that the balloon was "a discovery of great importance, and what may possibly give a new turn to human affairs. Five thousand balloons, capable of raising two men each, could not cost more than five ships of the line;" he wrote, "and where is the prince who can afford so to cover his country with troops for its defense, as that ten thousand men descending from the clouds might not in many places do an infinite deal of mischief, before a force could be brought together to repel them?"

Around three-quarters of a century later Tennyson in *Locksley Hall* followed Franklin's prophecy and

"Saw the heavens fill with commerce, argosies of magic sails,

Pilots of the purple twilight, dropping down with costly bales;

Heard the heavens fill with shouting, and there rain'd a ghastly dew

From the nation's airy navies grappling in the central blue . . ."

It remained for Wilbur and Orville Wright on December 17, 1903. to launch from Kill Devil Hill at Kitty Hawk on North Carolina's eastern shore "the first flight of a power driven airplane." From 1915 to 1918 this airplane invention, winging its way from the North Carolina coast, introduced a new, significant and disturbing factor in the strategy of war. For the first time in human history, attacking forces could fly over the heads of protecting armies to strike at cities in the rear, destroy or cripple sources of supply, create panic among the people and so undermine resisting armies.

Airplane contributions to total war.—This significant and disturbing factor in the war we entered in 1917 has become the deciding factor in the war we entered in 1941; airplane speed of 100 miles an hour in 1918 has grown to 300 miles an hour in 1942; airplane range of 500 miles in 1918 has grown to 6,000 miles and more in 1942; airplane carrying power has grown from 1,000 pounds in 1918 to 6,000 pounds and more in 1942; airplane numbers in the hundreds in 1918 approach the hundred thousands in 1942. The battlefields of Poland, Holand, Belgium and France give graphic testimony that no army can stand up against it unaided and alone. The Prince of Wales, the Repulse and the Arizona give graphic testimony that no navy can stand up against it unaided and alone. Warsaw, Rotterdam and Coventry give graphic testimony that no city can stand up against it unaided and alone. "Pilots of the purple twilight" are "dropping down with costly bales" and wreaking still more costly wreckage.

Expanding Military Objectives

Bombing planes thus give a new and terrible meaning to the old philosophy of total war. International tribunals have tried in vain to limit their attack to military objectives such as "military forces, military works, military establishments or depots, factories engaged in the manufacture of arms, ammunition or essential military supplies; lines of communication or transportation used for military purposes." But how could attacking forces, even if they were aiming solely at objectives such as these, hope to miss surrounding civilian homes and industries in thickly populated areas? Particularly when aiming with airplanes which cannot draw as fine a bead upon specific targets as rifles or artillery?

It took one civilian to produce sufficient food and war materials to keep two soldiers in the field in the Napoleonic wars; it took one civilian to keep one soldier in the field in the Franco-Prussian war; it took five civilians to keep one soldier in the field in the World War we entered in 1917; it takes ten to fifteen civilians to keep one soldier in the field in 1942.

When it takes ten to fifteen persons on the home front to keep one soldier on the fighting front, are not those ten to fifteen on the home front as much a military objective as the soldiers they support? Are not all of us participating in the civilian protection and civilian mobilization phases of civilian defense, legitimate military objectives of enemy attack? Have not military objectives expanded to include well nigh the whole of populations in modern wars where the peacetime economy has shifted to a wartime basis and nearly every person either in or out of office hours is engaged in war work?

Military attack on civilian populations is part and parcel of the patterns which have broadened modern war from battling armies to battling peoples.

Π

CAN THE AXIS POWERS ATTACK THE UNITED STATES BY AIR IF THEY WANT TO?

Let us look at all the light the records give, in answer to this question.

England knows the answer. The English island, "set in the silver sea, which serves it in the office of a wall, or as a moat defensive to a house," has now found out that twenty-two miles of water from Dover to Calais will not protect her from the "envy of less happier lands." In the winter of 1939 German bomber bases were 300 miles and more from English soil; in the spring of 1940 they were in Holland a hundred miles away; then in Belgium, less than forty miles away; then in France, at Calais, 22 miles away; in August, 1940, there were bombers over London. England knows at last that she can be attacked by land, by sea, and by air.

Australia knows. A year ago Japanese home bases were three thousand miles by air and around six thousand miles by water from Australia. From Japan they moved 1,800 miles to Hongkong, 1,600 miles further to Singapore, 600 miles further to Java, 2,200 miles further to New Guinea, hardly a hundred miles from Australian shores. Day before yesterday Australia knew she could not be invaded. Yesterday she found that she might be attacked by air. Today she knows she can be attacked by land, by sea, and by air.

India knows. Two years ago India was more than 5,000 miles from Japanese home bases. In the fall of 1940 the Japanese moyed into Indo-China, and celebrated their shotgun wedding with Thailand. Step by step they moved: to Hongkong, 3,500 miles from Ceylon; to Singapore, 1,800 miles from Ceylon; until yesterday Japanese planes were dropping bombs in Ceylon and Japanese warships went unchallenged in the Indian Ocean. India knows at last that she can be attacked by land, by sea, and by air.

Pearl Harbor knows and California thinks she knows. On Saturday evening, the sixth of December, American citizens went to sleep with the assurance that Japan was 4,500 miles away. Before they awoke on the morning of the seventh Manila and Pearl Harbor found out that 2,000 to 3,500 miles of Pacific water would not protect them from the striking fangs of the malignant Japs. Pacific Coast Americans have already felt the shock of shells from submarines at Santa Barbara, and many of them today are ready to swear to the flurry of enemy wings over California.

What of the Atlantic danger? In 1939 German bases were 4,000 miles from the American shores. By June of 1940 they came closer in the French Atlantic ports, by July in Dakar they came within 2,000 miles of the South American Coast. Can they creep closer to South America in the Cape Verdes and closer to North America in the Azores? To Martinique in the French West Indies within 1,200 miles of the Atlantic Coast and just 500 miles from Panama? To the Bermudas within 700 miles of the North Carolina coast? To the Bahamas within 600 miles of Cape Hatteras?

For years before this war began Germany operated a schedule of heavy commercial planes from Dakar to South American landings a little over 2,000 miles away. These planes had a cruising range far beyond 2,000 miles; there was no commercial necessity for stoppage on the way, and yet they were refueled from German tenders in the mid-Atlantic. Is it possible that they were rehearsing maneuvers to bring aircraft carriers and bombers within striking distance of our shores? Their submarines are already sinking tankers and freighters in Atlantic coastal waters. Can they shell North Carolina seaports and cities by the sea? Can they make commando raids on strategic coastal points? Can their submarines bring bombing planes within sight and sound of our coast line?

What if they sink a few more British battleships and cruisers like the *Hood* and the *Royal Oak*, the *Prince of Wales* and the *Repulse*, the *Dorsetshire* and the *Hermes*? A few more American battleships and cruisers like the *Arizona*, the *Oklahoma*, the *Utah* and the *Houston*? What if the French Navy comes out on the seas in German hands? What if the *Scharnhorst*, the *Gneisenau* and the *Prince Eugen* escape from German ports to join them,—after all, an easier task than escaping down the English Channel.

If we can ferry planes from Elizabeth City 3,000 miles to London; if we can carry tanks, planes and guns 6,000 miles from New York to Archangel and Murmansk; if we can carry men, munitions and supplies 6,000 miles to Australia; why should it seem so strange to think that Admiral Raeder and Admiral Tojo might some day do nearly half as well in reverse? If we can bomb Tokio, can Tokio bomb us?

Why should it seem strange?

If John Paul Jones in 1776, with tar on his heels, and the beginnings of a United States Navy at his back. could cross the Atlantic under wind and sail, steer his course around Ireland, capture merchant ships and brigantines at will, and sink the Serupis off the coast of France, why should it seem so strange that German submarines in 1917-18 should torpedo ships off the Atlantic coast and sink a lightship off Diamond Shoals at Hatteras? If Captain Johnston Blakely of North Carolina, the University of North Carolina and the United States Navy in 1814 could sail across the Atlantic Ocean in the Wasp to sting and cripple enemy shipping in the English Channel, why should it seem so strange that in 1941 the Axis powers have sunk tanker after tanker off the North Carolina coast, jarring the windows of Southport and other seaside cities and towns?

Have we forgotten that North Carolina has been invaded by land? that in the days of the Revolution hostile soldiers were transported across 3,000 miles of water, landed in Atlantic ports, crossed the North Carolina line around Rutherford and Union Counties, and from there crisscrossed the state in the west, the Piedmont and the east under the lead of Colonel Ferguson and Lord Cornwallis? That in the Civil war this Revolutionary history repeated itself with a vengeance in Stoneman's raid and Sherman's march? That counties, cities and towns of North Carolina by the score have been plundered by hostile land attacks in bygone days?

Have we forgotten that North Carolina has been invaded by sea? that in Colonial days French and Spanish privateers captured ships "within sight of the wharves at Edenton," and within the bar at Ocracoke? That in the Revolution 450 enemy soldiers sailed up the Cape Fear river, captured Wilmington. "swept through Duplin, Jones and Craven Counties?" That in the Civil War, sea borne enemy troops captured Fort Ellis, Fort Macon and Fort Fisher, forced the abandonment of Fort Clark and Fort Morgan, brought Hatteras inlet under their control, and captured Roanoke Island, Edenton, Elizabeth City, New Bern, Morehead City, Beaufort, Washington, Williamston and Plymouth?

If we have been successfully invaded by land and by sea in bygone days, why should it be considered beyond the bounds of probability that we might be invaded by land, by sea, or by air at the same time in the future?

Certainly the Axis powers have the same motives for attacking us that they have for attacking our allies: (1) we are their enemies; (2) we are also the arsenal of their enemies; (3) we are also moving men and munitions more and more from this arsenal to the firing lines of their enemies—in England, in Russia, in China, in Australia, wherever the battle line is drawn; (4) if they cripple us they cripple all their enemies because: (5) if they cut the supply lines running from the Pacific Coast of this arsenal to Australia, Australia may fall as the Philippines fell and (6) if they cut the supply lines running from the Atlantic Coast of this arsenal to England and Russia, England and Russia may fall as the Philippines fell; (7) if Australia falls we lose our best and perhaps our only remaining base for returning the compliments of Pearl Harbor to Japan; (8) if England and Russia fall and the rest of Europe caves in, we shall be left alone in the western hemisphere to hold the bag of liberty for all the world.

Who doubts that the Axis powers are planning, working and fighting for this end? Who doubts that certain South American countries might jump with the cat at such a turning point and furnish bases to the Axis powers? Who doubts that the Axis powers with the combined resources of a conquered world could hopelessly outpoint, outbuild and outman the United States to the point that they could converge upon us from the four corners of the earth, to be met here by a fifth column, furtive and slinking now but ever ready to polish its brass and let its light so shine that its friends and our enemies can take it for a guide as at Pearl Harbor, Manila and throughout the Philippines?

Kipling's warning to the "Islanders" in 1902 is a grave and urgent warning to Americans in 1942:

"Fenced by your careful fathers,

Ringed by your leaden seas,

Long did you wake in quiet

And long lie down at ease,

Till ve said of strife, 'What is it?'-

Of the sword, 'It is far from our ken'--

Till ye made a sport of your shrunken hosts, And a jest of your armed men...

"Then were the judgements loosened; Then was your shame revealed,

At the hands of a little people,

Few but apt in the field."

ш

How can we cut down the likelihood and effectiveness of air attack on the United States? on the cities, counties and state of North Carolina?

Battle front preparations.—It goes with little saying that we can cut down the effectiveness of these attacks: (1) by carrying the war to the enemy with all our might on fighting fronts wherever free men hold the line with faces still to the front and wounds to the fore:---to Britain, to Russia, to China, to Australia and the rest; (2) by preventing enemy acquisition of added island bases as in the British seizure of Madagascar and the American efforts to neutralize the island of Martinique; (3) by making the sea unsafe to the point of terror for submarines and aircraft carriers approaching our shores; (4) by anti-aircraft artillery, balloon barrages and batteries on the shores; (5) by intercepting battleships and aircraft of our own; (6) by blacking out cities, towns and counties so completely that attacking planes cannot spot their targets if and when they break through; (7) by organizing civilian protection in cities and towns and countrysides so thoroughly that token raids will not terrorize and frighten people into panic and that the resulting damage from attacking airplanes breaking through our interceptor lines will be minimized to the point the enemy will not want to risk it.

Home front preparations.—We know from the record that preparations such as these help cut down attacks. England cut down German daylight bombing by knocking down attacking planes so fast the damage done to England was not worth the cost to Hitler. She cut down the likelihood of air borne troops by training parashots to shoot the parachutists from the skies. She cut down the likelihood of sea borne troops by calculated preparations to feed them to the fishes on the way. She cut down the hindrance to war production efforts by civilian protection programs which could keep the people off the streets in air raids, black out the lights, put out the fires, repair the water lines, communication lines and transportation systems, so as to minimize the damage done. She has thus far saved herself and others too by showing with all the stinging freshness of demonstrated truth that while soldiers can give punishment on battle fronts, civilians can take it at home; that while England's air men "crowded loyalty and love into moments of glory and joyfully stormed at all the thousand doors that led to death" in Dunkirk skies, England's civilians in motor boats and fishing smacks, crossed the choppy waters of the English Channel and steered into the blazing hell of Dunkirk harbor as unflinchingly as England's professional seamen in rescue of a sacred remnant of their brothers. Airmen, seamen, soldiers and civilians alike gave a fierce and terrible meaning to Churchill's battle cry: "we shall fight on the seas and oceans, we shall fight in the air, we shall defend our Island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never surrender.'

IV

Can we here in North Carolina and throughout the United States organize civilian protection and defense as effectively as it has been organized in England?

Aircraft warning service and air raid warning system.—Steps are being taken to that end. At the outbreak of the war in Europe, civil and military authorities went from the United States to England to study methods of protecting civilian populations from ravages by air.

These authorities returned to build a program of civilian protection adapted to the dangers and the needs of the American people: This protective program calls for an aircraft warning service: (1) to pick up the presence of approaching planes from island stations linked together by naval patrols, from coast guard cutters, air patrols and mechanical detectors on the shore, from observation posts behind the shorelines dotting every six mile grid throughout the state; (2) to flash the words of warning to Filter Centers which plot the nearing course of hostile planes and report results to Information Centers which precipitate a plan of action, alert anti-aircraft batteries on the shore and send intercepting planes into the sky.

It calls for an air raid warning service, stemming from a Civil Air Raid Warning Officer at the Information Center, transmitted through District Warning Officers in all sections of the state to all cities, towns, and countrysides which want a warning and prepare a center to receive it: *yellow* to let them know that the enemy planes may strike in twenty minutes; *blue* to let them know these planes continue their projected course and may strike in eight to ten minutes; *red* to let them know that they may strike at any minute; *white* to let them know the raid is over and the danger is passed.

It calls for civilian protection organizations in every property and population center: to black out the lights; put out the fires flaming from incendiary bombs; rescue people trapped in bombed and burning buildings; give aid to the wounded and food and shelter to the homeless; keep the streets and highways open; tear down tottering walls and clean up ruins of the raid; restore broken water mains, communications lines and transportation systems; keep the peace in times of panic and protect persons and property from looting ghouls; to save the cities, towns and countrysides from spreading air raid damage.

V

AIRPLANE STRIKING POWER

For when the bombers come they may strike with many weapons. They may strike, as they have struck before, with small cannon and machine guns at civilians on the streets and highways or at soldiers in the camp or on the march. They may strike, as they have struck before, with incendiary bombs: with four to eight 500 pounders carried by a single plane and aimed at specific targets; with 1000-2000 two-pounders carried by a single plane, released in racks of twenty to fifty, scattered in swift succession over the heart of a city, falling with a momentum which carries them through roofs and into attics or the heart of buildings according to the construction, setting 100 to 200 separate spreading fires. They may strike, as they have struck before, with high explosive bombs, weighing from 100 to 4000 pounds, falling at a rate of 1,000 feet a second or 600 miles an hour; striking with a force of impact that carries a 500 pound bomb through six floors of a building, eight feet of brick masonry, four feet of solid concrete, twenty feet of earth; digging a crater ten feet deep and thirty feet wide in a street, throwing hundreds of steel splinters with a deadly force six hundred feet; blasting out a wave of pure and simple air with killing power eighty feet away; and returning with a suction power pulling out the walls of buildings in its path. They may strike, as in isolated cases they have already struck, and as the Prime Minister of Britain has suggested they might strike again, with poison gases, the very names of which will scare a common man to death: diphosgene, chlorpicrin, di-chlorethyl sulfide, ethyldichlorarsine, brombenzylcyanide, chloracetophenone; the odors of which are both intriguing and misleading and range from the odor of stove polish to flypaper to coal smoke to garlic, and from apple blossoms to geraniums to new mown hay; the effects of which may go far enough to blind the eyes with tears, or further to touch the skin, blister it and sink into the bloodstream, or further still go through the nose to create a sinus headache or the nausea of seasickness without the power to vomit, and on into the lungs to eat away the capillary blood vessels and drown a man in his own blood serum. They may strike with combinations

of all these weapons: with incendiaries to light up specific targets for high explosives to demolish with precision bombing, followed by machine guns spraying death on people fleeing from their bombed and burning homes; with small but killing charges of explosive in occasional incendiary bombs to generate a fear of putting out the fires they start, with delayed action fuses on high explosive bombs to lull the people into thinking they are duds, and thus increase the number of the dead. Add poison gas to the raids already made on London and the combination is complete. If the Axis powers do not plan to use gas, what are they making it for? Folks who start out to fight like men when the going is merry may come to fight like tigers when the going is tough.

Where Will the Bombers Strike?

Cities have been in the past and are today the natural objectives of attack, whether by land, by sea, or by air. In ancient days attacking forces cutting through protecting armies and capturing strategic cities often broke the back of organized resistance. In the Civil War the Union armies aimed at such centers as Richmond, Atlanta, Vicksburg. In 1914 the Germans aimed at Paris and got close enough to drop shells from heavy artillery into its streets. In this war the axis powers aimed at Paris, London, Moscow, Leningrad and other symbolic and strategic centers. Attacking forces aim at cities today for the same reasons as in former days: they are seats of government; centers of population; centers of industry; hubs of transportation and communication systems; and enemies can destroy more people, property and morale and do more damage there in less time, with less money. Through cities they can hit their hardest licks at countrysides, destroying the rural markets, disorganizing rural sources of supply, and demoralizing country livelihood.

Possibilities, probabilities and certainties.—It is generally conceded that it is physically possible for the Axis powers to bomb Amercan cities today: from homeland bases, from island bases, from aircraft carriers, from submarines. If the tides of war keep flowing in the Axis favor long enough, this possibility turns into a probability. If our allies across the seas should chance to fall, this probability turns into a certainty. Whether these possibilities, probabilities and certainties are worthy of attention is a question American cities and towns must settle for themselves. The cities and towns of North Carolina face this question now. They can go all of the way to prepare against attack, part of the way, or none of the way. In fact we are fighting Axis powers for the right of North Carolina cities, towns and counties to do exactly as they please.

In exercising this right, however, they might face themselves with questions such as these: Does North Carolina have strategic war activities which might invite attack? Seaports shipping war supplies? Shipyards? Military bases? Industries in war work? Power dams and generating plants? Critical raw materials? Strategic transportation lines and communication systems? People to be terrorized and frightened into panic?

Is it foolish to assume that in choosing which of two equally desirable centers of attack the enemy might choose for its target, the enemy will choose the center unprepared against attack and helpless to cut down the spread of air raid ravages? Is it foolish to assume that token raids might fall where neither military installations nor supply lines may be found, just to spread the feeling that no spot is safe and thus provide a reason for bombings without rhyme?

With around two thirds of our Navy spread thin in the Pacific, around one third spread thin in the North Atlantic, and little left to protect the South Atlantic Coast, we might inquire whether it would be to the advantage of the Axis powers to attack us by sea or by air on the theory that hit dogs howl for help and might therefore compel withdrawal of reinforcements, munitions and supplies now going to our own soldiers and allies on the war fronts of the world. If and when we come to that point shall we fall in with Hitler's plans or shall we stick to our own? If and when we come to the point that ships and planes and supplies are needed at the same time by our soldiers on the battlefronts and ourselves on the home front, shall we save our soldiers or shall we save ourselves?

We might inquire whether the words of the English poet to his native island in 1902 bring any meaning to American citizens in their native land in the light of facts in 1942:

> "Given to strong delusion, Wholly believing a lie, Ye saw that the land lay defenceless, And ye let the months go by Waiting some easy wonder: Hoping some saving sign . . . Idle—except for your boasting, And what is your boasting worth? Ye stopped your ears to the warning, Ye would neither look nor heed. Ye set your leisure before their toil, Your wants above their needs. But ye say, It will mar our comfort. Ye say, It will minish our trade. Do ye wait for the spattered shrapnel Ere ye learn how the gun is laid? For the low, red glare to southward When the raided coast towns burn? Light ye shall have on that lesson, But little time to learn."

Civilian Defense: 1776-1942.—This is not the first time the civilians have been called upon to help themselves. Committees of Safety were organized by civilians in every county, city and settlement in North Carolina in 1776 and continued on the alert throughout the Revolution. Vigilance committees were organized by civilians in every locality of the state in 1861 and continued on the alert throughout the Civil War. State and local councils of defense were organized in 1917 and continued on the alert throughout the World War. Civilian Protection Committees and Councils of Defense are organizing in every city, town and countryside today, and civilian protection programs are part and parcel of their program as now once more

"through the gloom and the light, The fate of the nation is riding tonight." As these words of warning sink into our souls and we waken to our home front task we are beginning to understand the spirit and truth of the Roundhead's prayer as he went into battle with the Cavaliers nearly three hundred years ago: "O Lord, I shall be very busy this day. I may forget Thee; but do not Thou forget me."

This is total war, and we are all together in it. From the farms and mines and forests, to the factories and industrial plants, to the training camps and seaports, through the convoys of ships bridging the seven seas, the lifelines of America are flowing to the fighting men on fighting fronts across the world. From these backlines, through supply lines, to the front lines any man who strikes his colors stabs his brothers in the back.

From the far out island stations to the sea and shore patrols, from observation posts to filter and information centers to cities, towns and countrysides, they who keep the vigil of the aircraft warning service and air raid warning system also keep the faith of freemen with their brothers in civilian protective units and the people in the homes that they protect.

They who heed the warning when it comes—in yellow, blue and red, from Citizens Defense Corps commander, to control center staff, to protective unit heads and the workers in their squads, to the rank and file of people who refuse to be stampeded into panic—all these keep the faith, make worth while the looking, listening, warning work of the unbroken chain of watchers of the skies. All of us are in the army now.

"They which builded on the wall, and they that bare burdens," said the prophet of old, "every one with one of his hands wrought in the work, and with the other hand held a weapon." So was it with our own forbears in the lurking dangers of the colonial wilderness who wrought with axe in one hand and rifle in the other. So is it with us today as men and women in the Citizens Defense Corps on the home front stand shoulder to shoulder with military defense forces on the fighting front; as men and women in the protective services at home make their living by day and go into training to protect that living by night; as all of us hear and answer to the ancient battle cry: "Be not ye afraid of them: remember the Lord, which is great and terrible, and fight for your brethren, your sons, and your daughters, your wives and your houses."

Thus the Civilian Protection Division of the Office of Civilian Defense in city, county, state and nation is locking arms with the army, the navy and the air corps—all of them manned by men and women from thirty million homes, backed by the united resources of these United States; scorning to ask more quarter of the enemy at home than the men in the foxholes of Bataan and the batteries of Corregidor; and in every bead of sweat on the brow of labor, in every blister on the hands of those not used to work ,on every dollar and dime we have or hope to have, saying to our common country

> "What all our lives to save thee? We reck not what we give thee, We will not dare to doubt thee, But ask what ever else and we will dare."

Aircraft Warning Service and Air Raid Warning System

By ALBERT COATES, Staff Member, Institute of Government Third in the Series of Civilian Protection Lectures

From island outposts to the shoreline.—In the last hour I pointed out that civilian protective services in cities, towns and countrysides throughout the state are organizing against the background of aircraft warning services and air raid warning systems, prepared to bring them notice of approaching hostile planes. The diagram below charts the course of aircraft warning services from the start of the warning message to the alerting of anti-aircraft artillery and the start of intercepting planes.

The aircraft warning service begins with a chain of island outposts 500 to 1000 miles off our Atlantic shoreline: from Greenland and Iceland to Newfoundland to Bermuda to the Bahamas to Puerto Rico to St. Lucia to Trinidad; it continues with a line of Coast Guard planes and navy patrols and radio locators on the shoreline. Military lookouts watch the skies at their successive stations, pick up the presence of approaching aircraft, and flash radio warning direct to designated Information Centers.

From observation post to filter center .--- At the shoreline these military lookouts are joined in their unceasing vigil of the sky by civilian lookouts stationed at 1100 observation posts, dotting every six mile grid across the state, manned by men and women of the neighborhoods, where twelve to twenty or more watch the sky in shifts and relays through all hours of the day and night. At the sound and sight of planes of any sort they lift the telephone receivers by their sides, give the signal "Army flash," get first call upon the line to filter centers, hear the filter center operator say "Army-go ahead please," and then give the number, description and direction of all planes flying overhead.

At the filter center is a map traced on a large table-board, drawn to a scale of one inch to the square mile of land within the filter center area, with the code names and locations of all observation posts as they appear upon the land. Around this filter center board sit civilian volunteers from the surrounding neigh-

borhood, directed by army officers in charge, working in shifts and relays through all hours of the day and night. As the calls from scattered observation posts converge upon this filter center, these civilian volunteers plot the course of every plane that flies-moving their markers across the centerboard map as a shadow from the flying plane might move. Just as these planes in the air are kept in sight by successive observers on the ground so are they kept in sight by those around the filter center board, forever checking observation post reports against each other, sifting out the faulty observations, and plotting the resultant flights.

From filter center to information center.—These resultant flights are flashed by telephone to Regional Information Centers where facsimiles of the filter center boards reporting to that area are consolidated into one composite map of the Information Center territory. Volunteer workers directed by army officers move the markers across this com-



The above map shows the three filter centers in North Carolina to which observation posts report. The far western counties report to Atlanta, the southwestern to Columbia, the northeastern to Norfolk. Wilmington is also an information center.

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posite map in courses corresponding to the flights of planes, so as to mirror on the Information Center map board movements of all airplanes in the skies. In the same room is a seaward board on which all flights approaching from the sea are plotted.

"The game's afoot."—At a balcony overlooking this information center board sit representatives of the Army, the Navy, and the Civil

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Aeronautics Authority, with charted flights of all military and civilian planes. They check these charts with movements on the board to identify all army, navy and commercial or other civilian flights. When they see a flight of planes move onto and across the board, not present or accounted for upon their charts, and unidentified, they assume them to be enemy planes, and the time for action has come: the CAA representative orders all commercial planes and civilian flying from the sky; the FCC representative stands ready to shut off all radios which might give guiding beams to hostile planes; the Anti-aircraft Officer buts anti-aircraft artillery into readiness for action; the Commander orders the nearest available squadron of pursuit planes into the air to intercept the enemy; the stage for battle is set.



This map traces an air raid warning originating in the Wilmington Information Center to the Raleigh District Warning Center; from Raleigh to its quota of toll centers, including Winston-Salem; and from Winston-Salem to the cities and towns in its territory, some of which relay the warning a fourth time. In the same way, through district warning centers, toll centers, and local exchanges, the entire state is covered. In spite of the number of relays, an air raid warning will reach the local control center within 90 seconds after the time it is ordered at the Information Center in Wilmington, Norfolk, or Charleston.

Air Raid Warning System

The diagram above charts the course of air raid warning messages from the time the warning message leaves the Information Center to the time the signals—yellow, blue and red—call protective services to action and put civilian populations on alert.

At the moment the Commander sends up intercepting planes, and the anti-aircraft officer alerts the anti-aircraft batteries, the Civil Air Raid Warning officer flashes the warning to the District Warning Officers in the path of the approaching planes: *yellow*—to let them know that enemy planes may strike in 20 minutes, *blue*—to let them know the enemy may strike in 8 to 10 minutes, *red*—to let them know the enemy may strike at any minute, *white* —to let them know the raid is over and the danger passed. These district warning officers in turn relay these successive warnings to strategic cities and towns within their respective districts, and from these strategic centers the warning is flashed on to every city, town or settlement that wants a warning and prepares a local control center to receive it.

From the Information Center to the Local Control Center.-To illustrate the process with a call from the Wilmington Information Center to the Raleigh District Warning Center: The Civil Air Raid Warning Officer in Wilmington gives the Raleigh District Warning Officer this message: "Raleigh—yellow"; the Raleigh District Warning Officer transmits this message to the toll centers in the Raleigh District: Louisburg, Durham, Burlington, High Point, Greensboro, Reidsville, Winston-Salem. Each of these toll centers then calls its tributaries: for

instance-out from the Winston-Salem switchboard goes the call to Dobson, Glendale Springs, King, Mayodan, Midway, Mocksville, North Wilkesboro, Oldtown, Roaring Gap, Rural Hall, Sparta, Walkertown, West Jefferson, Lewisville, Mount Airy, Elkin, Pilot Mountain, Yadkinville. Some of these places in turn call others, and thus the yellow warning reaches the control center in every locality that makes arrangements to receive it. The same process is repeated on the successive warnings: blue, red, and white.

From the Local Control Center to the homes of the people.—When the Yellow warning speeds into the Durham Control Center through the Air Raid Warning telephone equipped with a gong sounding louder than the usual telephone jingle: one of two operators always on duty there picks up the receiver, acknowl-.



THE WAITING ROOM OF THE DURHAM CONTROL CENTER DURING AN AIR RAID. An Incident Officer has just been ordered from the THE WAITING ROOM OF THE DURHAM CONTROL CENTER DURING AN AIR RAID. An Incident Officer has just been ordered from the Control Room to the scene of a major disaster, and is here reviewing the situation with Messengers and Drivers before leaving. One of the Drivers will take him to the scene; he may also take one or more Messengers to handle communications. Note the flags and lantern, which will be used to block off streets and dangerous areas. The Waiting Room, the Message Room, and the Control Room adjoin each other and make up the Control Center; the Waiting Room contains the only entrance from the outside. Messengers and Drivers report here on the yellow signal, and await orders, except for those Messengers who are used between the Message Room and the Control Room. See the accompanying text for a discussion of how

the Control Center operates to warn volunteer units and to handle reports of air raid damage.

edges receipt of the warning, presses a button to ring a bell and a switch to flash the yellow light in all three rooms of the control center; both operators move down the table to the two "outgoing" phones and begin to call the personnel of the control center staff including: the Commander, Controller, Chief of the Police, Fire, Medical, Public Works, and Utility divisions, Chief Air Raid Warden, Chief of the Fire Watchers, Records Clerk, Communications Officer, Chief of Messengers, Chief of Drivers Corps, and then notifies other strategic persons and departments including: Fire, Police and Public Works Departments, Public Utilities, Schools, Hospitals, Industrial Plants in defense work, Air Ports, Radio Stations, and a few other local institutions when requested.

As these men get the warning they in turn call their assistants and leave at once for the control center and their posts of duty. To illustrate: the Commander of the Citizens Defense Corps calls his Assistant Commander; the Controller calls his Incident Officers; the Chief Air Raid Warden calls his District Wardens, who in turn call sector wardens, who in turn call zone wardens, who in turn call block and building wardens while the head District Warden is calling wardens of the neighborhoods throughout the county. Thus the calls go out from all division heads of the protective services until all members of all units of the Citizens Defense Corps are at their posts and ready for action whenever danger strikes.

The Blue Warning follows a similar course, except that the staff and chiefs of the divisions and others are already at their posts.

When the Red Warning comes to the control center, the designated person throws the switch, sets off ten sirens located in strategic places through the city, supplemented by steam whistles in industrial plants connected with the control center by private wire, further supplemented by alarms from each fire station



MESSAGE ROOM OF THE DURHAM CONTROL CENTER. At the left is one of the two telephone operators always on duty; at the right the Communications Officer. Standing at left is a Boy Scout Messenger who carries reports of air raid damage through the door behind the Operator to the Control Room. Note the kerosene lanterns and flags for the use of Incident Officers going to the scene of air raid damage, the first aid kit, and the emergency gasoline lamp at the top of the door.

unit, from every locomotive on the railroad yards, still further supplemented by sirens from eleven City, County and State Highway Patrol cars which go out one mile beyond the city limits on the eleven main arteries of traffic, still further supplemented by country church bells, (further supplemented in .some places by the ringing of every rural telephone on a designated signal), until the warning carries home to every section of the city and surrounding territory, and all black out their lights and wait for the sound of bombing planes and falling bombs.

Air raid wardens scattered through every city block—in hearing distance of any falling bombs, in seeing distance of any starting fire, in smelling distance of any poison gas that has a smell—go to the scene of any disaster, size up the situation and telephone through relays agreed upon into the control center the reports of damage done.

In the message room at the Control Center telephone operators sit at four "incoming" message phones, waiting to receive reports from air raid wardens who are not only the eves and ears but also the nose and throat of the control center in the field. The air raid warden might report a single incendiary bomb falling in a specific spot and starting a single fire which a lone fire watcher and supporting householders might put out, or a cluster of incendiaries starting separate fires which spread together and get beyond the reach of home made remedies; and further add high explosive bombs

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dropped on strategic installations in the light of flaring fires—some of which remain unexploded in the earth; and still further add poison gases to the picture.

He might report a burst water, gas, or sewer main; high power wires broken with their loose ends playing dangerously on the ground; telephone and telegraph communications cut; people trapped in partially demolished buildings, wounded by the flying splinters of fragThe Commander reviews the report, reads it aloud to the chiefs of all divisions seated around the control room table and they determine what protective services are needed. The incident may call the fire division only into action; it may call for police to handle crowds; it may further call for rescue squads, road repair crews, demolition and clearance crews and decontamination squads until all of the protective services of all divisions are in action, including



THE MESSAGE ROOM DURING AN AIR RAID, looking from the desk of the Communications Officer. All telephone operators and messengers are on duty to take care of incoming reports and outgoing warnings. Behind the operators is a map of Durham and vicinity. Above the heads of the messengers are the four colored lights which show at this time that a red warning is in effect.

mentation bombs, suffering from poison gases; streets blocked by craters dug by high explosive bombs or by the debris from blasted buildings; and so on through the infinite variety of circumstances which make truth stranger by far than fiction in air raid disasters.

The receiving operator notes the message on a printed form; the Communications Officer checks it, numbers it and sends it through the door of the Control Room to the Plotting Officer who plots it on the map with colored pins: blue for high explosives, red for incendiary bombs, yellow for gas, and green for unexploded bombs or fallen aircraft.

Incident Officers sent by the Controller to co-ordinate the various protective services working on the scene. As the chiefs of the divisions call their respective units the panel clerk records their action on the panel, and thus the happenings in the city outside are mirrored in the control room on the map and panel board. The progress of these units at their work is reported to the control room; as the work is completed at the scene and the units return to their respective stations, the map and panel board reflect the clearance until finally the "all clear" warning sounds, and people go back to sleep and work until another warning comes.

Defense Issue, 1942

All for one and one for all.—The Aircraft Warning System, the Air Raid Warning Service, and the Civilian Protection organization are segments of a chain which is no stronger than its weakest link. If the lookouts go to sleep at their Observation Posts, the Filter and Information Centers are paralyzed for lack of word to go on. If the District or Local Warning Officers go to sleep at their posts, all the ceaseless vigil of a thousand lookouts goes for nought. If the commanders of control centers are not on the alert, or the leaders and crews of the protective services are not disciplined and trained to the point that they can do their duties in the darkness of blackouts and under the stress and strain of falling bombs and spreading fires, their communities may be forfeits for

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their failures. If the rank and file of the people do not know and understand and play their parts in this all enveloping drama—if they go into a headspin, fail to black out lights, jam their telephone lines with useless calls, run around like chickens with their heads cut off and choke the streets and roads in panic, they will paralyze their own protective forces built to save them.

Citizens and Soldiers.—From the island outposts through the navy patrols to the shoreline, the responsibility of this program rests with the military forces alone. From the shoreline through the observation posts and filter centers to the information center, the military forces work side by side in training and performance with civilian volunteers. As the warning leaves the information center and speeds through district warning officers and local control centers to the people in their homes, the responsibility shifts to civilian shoulders altogether. When they come together in the spirit of all for one and one for all—and work together in the knowledge that the strength of the pack is in the wolf and the strength of the wolf is in the pack—

- "Then shall ye bide sureguarded, when the battle lightnings wake
- In the womb of the blotting war clouds and the pallid nations quake.
- Then at the threat ye shall summon, then at your need ye shall send
- Men—not children, nor servants, nor kinsman called from afar
- But each man born in the nation, broke to the matter of war."



THE CONTROL ROOM DURING AN AIR RAID. A Messenger has brought in a report of air raid damage, which is being reviewed by Controller C. W. Toms, Jr., who served as an instructor in the statewide and district Civilian Protection Schools organized and conducted by the Institute of Government. At the other end of the table sits Commander Henry A. Yancey, City Manager of Durham, who has just finished reading the message aloud to the chiefs of the emergency services. At the left of the Controller, not visible in the picture, sits an Incident Officer ready to go out and take charge of any major disaster. The Panel Clerk is entering the number and nature of the incident; the Plotting Officer is locating it on his map. Three of the chiefs of services are colling volunteer units to the scene through the three trunk lines that serve the Control Room. Incoming telephone calls to the Control Room are relayed through the Controller; flashlight on the table beside the Plotting Officer, and the clock.

flashlight on the table beside the Plotting Officer, and the clock. The Panel Board gives a complete picture of the progress of the air raid. In the practice raid being staged here this is the tenth incident, and the resources of the volunteer services have not been exhausted, as the left-hand side of the panel board, which shows services needed but not dispatched, is blank. None of the incidents has been finally cleared up; when they are, the pins on the right hand side of the board will be returned to their place at the top to show that the units have finished their work, returned to their posts, and reported to the Control Room.

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HIGH EXPLOSIVE BOMBS

Fourth in the Series of Civilian Protection Lectures

The bombing of cities in modern warfare is intended to destroy life and property—primarily war materials and strategic industrial centers—and civilian morale, the most powerful weapon a country at war can have on the home front.

Whenever air raids can be made to pay dividends to the enemy, North Carolina cities will be bombed. Every city of more than 50,000 in England has been bombed at least twice, as have many of the smaller towns of strategic importance. The Germans have bases near England, and only the R. A. F., anti-aircraft guns, and barrage balloons have kept them from crippling British industry fatally with daylight attacks.

Types of Bombs

There are four types of high explosive bombs, two of which are used against cities and towns:

1. The *armor-piercing* bomb is used against naval vessels and other fortified military targets.

2. The *fragmentation* bomb is used primarily against troops.

3. The parachute bomb or aerial mine is used against closely built up residential districts or wherever the wholesale destruction of weak buildings is possible. Although it ranges from half a ton to two tons in weight, the usual size is one ton. The explosive makes up nine-tenths of this weight; the steel case merely holds the explosive long enough to get the maximum blast. Exploded on impact, it will level a quarter of a square mile of frame houses, and blow out light walls and windows over a tremendous area.

4. The *demolition* bomb is used against business and industrial sections and railroad yards. If raiders are reduced to area bombing, part of these bombs will inevitably fall in residential districts.

Its range of weight is from 100 to 4000 pounds. Dive bombers carry the lighter bombs; the 500 pound size is by far the most important. By weight the demolition bomb is about 50-50 steel and T. N. T. It destroys by the shock of its explosion and the penetration of flying fragments, but the



indirect destruction, the crippling of utilities and the fires started by broken electric cables and gas mains, is far greater than the destruction wrought by the bomb itself. For every ton of structural steel destroyed in England by bombs, ten have been destroyed by fire.

How Bombs Fall

Day and night bombing.—Daylight precision bombing has been brought to a high degree of accuracy since the last war. In one test, an American bomber hit three targets thirty feet long and three, four, and five feet wide in three tries from 9000 feet. If bases are established on nearby islands, only adequate military protection will prevent enemy bombers from raiding cities and towns at will from any height.

At night an effective blackout will prevent precision bombing and force the enemy to bomb areas rather than specific targets.

Path of bombs.—Because bombs come from above, we think of them as always hitting the tops of buildings. This is far from the truth. Bombs are released horizontally and move horizontally for some distance before gravity begins to pull them downward. The path of a bomb is parabolic, as can be seen in the accompanying figure. If the bomber in the test above had been flying at 200 miles an hour, the bombs would have struck 20° off the vertical. The lower the bomber and the faster its flight, the flatter will be the path of the bomb. A bomb is therefore more



PATH AND SPEED OF FALL OF DEMOLITION BOMES. A bombardier flying 210 miles per hour at 20,000 feet would have to sight his target five miles or more ahead, in order to adjust his bomb sight. The bomb would be released two miles before the bomber flew over the target, would reach the target in 35 seconds, falling at 930 feet a second, and would strike its target 12° off the vertical.

likely to strike the side than the top of a tall building; delayed action bombs occasionally go through both walls of buildings and explode on the outside.

How Bombs Destroy

A bomb has not one but four successive chances to destroy life and property within a twenty-fifth of a second after it explodes: (1) the impact of its fall; (2) fragmentation; (3) the shock of its explosion in the air and the earth; and (4) the suction that follows the explosion.

1. The impact of the bomb is of little importance except for the fact that it is enough to drive it deep into the ground or into the heart of a building before it explodes. A 500 pound bomb will go from 15 to 25 feet into the earth, about eight feet into brick, about four into concrete; or it may penetrate six floors of a building, continuing to move toward the center, before exploding.

2. Fragmentation.—When a demolition bomb explodes its steel casing swells up like a balloon and flies apart into thousand of splinters. These fragments travel at first at several times the speed of a rifle bullet, but being of irregular shape they are quickly slowed down in the air. Fragments of a 500 pound bomb will cause fatalities up to about 600 feet; at fifty feet, about two feet of sand or gravel, one foot of a brick wall or slightly less than a foot of reinforced concrete will give protection. A bomb with an instantaneous fuse will go about half its length into the earth before exploding and its fragments will scatter in all directions, but as the delayed action is set for longer times, the fragments are turned more and more upward.

3. Shock of explosion alone enables the aerial mine to lay waste large areas. This shock is felt in the air as a blast and in the earth as an actual movement that will throw a man or a building flat.

Blast is relatively more dangerous than earth shock when the bomb has an instantaneous fuse and explodes above ground. At fifty feet the blast from a 500 pound bomb is enough to burst a man's blood vessels; it is fatal at 75 feet; even when it explodes underground, the radius of destruction from blast is about 200 feet.

Earth shock may cause more de-

ARMOR DEMO-FRAGMEN- AERIAL INCENDIARY GAS PIERCING LITION TATION MINE LIGHT SCATTER TYPE OF BOMB Gh USUAL WEIGHT-LB 1100 550 30 2000 2 30 30 200-4000 100-4000 17- 2000 1000-5000 RANGE OF WEIGHT 2-60 17-500 30-600 SECTIONAL PRESSURE 9.7 3.1 2.0 0.3 1.5 1.5 PERCENT OF EXPLOSIVE 10-15 40-60 15 90 TERMINAL VELOCITY-FPS. ---350 1400 1100 725 PENETRATION EXCELLENT GOOD POOR POOR POOR FAIR POOR BLAST EXT. HEAVY REDUCED HEAVY LIGHT NONE NONE NONE BUILDINGS WHOLESALE PERSONNEL DEMOLITION TO CAUSE FIRES BRIDGES WARSHIPS PERSONNEL AND OF WEAK FOR DIRECT DAMAGE AND USED AGAINST AND TRANSPORT STRUCTURES AND TO ILLUMINATE CONTAM-MILITARY INATION SPECIAL CONCEN OVER WIDE THE TARGET TARGETS TRATIONS AREA

SIZES, PURPOSES, AND CHARACTERISTICS OF THE DIFFERENT TYPES OF BOMBS

struction than blast when demolition bombs are set to explode underground. A 500 pound bomb will throw about 150 cubic yords of earth out of a crater ten feet deep and forty wide; the radius of destruction from earth shock is from 50 to 75 feet.

The amount of damage it does aboveground depends on the construction of nearby buildings. Steel frame buildings suffer little from earth shock and reinforced concrete frame buildings little more, but wall supported buildings of brick or masonry crumble quickly when the earth shifts beneath them.

Every delayed action bomb that explodes beneath a street is like a little earthquake breaking water and gas mains, sewers, and power and communication cables. No water or gas main in any North Carolina town is deep enough to resist a direct hit, and the lateral shock travels farther than the vertical. The larger bombs will destroy mains 120 feet away from the crater and will crack them even farther. Electrical and communication cables are flexible and may be displaced without breaking. However, their lead sheaths are often cracked and water seeps in and causes a short circuit, which in turn melts the lead.

In spite of the damage to mains and sewers in England, no power stations, water purification plants or sewage treatment plants have been seriously damaged. In London, interruptions to vital services have been shortened by intelligent use of their elaborate interconnections and by keeping stores of repair materials widely distributed. On a typical day in the winter of 1941, only eighty families in the entire London area were without gas.

4. The suction of the air back into the partial vacuum made by the explosion is less violent than the blast, but it is too destructive to be ignored. Everything shattered but not blown in by the blast will be drawn back toward the crater by the slower, more persistent suction. Pictures of buildings destroyed by bombs usually show the lower walls blown in and the upper stories pulled out. At the same distance from a bomb as the upper story of a house, a man would be killed by the sudden reduction in air pressure.

PROTECTION AGAINST BOMBS

From Wilmington to Asheville, North Carolina's cities and towns are well spread out rather than concentrated in a single section. Within themselves the cities are not always compact. Area bombing will inevitably be wasteful here, and with good blackout protection precision bombing at night will be difficult.

Bomb Shelters.—In London, close packed and heavily bombed as it has been, only 5% of the people have taken refuge in public shelters and 19% in commercial shelters, yet 35% of the casualties have occurred in public shelters. The State Defense Council has been quick to scotch any plans for specially constructed air



C. W. Toms, Jr., Controller of the Durham Citizens Defense Corps, who came to the first statewide Civilian Protection School as a student and showed that he knew so much about the practical aspects of Civilian Defense organization that he was asked to remain as an instructor, and taught in the statewide and district schools. Mr. Toms has built a first-class organization in Durham by "doing just what the book says," and by dint of hard work and imagination.

raid shelters here, in accordance with a national policy that fits North Carolina even better than the rest of the country.

Protection from direct hits.—Some kind of protection can usually be found against incendiaries and gas, but safety from high explosive bombs will always be more a matter of luck than of preparation. To be safe against a direct hit a shelter would have to be built sixty to eighty feet underground and covered with a stout roof. Desirable as such protection is, the cost is prohibitive, even if the labor and materials were available. The most that can be expected of small shelters or simple home precautions is that they protect against splinters, shell fragments, blast, and flying debris, especially flying glass. The primary purpose of sandbags, for instance, is to protect against flying bomb fragments and to deflect blast.

Shelter in Large Buildings

Where is the safest place in a building during an air raid? Control centers are being located whenever possible on the third floor of a tall office building. The third floor will be relatively safe from bombs falling on the top and high on the

sides of the building; the two floors toward the street, the walls, and the distance aboveground give good protection against blast and flying fragments; the height also affords ample protection from gas. Office buildings are chosen because they are not filled with heavy machinery that might crash through to the ground if it were once dislodged. If shelter space is set aside in such buildings, preferably in the corridors, several small shelters are better than one large one-they will be less crowded, less unpleasant, and easier to get into and out of.

The English favor the use of basements in both large buildings and houses. Basements offer good protection from lateral blast and splinters, but to use them the English have had to shore up the ground floors of many of their buildings. There are three drawbacks to taking shelter in basements: (1) the danger of being trapped. In an office building, utility tunnels and service entrances to the street would serve as emergency exits; there should be at least one reinforced exit direct to the outside for any basement used as a bomb shelter. (2) The danger of the ground floor and the joists which support it, the heaviest construction in most American homes, collapsing from the weight of roof and walls. (3) The danger of burst water and gas mains. Basements are gas traps.

Shelter in the Home

For people who stay at home during air raids as we have been advised to do the collapse of the house is the greatest danger from bombs. On the ground floor or in the basement, the Morrison type shelter developed in England is the best simple protection against falling timbers. It is nothing but a heavy table six feet long and four wide fitted with heavy angle irons for legs. The top is one inch planking covered with a quarter-inch sheet of iron. A mattress can be bought that fits underneath. The table is surrounded by wire netting -a heavy screen wire would give some protection against flying glass and debris. The table is placed as nearly as possible at the center of the house, and if a small crowbar is kept at hand the only danger of being trapped is by fire. A heavy work table could be reinforced to serve the same purpose.

Shelter outdoors.—Earth shock will knock a man flat and a close hit will kill him; what he should look for is protection from blast and fragments. When he hears a bomb falling, he should jump behind a heavy wall or, as a second choice, fall flat in a gutter and hope the bomb will have a delayed action fuse so that the fragments will all go upward.

Bomb Disposal

Bomb disposal is not only dangerous, it is a highly technical job. The only thing that should be done in a hurry when a bomb falls and fails to explode is to evacuate as large an area as possible around it and rope it off. There is no way to find out whether it is a delayed action bomb, which may explode at any time up to four days, or a dud; and even duds have a way of going into action when they are tampered with.

For further study:

Protective Construction. 36 pages. Illustrated. Superintendent of Documents, Washington, D. C., 25 cents. A clear discussion of the effects of bombing and proposed protective measures.

posed protective measures. "Some Physical Effects of Bombing," by Herman G. Baity. Journal of the American Waterworks Association, April, 1942. A brief, concise discussion.

Bombs and Explosives. 26 pages. Federal Bureau of Investigation, Washington, D. C.

Report of Bomb Tests on Materials and Structures, 55 pages. OCD. Illustrated with numerous photographs. Technical and comprehensive.

The OCD has in preparation a bulletin on simple shelters.



F. C. Erickson, University of North Carolina professor and noted geographer and cartographer, on the consulting staff of the Institute of Government, now on leave as government foreign analyst in Washington, who drew all the illustrative maps in this issue of POPULAR GOVERNMENT.

INCENDIARY BOMBS

By SAMRAY SMITH, Staff Member, Institute of Government

Fifth in the Series of Civilian Protection Lectures

Incendiary bombs and fire raids have been the most spectacular development of the second World War on the civilian front. Gas is always in the background for a possible disastrous attack; incendiaries have been used, and we know how they come, what they are and what they will do. There is no question about their effectiveness against an unprepared city. It is generally conceded that if there had not been a change in the wind, London would have been virtually destroyed in one of the first big fire blitzes. There is also no question that adequate preparation and vigilance will reduce this effectiveness, as subsequent fire raids on London have proved.

Fire as a Weapon.—This is not to say that incendiary attack is new. It is as old as warfare itself. The first recorded use of fire in an attack on a city was in 428 B. C. when an enormous flamethrower made of a hollowed tree, with a pitch-and-sulphur fire and a bellows at the lower end, was aimed at the wooden fortifications of a Greek town. Fire as a weapon developed along with bows and arrows, and it has continued to develop and holds its place to the present day.

Military men say that we are most likely to be attacked with high explosive bombs, with incendiaries as the second danger and gas the third. But while an incendiary attack may be less likely, disastrous fires are a greater menace than destruction of property by high explosives. When a two-ton bomb goes off, its damage is done; but when a two-pound incendiary strikes a house, it is just beginning its work. It carries the threat of a major disaster.

High Explosives and Incendiaries.

-High explosive bombs also are responsible for fires, both because they break gas mains and power lines, and because a building partially shattered and exposed by high explosives catches fire more easily. The usual order of a leisurely night attack on a city is: first, magnesium flares to expose the best targets; second, incendiaries to start fires that will continue to light them; and third, high explosives to destroy them. Incendiary and high explosive bombs play into each others' hands, forming a vicious circle of air attack.

Properties of Incendiaries

What is the difference between the way incendiaries burn and any other fire? Most of the fires we see are about the same, except that some are bigger than others. The incendiary substances used in war are different they burn hotter and they are harder to put out.

Nobody knows much about the nature of fire. It is called a chemical reaction which gives off heat and light and causes combustion. A chemical reaction in turn is the getting together of two substances. In a fire one of these substances is always oxygen. Any other substance that has an affinity for oxygen—that is, that by its nature likes to combine with it—is combustible.

A familiar experiment that shows how this reaction takes place can be made by putting an uptilted hollow tube in the heart of a candle flame, and lighting the other end with a match. It is the gas that is burning, not the tallow itself, no solid or liquid will burn-it is first vaporized, and the vapor combines with the exygen. If the combination is fast and furious, as with magnesium, there is a hot fire; if the substance catches fire whenever it is exposed to the air, as white phosphorus does, there is the possibility of a bigger fire until it is consumed; if the substance contains its own oxygen, as does iron oxide, the fire cannot be smothered. A substance that will do any of these three things is called an incendiary agent; and it is of these incendiary agents that incendiary bombs are made.

There are three other properties that an incendiary should have: it should be light, so that it can be transported in quantity; cheap, so that it can be used in quantity; and it should burn a long time.

Incendiaries and Incendiary Bombs

Magnesium .--- No incendiary will ever meet this full set of specifications, but the one that comes nearest to it is magnesium. Its only drawbacks are that it is not cheap and that it is hard to ignite. It is a very light metal, lighter than aluminum: a bomber can carry a bigger load of magnesium bombs than of any other incendiary. At the same time, it is strong enough that a bomb made from it will not shatter on impact. It ignites at 750°, but only after that temperature has been maintained long enough to melt and then vaporize the metal. Magnesium burns quietly and intensely at about 3300°.

Thermit.—The next best incendiary is thermit, the trade name for a mixture of one part granular aluminum with three parts of magnetic iron oxide, closely packed and cut into pellets. Thermit burns hotter and faster than any other incendiary. It ignites quickly at a temperature of 1700° and burns with explosive violence at 4500° , more than twice as hot as crude oil and hot enough to cut through iron and steel. It burns so rapidly that any quantity of it likely to be used will be gone in from fifty to sixty seconds.

The thermit bomb.—The English have been using a 4½ pound thermit bomb that is shaped like a two-footlong lead pencil. The thermit is held in a thin metal case, and the nose is made of a solid piece of iron that will keep the bomb falling nose downward. It is known that both the Germans and the Japanese have been making 33 and 132 pound thermit bombs. Bombs of this size will not be scattered broadcast; they will be aimed as carefully as a high explosive bomb.

The magnesium bomb.—The most important use of thermit has been in the magnesium bomb. The twopound magnesium bomb developed by the Germans is by all odds the most important incendiary weapon



of the present war, and it is against this weapon primarily that our preparations are aimed. It holds the same position among the incendiaries that mustard holds among the gases. More of them have been used, and they have been more effective, than any other size or type of bomb.

The German Elektron bomb is a hollow tube of magnesium 14 inches long and two inches in diameter, hollowed and filled with thermit. The nose containing the firing pin is also of magnesium; the streamlined tail is of sheet iron, with fins to guide its flight and a ring around the end to slow it down and give it a screaming, demoralizing whistle as the wind streams through it. Except for the tail, the entire bomb burns, usually in from fifteen to twenty minutes.

Magnesium bombs are also made in larger sizes up to 22 pounds, but it is against the two pound bomb, scattered over residential areas, that we must be prepared.

Intensive and Scatter Incendiaries

Magnesium and thermit work in the same general way. They burn intensely in one place, and depend on striking a combustible substance for their effectiveness.

The two other important incen-

diaries, oil and white phosphorus, are made into bombs with small explosive charges that scatter them over a large area, on the chance that they will start a number of small fires.

Oil is as effective an incendiary as thermit used alone. An equal weight of crude oil generates almost twice as much total heat as magnesium. It spreads as it burns and makes a fire that is hard to fight, as all firemen know. It is cheap and readily available. Its disadvantages are that it generates so much smoke while burning that it will not go undetected for long, that it is hard to ignite quickly, that it is apt to smother in a confined space, and that it burns almost entirely upward—it might burn on a floor for some time without setting fire to it. It uses large quantities of oxygen in burning, three times its own weight, which it must get from the air. When the oxygen in the air falls below 17%, no substance that is not supplying its own oxgyen will burn.

The oil bomb.-When used as an incendiary, oil is usually jellied to the consistency of canned heat, so that it will be thrown out in globs instead of drops. Because a quantity of oil is required to start a hot fire, the oil bomb is a large, heavy one, usually with an explosive charge powerful enough to spread the oil but not so powerful that it will put out the fire. Sometimes thermit is included to set it off; sometimes other substances which will burn intensely or explode on contact with water are mixed with the oil to ignite it again if it goes out. It is difficult to set fire to the oil before the explosive scatters it; a large proportion of the German bombs have been duds because too heavy an oil was used.

White phosphorus is most familiar to us in the form of the "calling cards" which the British distributed over Germany. More recently it has been used against American troops in Bataan. Its primary military use is for smoke screens; as an incendiary it is less important, although it was used considerably in the last war. It is a tallow-like substance which ignites spontaneously on exposure to the air.

The White Phosphorus Bomb

In the solid form it can be put into a bomb with a small explosive

charge; it is also dissolved in carbon disulphide, which evaporates into an inflammable vapor and leaves the finely divided phosphorus to burn. Its big disadvantage is its low burning temperature, $400^{\circ}-600^{\circ}$, about enough to set fire to excelsior, paper, dry fields, dry woods, or shingles. It is easily put out by water, but will reignite when it dries, so that it is better to let it burn if it is not lighting a target for bombers.

PROTECTION AGAINST INCENDIARIES

The first step in protection against incendiary attack is a psychological one: The shifting of the responsibility for fighting the magnesium bomb to the householder, the apartment house owner, the store owner, the plant owner. He must not only be told what is expected of him, he must be shown why it will be necessary for him to fight fires himself.

Why can't the fire department assume the full responsibility of fire protection during an air raid? A medium bomber can carry a thousand two-pound magnesium bombs. They will all be released in racks of thirty or fifty a second, and scatter out over an area of two or three square miles. In an average residential district in a North Carolina town, about one out of twelve of these bombs would start a fire, more than eighty fires from one bomber. But bombers never come one at a time, and the number of fires will be eighty multiplied by the number of bombers that carry incendiaries. Some of them will carry high explosives which will break water mains in the areas in which the incendiaries are falling. Even if water mains are not broken, the water pressure will immediately go down because of the tremendous drains on the supply. Add to this communication and transportation difficulties in an air raid: the inescapable conclusion is that with the best will in the world and with an army of auxiliaries, the fire department can not put out incendiary bombs. The individual householder must take the responsibility, not only for his own sake but for that of the community.

Can the householder control an incendiary bomb? The answer is yes, with reservations. With a minimum of preparation, with the equipment recommended by the OCD—which is

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neither elaborate nor expensive, and with proper training—given by the fire department or whatever agency is designated by the local defense coordinator—anyone can control fires from incendiary bombs up to 10 or 12 pounds. A larger bomb is a job for the firemen.

Preparation for Incendiary Attack

The advance preparations for fire raid—the things we are supposed to be doing now—divided themselves into two parts: first, reducing fire hazards in homes, schools, stores and factories; and second, getting equipment to fight a magnesium bomb.

Reducing fire hazards is protective insurance, like learning to use a gas mask. Fire marshals and fire chiefs have been working on this problem for years. They have tried to get fields of dry weeds burned; they have tried to keep people from storing gasoline in their garages; they have tried to get attics cleared out. If the present situation gives their work a boost, it will be one of the benefits we gain from this war.

The Attic

The OCD has made three specific recommendations, all aimed at better housekeeping in the attic, where the magnesium bomb is likely to lodge:

1. That it be made readily accessible, by cutting a larger entrance hole, if necessary, and by setting up a permanent ladder. If parts of the attic are walled in, holes should be cut through these walls so that a magnesium bomb can be fought wherever it falls.

2. That it be put in order so that the fire fighter can move about easily; swept, since dust increases the danger of an explosion; and that old magazines, crates, furniture, and every other combustible article that can be removed should be removed.

3. That it be floored and, if the construction of the house will permit it, a fire-resistant layer of earth, ashes, or any finely divided covering laid down. Coarse sand is of questionable value, it is heavy and the burning magnesium will melt and run through it. It is recommended that rafters and shingles be white-washed, or, better, painted with a fire-resistant coating made of $1\frac{1}{2}$ pounds of china clay, $1\frac{1}{2}$ pounds of water glass (sodium silicate) mixed, and a pint of water added.

POPULAR GOVERNMENT

Materials for Fire Fighting

The materials recommended for fighting the magnesium bomb listed in the training publications are: buckets to carry water for the tank; two buckets of dry sand; a long handled shovel; heavy goggles for protection against flying sparks; work gloves; a flashlight; and a hatchet or small axe. If air raids begin to come to our cities, bathtubs and cooking utensils should be kept filled with water.

On the theory that water pressure might be sufficient to carry water from upstairs facuets to the burning bomb, Chief Frank Bennett of the Durham Fire Department has worked out a gagdet for coupling a garden hose to any household faucet. It is a six-inch length of garden hose with a metal band at one end to clamp the hose around the faucet and a threaded hose coupler at the other. A properly tightened clamp will hold the coupler to the faucet under one hundred pounds of water pressure, enough for any town in the state.



Frank Bennett, Chief of the Durham Fire Department and of the Emergency Fire Division of the Citizens Defense Corps, an instructor in the statewide civilian protection schools, demonstrates the simple gadget for home firefighting described above.

Fighting the Incendiary Bomb

Water and sand were the extinguishers recommended for fighting incendiary bombs. What about the usefulness of the other types of extinguishers, soda-acid, carbon tetrachloride, foam, carbon dioxide, and powder extinguishers, if the water pressure is gone and nothing but an extinguisher is available?

Against a magnesium bomb, none of the commercial extinguishers is any better than water and sand, and some of them are dangerous. Against a fire where live wires are exposed, water itself is dangerous.

The soda-acid extinguisher is as good as the same amount of water and no better. *

A carbon tetrachloride extinguisher should never be used against magnesium or thermit. When it strikes the hot metal, the carbon tetrachloride will be vaporized instantly, and the vapor above the fire will cut down the amount of oxygen the magnesium can get and eventually smother the fire. But carbon tetrachloride is a double first cousin to chloroform. In fact, it would be used as an anaesthetic if the lines between putting somebody to sleep temporarily and permanently were not so close together. Another effect which has been noted in the discussion of gases is that phosgene is formed when carbon tetrachloride is vaporized by burning metal.

A foam extinguisher is intended to smother a fire by covering it with bubbles of aluminum hydrate containing carbon dioxide gas. Magnesium and thermit cannot be smothered—oil and white phosphorus can be. The foam will, however, wet down the area around the bomb and eventually smother it.

A carbon dioxide (snow) extinguisher will feed oxygen to the magnesium or thermit and leave carbon monoxide, which might be fatal in an unventilated space. It is non-corrosive and non-conductive, however, and is invaluable in electrical fires and fires around machinery.

The ordinary dry powder (baking soda) extinguisher will form carbon dioxide, and from that point will work in the same way as the carbon dioxide extinguisher.

The commercial powders are usually no better than sand and are much more expensive. One of them, G-1, costs 16c a pound and is chiefly powdered graphite. Since graphite is a lubricant and sand is an abrasive, it too should be used for fires around machinery, as could talc. If they can

be found, fine cast-iron borings are another substitute for sand.

The problem throughout is that magnesium burns with such intensity that it will take oxygen out of any compound that contains it.

What will a magnesium bomb do when it strikes a house? A two pound magnesium bomb dropped from 5,-000 feet, will penetrate a quarterinch plate of mild steel. This is enough to carry it through any house roof to the attic; if the attic is not floored, the impact may carry it through to the floor of the room below. The roofs of American houses are generally lighter and less sharply pitched than English slate or tile roofs, and it has been suggested that magnesium bombs used against us will have larger tails to slow them down still more. A fire bomb in the front room would certainly be easier to fight, but it would do more damage to furnishings before it was put out. It is to the Germans' advantage and to ours to keep the bombs in the attic.

Suppose then that the bomb begins burning in the attic. The thermit starting mixture will sputter and throw out burning sparks that will set fire to anything combustible in their reach. The thermit ignites the magnesium, and it too is thrown out in small chunks as it begins to burn. It will be gone within a minute and the magnesium will settle down to steady, intense burning for fifteen to twenty minutes. Molten iron and magnesium will run through cracks in the floor, and the heat radiating from the magnesium, which burns at 3300°, will set fire to rafters and wooden roofs. If left alone the magnesium will finally burn through the attic floor and fall into the room below.

What is the best way to control a magnesium bomb and the fire it starts? The bomb cannot be put out, but it can be controlled with sand or water. The fire started by the bomb is handled like any other fire. The fire is the same—it is the incendiary that is different.

The Germans have been putting a TNT charge in about one out of fifty of their magnesium bombs, not enough to blow it to pieces, but enough to kill anyone who got within a few feet of it. These charges will explode within two minutes or not at all—the heat is too great for them to remain intact longer. The thermit will be burning for the first fifty or sixty seconds; it is during the second minute that you have to keep the explosive in mind.

Sand is the best choice if the floor of the attic has already been covered with earth or ashes, and if the fire has not gained headway. A pail of dry sand is turned over near the bomb and the sand is pushed up over it with a long-handled shovel. Dropping a shovelful of sand on the bomb will spatter the molten magnesium. Sand on top of the bomb will smother it but will not put it out; the chances are that it will melt the sand and go right on burning if it is left alone. Scoop the bomb into the bucket as soon as possible, but be sure there is plenty of sand in the bottom. Run the handle of the shovel through the bail of the bucket and carry out the whole thing. You will need help at the other end of the shovel handle if you can get it. If the attic has not been floored, it will be next to impossible to reach the bomb between the joists and scoop it up with a shovel.

Water.—If you decide to fight the bomb with water, remember that you can't do it with buckets—you have to have pressure, a stream and a spray, and two assistants if you can get them.

A bucket of water splashed on a magnesium bomb will do two things. The first and least serious is that it will scatter the molten metal. and you will have not one piece of burning magnesium but several. The other is that as the water hits the bomb, some of it will instantly be turned into steam and the steam will explode. (Magnesium burns at 3300° ; steam explodes at between 600 and 700° .) The magnesium will fly out for eight or ten feet on all sides, and there will be a fire plus a casualty.

A solid stream of water aimed directly at the magnesium will do the same thing, except that the misguided fire fighter would have a better chance of escape, as he would probably be farther away. The object is to cover the bomb with a spray. A nozzle that will throw a spray fifteen feet will throw a stream thirty feet, and will cover the fires started on the other side of the bomb.

The magnesium bomb will not be put out in this way, but it is being controlled in two ways: 1. The area around it is being wet down to keep the fire from spreading, cool the molten iron, and lessen the chance that the bomb will fall through the floor.

2. The bomb is burning faster but less effectively, and will be gone quickly. In effect, oxygen is being fed to it. The air has only about 21% oxygen; water has 88%, and magnesium burns hot enough that it will take the oxygen from the water. A magnesium bomb will burn up in two minutes instead of fifteen if water is sprayed on it continuously, but this will not be possible if the thermit has already started other fires.

A fog nozzle is not as good as a fairly coarse spray. The water is not brought close enough to the bomb to feed oxygen to the magnesium, but will tend to smother it with steam.

After spraying the bomb first to wet down the area around it, the nozzle can be adjusted for a jet and used against curtains, paper, and other easily combustible furnishings that have caught fire. The best procedure is alternately to spray the bomb and throw a jet on the fires it has started, putting out the easiest ones first and keeping the rest under control until the bomb is gone, when water can be doused on them. The bomb, if left alone, would finally burn out, while the fires it starts would burn down the house.

With an extinguisher.—It will take about five gallons of water or more to burn up a bomb with spray. Probably two or three more will be required for the rest of the room. If a $2\frac{1}{2}$ gallon extinguisher is all that is available, it will be better to use proportionately less of it on the bomb and more on the fire, as the bomb will eventually burn out and the fires will spread. In this situation it would certainly be better to use sand or ashes on the bomb, and try to get rid of it, than to try to put it out.

Fighting Thermit, Oil, and Phosphorous Fires

The directions for fighting a *thermit* bomb are more simple: don't try to. It will be gone in sixty seconds, and nothing can be done about it. The fire it starts can be fought like any other fire. Like magnesium, it will run into tiny cracks, and the charred area around the bomb should

be dug out with a hatchet and soaked with water.

With white phosphorus there is more danger of someone getting hurt than there is of a big fire. Anyone standing within range of the phosphorus particles which the explosive charge will scatter from the bomb is going to be a casualty. Water will put out the fire; a solution of copper sulphate (bluestone) will put it out permanently, by covering it with a layer of the solid. But it is never safe until it is consumed. Accidental pressure would break the copper seal. Sooner or later it is going to burn, and the best thing is to gather it all up and burn it later, or to let it burn if it is not furnishing a target for bombers.

Oil will not be used indiscriminately against residential areas; oil bombs, because of their weight and the small number that can be carried as compared with magnesium, will be aimed at military targets. Most of the oil fires will be fought by plant brigades and fire departments, who are prepared to deal with them.

Any of the commercial extinguishers which were damned as useless against magnesium and thermit are good against oil. Water spray is good, and a fog nozzle is better. Start the spray over the edge of the flame and gradually sweep up the fire. This does two things: First, it cools the fire with the water and smothers it with the steam, which shuts off oxygen from above. Second, it gets water between the oil and the flame. Oil burns like a tallow candle—there is always a little space between the oil and the flame, where the oil vapors are so heavy that there is not enough oxygen for a fire. If you can divide the fire and the oil, you can put out the fire.

For further study:

Fire Protection in Civilian Defense. 41

pages. OCD. A compact, meaty discus-sion of the whole problem. Handbook for Auxiliary Firemen. 94 pages. Illustrated. OCD. Standard School Lectures. Series 2,

Fire Defense. Excellent instruction material. Fire Defense. 220 pages. Illustrated

with numerous photographs. National Fire Protection Association, 60 Battery-march St., Boston. \$1.50. Helpful to the Emergency Fire Chief for planning fire defense defense.

Incendiaries: Training Guide. 39 pages. Chemical Warfare School, Edgewood Ar-senal, Maryland. Concise information in question-and-answer form.

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THE WAR GASES

By SAMRAY SMITH, Staff Member, Institute of Government Sixth in the Series of Civilian Protection Lectures

So far in this war, incendiary and high explosive bombs are the weapons that have been used against cities incendiaries to set destructive fires and high explosives to destroy life and property. Another weapon that has been held in reserve by all the belligerents is gas. For a number of reasons, the average man dreads it more than either fire or explosives. He dreads it more because so little is known about it, because it is an invisible and terrible weapon, and because it has never been used against cities and no one can estimate exactly how effective it will be. However, it is generally believed that gases will not be effective against a population that understands how to protect itself.

What do Civilian Defense workers need to know about gases? The first question that comes to mind is: Why should they know anything about them? What is the likelihood of gas attacks on North Carolina cities and towns? Assuming that there is a possibility of gas being used, the questions that ought to be answered are: Which gases are most likely to be used against civilians? How can they be released? What do they look like? If they cannot be seen, what do they smell like? If they can neither be seen nor smelled, what are the first symptoms of attack? What do they do to the human body? What can be done to counteract their effects? What can a person do to keep from being exposed to them, with a mask or without one?

What is the likelihood of gas attacks on cities? Gas has been used at least three times in the present war, if we include the Italo-Ethiopian war as one of its preliminary skirmishes. In 1936, a blistering gas was spread on the ground in front of advancing barefooted Ethiopian troops. In 1941, the Japanese gassed unprotected Chinese troops in front of Chungking, and, according to the Chinese, it has been used again in 1942. It has not been used against troops who were prepared against it,

but Churchill's radio address of May 10 warned that this time may not be far off.

The Germans have not used gas against London partly because the British are prepared. The civilian population has been supplied with gas masks and is trained in other protective measures about which most Americans know nothing. They have won a battle without having to fight it, simply by being prepared.

Neither the Germans nor the British want to run the risk of retaliatory attacks. This is the controlling factor. If one side uses gas, the other will; if it is used on the battle front, it will spread to the home front.

A gas attack on North Carolina at the present time would be a hit-andrun affair, intended to produce panic rather than to do effective damage. Army men are convinced that the greatest danger from a gas attack is the certainty of panic, and panic comes from unreasoning fear. Civilian Defense workers need to know the basic facts about gas, what it will do and how to protect against it.

The War Gases

Poison gas got its name in the early days of the first World War. Chlorine, phosgene, and chlorpicrin were in turn the most important of these weapons. They are all true gases, but all the other so-called war gases developed during the war and after are either liquids or solids, and some of them are not poisonous. A war gas is defined as any chemical agent suitable for use in the open that produces a powerful effect on the body. Naturally it must remain effective in the open an appreciable length of time, and the longer it remains effective the more of a nuisance it will be.

For instance, carbon monoxide, which is usually a component of the gas used for cooking and heating in homes, is poisonous. Anyone who breathes it long enough will die. But if he gets just a few strong whiffs of it before he recognizes it, turns off the burner and gets out of the house,

he will be nauseated and get a headache, but he will get over it in a short time. After he opens the doors and windows it will clear out almost immediately. Any of the true gases would act in the same way, but the slowly vaporizing liquids would give him more trouble.

Other gases encountered in peacetime are chlorine, a hazard in municipal water plants; hydrocyanic acid gas, used for fumigating, and so deadly that it is used for executions; and ammonia fumes. Firemen are often forced to work in dangerous concentrations of deadly gas, and it has been suggested that a limited number of gas masks for decontamination squads could be obtained at fire stations and water plants of the larger cities. Any mask supplied with a black or a red canister will protect against all of the war gases.

The gases most likely to be used against cities and towns are the ones that do the most damage to the body, remain effective the longest, and are the hardest to get rid of.

Tear Gas (Lacrimators)

Tear gas is the most familiar of the war gases because of its effectiveness in breaking up mobs without permanent injury. It is a solid, something like brown sugar crystals, released in grenades and vaporized by burning. In the air and without burning it vaporizes slowly, like a mothball. It is occasionally dissolved in chloroform or some other solvent and goes into the air as the solvent evaporates. It can be mixed with more powerful, slower acting gases when used in this way.

In heavy concentration it is a stinging, choking gray smoke; in light concentration it has the pleasant odor of apple blossoms. It will cause a heavy flow of tears instantly, causes the muscles of the eyes to jerk, and may swell the eyes shut. No particular first aid is required. It is usually enough to get out of the gas, face into the wind, and let it blow over the eyes and through the clothes. In particularly bad cases the eyes can be washed with 2% baking soda or boric acid.

Irritant Smokes (Sternutators)

The irritant smokes are solids when released and remain solids in the air. They are burned somewhat like tear gas and spread as smokes. The particles are extremely fine, little larger than those of cigarette smoke. The chief difference between the tear gases and the irritant smokes is that the former are quickly soluble and act on the mucous membrane of the nose and throat, whereas the latter are insoluble and penetrate to the lungs.

When first released, Adamsite, the most important of these gases, is a bright yellow, but it rapidly disappears in the air and soon becomes ineffective, usually within five minutes. It is not to be confused with the screening smokes used to conceal troops, which have no effect on the lungs and remain visible for a long time.

Adamsite is practically odorless, and since it can neither be seen nor smelled, the first symptoms of attack are of unusual importance. Five or ten minutes after exposure to Adamsite a person will begin to sneeze and then develop a feeling of fulness in the head like a head cold, pain like a sinus headache, a running nose, a flow of tears, and nausea the more acute because the vomiting nerves are partially paralyzed. Most dangerous of all, Adamsite produces a mental depression so profound that the victim might decide life was not worth living and attempt suicide.

All this lasts only an hour or so,

and there are no after-effects. Besides letting the victim sniff chlorine for his throat irritation and giving him aspirin for his headache, all that can be done is to reassure him that it will soon be over.

Diphenylchlorarsine, another irritant smoke, acts in much the same way except that the smoke cloud is gray, not yellow. It takes effect immediately, but is less violent.

The irritant smokes, like the tear gases, are usually released along with more powerful, slower acting gases.

Lung Irritants

These are the real poison gases. They attack the lungs, they cause choking and coughing, and they usually cause death if a person breathes enough of them to make him a casualty.

Phosgene, the most important of the lung irritants, is a non-persistent gas, effective ten minutes or less under average conditions. It is quickly destroyed by water—even the moisture in the air helps get rid of it. It is released in bombs as a liquid, but is instantly vaporized when exposed to the air, and can be seen for a few seconds as a white vapor cloud.

A gas bomb of any type will have a small explosive charge to vaporize and disperse the gase in the air. It





can easily be distinguished from a high explosive bomb, however, because the explosion is so much less violent and the gas bmb does not detonate with the sharp crack characteristic of high explosives.

Phosgene is effective in concentrations so light that they might pass unnoticed. In the usual field concentration the odor is like that of a field of new-mown hay on a hot afternoon, sweet and not unpleasant.

The first **effect** of phosgene when breathed in an ordinary field concentration is coughing, choking, catching the breath, irritation of the eyes and sometimes vomiting. This first attack will pass rapidly, and there is a serious danger that the victim may think he has suffered no ill effects and go on about his business. The gas is acting, nevertheless, just as it is on the person who continues to breathe so light a concentration that he cannot smell it.

The action is not merely to irritate the lung tissues, as the name suggests. It breaks down into hydrochloric acid; the blood serum begins to seep into the lungs through the tiny blood vessels as they are eaten away; the lungs fill up with the serum; the heart beats faster to supply more oxygen from the rest of the lungs; finally the heart will stop. It is, literally, a case of drowning in the body fluid. People have been known to fall dead from such heart failure without ever knowing that they were gas victims.

In cases less serious than this the immediate danger is bronchopneumonia.

First Aid of Phosgene

The first thing to do for a victim of phosgene after getting him out of the gassed area and preferably to a first aid station, is to put him to bed, loosen his clothing, keep him quiet, cover him with blankets to keep up his body heat, and get a doctor. Any type of activity, even sitting up in bed or talking, will strain the heart by increasing the body's demand for oxygen. Smoking and talking will cause coughing, and in any case smoke will be distasteful.

There are two absolute "do nots" for phosgene cases:

1. Do not give them alcohol. It will strain the heart. Warm stimulating drinks are permissible.

2. Do not give them artificial respiration unless they have stopped breathing. The lungs may be full of fluid. The use of a resuscitator is equally dangerous.

Phosgene is the most effective lung irritant and the one most likely to be used, but two of the others, chlorine and chlorpicrin, should be considered briefly.

Chlorine was the original poison gas. On April 22, 1915, it killed 15,000 totally unprepared allied soldiers in France, a disaster so complete that if the Germans had followed it up they could have won the war in a short time. It is no longer considered an important war gas, being only about one-eighth as toxic as phosgene.

Everybody is familiar with its pungent, acid odor in Chlorox or Zonite or in the hypochlorites used for bleaching.

Chlorine is important for two other reasons: because it is used in manufacturing most of the other gases, and because it will neutralize mustard, the hardest gas of all to eliminate.

Chlorpicrin is considerably different from phosgene and chlorine. It is an oily liquid somewhat like the blister gases in physical state, vaporizing in the open in from one to twelve hours.

Its odor is easier to remember than to describe—it is sweetish, but stale and musty. In effectiveness it lies somewhere between chlorine and phosgene. It causes relatively more nausea and eye irritation and less damage to the lungs than phosgene, and takes effect much quicker, usually within an hour. Because of its quick effect, it is usually released along with one of the more dangerous but slower acting gases.

First aid for chlorine and chlorpicrin is the same as for phosgene. Liquid chlorpicrin splashed on the skin can be removed with 5% sodium sulphite in alcohol.

Blister Gases (Vesicants)

If gas is used against cities and towns, we are told that the chances are about nine to one in favor of one of the blister gases, mustard or lewisite. They are the most dangerous because of their persistencythey will remain on the ground for at least a day, and often a week or longer, and because either the liquid or the vapor attacks any part of the body with which it comes in contact, the lungs if vapor is breathed or the digestive tract if contaminated food is eaten.

Mustard

Mustard is a liquid of the appearance and consistency of cylinder oil. It can be released in a fine spray from a low-flying plane or dropped in explosive bombs or other containers, the simplest being a one-gallon oil can which will burst when it hits the ground. It evaporates slowly, freezes at between 46° and 50°, and may lie inactive for weeks in cold weather. It is not affected by water.

Mustard has a sour, pungent odor like that of garlic or horse-radish. It is said that the sense of smell is quickly tired out by this odor, so that a person might remain in a light concentration after the first few breaths, thinking the gas had dispersed in the air. The vapor is invisible; mustard on leaves or light-colored objects shows as brownish spots.

Penetration.—Liquid mustard will go right through the clothing, and is quickly absorbed by the skin. A small drop of it will spread out, glisten on the skin like any oil, and disappear in about two minutes. A quantity on the head of a pin so small that it can hardly be seen will make a burn the size of a quarter. The vapor will penetrate a uniform in about ten minutes, and exposure for an hour to a concentration as light as one part of mustard vapor to a million in the atmosphere, so light in fact that it could hardly be detected, will cause a casualty.

Action.—For a long time after the exposure, nothing happens. Mustard is a delayed-action agent. It compares with sunburn in this respect, and the comparison can be carried quite a bit further, as will be seen. Liquid mustard will begin to take effect in from two to six hours: mustard vapor may not take effect for twelve hours. The skin will first turn red in the affected areas due to the irritation of the tiny capillary blood vessels. Next the red spots will begin to swell, and finally as the serum separates the skin layers, blisters will form. The blisters turn into ulcers as in a bad sunburn. Mustard ac-

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tually destroys the cells, and for this reason the burns are slow to heal. The chief danger is that of infection of the burns, or of bronchial pneumonia if the vapors have been breathed into the lungs. Only two per cent of the mustard casualties in the first World War were fatal, and of these a large majority died of pneumonia, as compared to 80% fatalities from phosgene casualties.

The curious thing about a mustard burn is that it is not painful, and here the similarity with sunburn disappears altogether, but it does itch unmercifully. Itching may be the first symptom of an attack.

The one exception to the statement that mustard burns are not painful is *mustard in the eye*. Exposure to the vapor will cause smarting and watering after about two hours, light will be painful to the victim's eyes, and they may swell and close if enough vapor gets into them. Liquid mustard is almost immediately painful to the eyes, and it is extremely serious. The eyes will recover from a vapor burn, but severe ulceration and perhaps permanent damage to the vision will follow a liquid burn.

First Aid for Mustard

There is a good chance of preventing any damage at all if first aid can be applied soon enough. But every second counts, because of the rapidity with which mustard is absorbed into the skin. If a lavatory can be reached within a few seconds, water and strong soap will wash off the mustard and no harm will be done, but if first aid is delayed longer than five minutes, there is going to be a burn.

It would be well for the patient to wash himself while someone else tries to get a doctor or to locate a casualty station that could take him immediately. If this cannot be done, the first thing is to take off the contaminated clothing and get it out of the way so that the vapors from the mustard it contains will not cause more burns.

We have a choice of two ways of getting rid of mustard, to dissolve it out or to neutralize it with active chlorine in bleaching powder (chloride of lime) or some commercial bleaching solution.

Any of a number of *solvents* kerosene, gasoline (nonleaded), alcohol, or carbon tetrachloride—will dissolve liquid mustard, and this is and water and patted dry with a

towel.

Neutralizing the mustard is a much more difficult and uncertain matter, because of the danger of irritating the skin, particularly with a liquid burn. Bleaching powder dissolved in two parts of water or a commercial bleaching solution is used, and must be washed off within a few minutes or it will cause a burn itself.

These two methods can be effectively combined if a solution of bleaching powder in carbon tetrachloride has already been made, but a preparation of this kind could probably not be found short of a casualty station.

It should not be overlooked that a person can do most of these things for himself if no one is around to give him first aid.

Mustard in the eyes is extremely serious, as has already been said, and should receive priority treatment. The victim should be gotten into a dark room, and a two percent solution of boric acid, baking soda, or salt, in order of preference, should be poured into his eyes.

Mustard in the lungs is much more dangerous than phosgene. The two percent solution of baking soda should be gargled if mustard has gotten into the mouth and throat, and should also be used to wash out the nose. A person who has breathed mustard for any considerable time is going to be a casualty. He should be kept warm and quiet, and that is about all you can do for him except get him to a doctor. The first sign of mustard in the lungs is hoarseness, the next is a harsh cough, and the victim will lose his voice for a time.

Lewisite

There is a familiar story of a shipload of a new gas that was crossing the Atlantic to France when the Armistice that ended the last war was signed. So terrible was the gas that it would have wiped out the whole German army, so the story went, and when word came through that the war was over, it was dumped into the ocean and the ship turned

back to America without a cargo. The gas was lewisite, a blister gas similar to mustard, and the story bears a family resemblance to some of the scare stories about gas that have come out of the present war. It is true that lewisite is more dangerous than mustard for four reasons:

1. It is more poisonous. A fifteenth of a fluid ounce absorbed into the body will cause a casualty.

2. It contains arsenic, and therefore will poison the system as well as cause blisters.

3. It vaporizes faster and has a lower freezing point (0° Fahrenheit), and therefore continues to be effective at lower temperatures.

4. The serum in a lewisite blister is poisonous. It will either go into the blood stream, or, if the blister is broken accidentally, cause more burns.

The odor of lewisite can be more accurately described than that of any other gas: it is the odor of geraniums, with an added sting.

Lewisite and Mustard

Apart from the odor, lewisite is so much like mustard that the best way to study it is to bring out the differences:

1. Lewisite goes to work more quickly than mustard; specifically, in about one-fourth the time both for vapor and liquid.

2. It is more painful.

3. It continues to penetrate into muscles or other tissues. The arsenic in lewisite will poison the system. It is even more dangerous than mustard to the eyes.

4. Water will quickly break down either the liquid or the vapor into a solid that does not evaporate, but that is poisonous to the touch.

First Aid for Lewisite

The first aid measures suggested for mustard will also serve for lewisite, but it is better to ignore the danger of skin burns and neutralize the gas, to cut down the danger of arsenic poisoning.

Hydrogen peroxide will quickly neutralize lewisite, and will not burn the skin. The two per cent solution found in drug stores is used to bathe the eyes and is satisfactory for the skin, but a stronger solution, with up to twenty per cent oxygen, is better for the skin.

Lye.—If hydrogen peroxide is not available, a ten per cent solution of

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lye (sodium hydroxide) in a thirty per cent solution of glycerine can be used on the skin, alternated with regular rubbing alcohol. Glycerine and alcohol prevent burns from the lye. If they cannot be had, a five per cent solution of lye alone should be used rather than nothing, followed as in the better treatment with soapand-water washing.

A lewisite victim more than any other gas casualty is an urgent medical case. A bad liquid burn may require surgical removal of the affected skin to prevent arsenic poisoning of the system.

Tactical use .- Enough has been said to show what enormous advantages the enemy might gain by an attack with blister gas. In the World War mustard was used "to deny an area to the enemy." and it might well find the same use against cities and civilians. Before military action of any kind against an area, it might be used against vital communications centers in the larger towns which were not to be attacked immediately. If protective clothing and masks were not available, the telephone exchange, telegraph office, newspaper plant, radio station and railroad vards would have to be cleared out until they could be decontaminated.

Protection against Gas

The only object of a study of the types of gases and their action is to cut down the effectiveness of a gas attack. But with care and good luck it is not difficult to escape the effects of gas altogether.

Reduced to its simplest terms, protection against gas means one of two things: putting on a gas mask and protective clothing, or taking shelter and staying in a safe place until the attack is over. The mask is of course positive and safe; on the other hand, getting out of the way is not only the natural impulse, it is thoroughly practical, and obviously until gas masks are available to civilians it is the only way.

INDIVIDUAL PROTECTION

This is not to minimize the importance of the mask. It is an absolute necessity for civilian defense and other officials who have to work during an air raid or let the city burn down or remain a target until the bombers have finished their work.

The army mask furnishes com-

plete protection for the lungs and eyes against all the war gases. (It does not protect against ammonia fumes, carbon monoxide, or hydrocyanic acid gas.) It is a little uncomfortable and makes a minor labor of breathing, but its discomforts decrease with familiarity. The heart of the mask is the canister through which the air is breathed, wrapped with a fine-woven, porous paper to filter out the irritant smokes, and filled with steam-treated charcoal, which collects many times its weight of gas, and soda-lime, which neutralizes the gas.





Improvised mask .- After the first gas attack in 1915 the British improvised a gas mask which gave a measure of protection against chlorine. A cloth was dipped in hypo solution (sodium thiosulphate) and tied around the face like a veil. When no other protection is available this same mask, with the addition of baking soda to the solution, has been recommended by the OCD. Against the blister gases a towel moistened with Chlorox or Zonite would perhaps be better. The difficulty would be to get enough chlorine to give any protection without getting so much that it would be dangerous to breathe. **Protective Clothing**

Head-to-foot protective clothing must be supplied to decontamination squads before they can go to work, and it will have to be worn by other civilian defense workers, such as emergency medical squads, who must go into areas contaminated with blister gas to do their work. Such clothing can work in either of two ways: by shutting off the body from the outside air or by neutralizing the air that circulates through the clothing as a gas mask neutralizes the air that the lungs breathe.

The impermeable type of protective clothing that will be used by decontaminating squads is made of a material like slicker cloth. It cannot be worn for long—ten minutes to two hours is the limit, depending on the weather and how hard the wearer is working—and cannot be renovated once the mustard gas has worked its way through.

Mustard will penetrate any fabric or covering in time. The vapor will go through leather in approximately two hours, artificial leather or alligator cloth in three-quarters of an hour, waxed paper in half an hour. Cellophane. which contains no oil or fatty substance, will resist for about 26 hours: moisture-proof cellophane for 120 hours.

The Chemical Warfare Service has worked out an impregnating substance for cloth that will neutralize the blister gases just as other compositions will shed water. The workmen in our mustard factories have given this porous clothing a thorough, practical. and successful test. Its only drawback for decontamination is that it is not proof against liquid blister gas. This impregnite is also used on leather, but decontamination workers could either spray their shoes occasionally if they were using slurry, or scuff them in dry mix.

Improvised Protective Clothing .--During an air raid in which gas is used along with high-explosives and incendiaries, it might be necessary to escape from a house or to go out for help through streets contaminated with mustard. Protective clothing that would serve the purpose could probably be found in the home. Any waterproof coat, preferably a slicker or alligator cloth, could be worn; an old rubber sheet or an oilcloth could be wrapped around a child: if the raincoat did not have a hood. one could be made of another piece of oilcloth: rubbers or rubber boots would protect the feet, with as many pairs of socks as could be gotten on under them: as many pairs of the thickest. most tightly woven trousers as could be worn, both for men and women; rubber gloves from the kitchen: a



Captain Monroe Broad of the Fort Bragg medical unit, in charge of gas instruction at the three statewide Civilian Protection Schools, shows Earl Hostetler, Commander of the Raleigh Citizens Defense Corps, how to put on a mask, while Frank Daniels, Director of Training for the Raleigh council, follows the instruction closely.

pair of goggles or even sun-glasses to give some protection to the eyes; finally, the clothing should be tied at the wrists and ankles. It isn't an Easter parade, and probably nobody would be looking out the windows.

SHELTER FROM GAS

If you were on the street when you smelled gas or heard the gas alarm, what would you do? You would immediately want to know the location and type of gas, but you might not be able to get this information. A general knowledge of the way gas behaves in the air and on the ground would tell you which way to turn to take shelter.

The most important thing to remember at such a time would be that all the war gases hug the ground. To state it more accurately, no lighter-than-air gas is effective in the open. If it were, hydrocyanic acid gas, which is as deadly as some of the war gases are imagined to be, would be a far greater threat than it is. Chlorine is $2\frac{1}{2}$ times heavier than the atmosphere, phosgene 31/2 times and mustard $5\frac{1}{2}$ times. Gas, then, will seep into low places-downhill and into cellars and the bed of the stream that flows through the park. The best way to move out of it is up upstairs, uphill, up a tree, up a telegraph pole.

Second, gas travels with the wind, remains longest in protected places through which the wind cannot blow, and penetrates such places very slowly. The best way to move horizontally is against the wind and into the open. In a high or gusty wind there is little danger from gas.

POPULAR GOVERNMENT

Third, a high **temperature** means a higher concentration of the gas and quicker dispersion. In the early morning hours, when air raids and especially gas attacks are most likely to come, gas is drawn to the ground; when the ground is warmer than the atmosphere, it will swirl up and disperse harmlessly. A quick change in weather will upset any gas attack. In the first attack with chlorine in 1915, an unexpected shift of the wind blew part of the chlorine back over the German lines.

Fourth, rain drives gases out of the air, and destroys all of them except mustard.

Fifth, loose earth or any porous substances absorb gas; a hard, smooth surface holds it in contact with the air and gets rid of it more quickly.

Weather and terrain can make as much difference in the way gas behaves as differences between the gases themselves.

If you were in your house during an air raid and heard the gas alarm, what would you do?

Assuming that all doors and windows were already closed, the room with the least number of openings to the outside would be chosen for a gas shelter. An upstairs room will give more protection from gas, a downstairs room from bombs.

The improvised gas proof room.-Besides the family and pets, a flashlight, water, and gas proofing materials should be brought into the room. Towels, sheets, or blankets soaked in soda and hypo solution, soda solution, or just plain water should be hung over doors and windows and stuffed across the bottom: if there is any kind of tape in the house, they should be sealed up; and wet rags or newspapers should be stuffed up the fireplace, and in ventilators and hot air radiators. Some kind of oil has been recommended by the OCD for dampening blankets, sheets, and towels as giving more protection than hypo and soda.

The prepared gas proof room.— Those are the things that can be done off-hand. In large or strategic cities preparations are more likely to be made beforehand. A downstairs room with two exits will give a better chance against bombs. Oilcloth curtains can be tacked over doors and windows, rolling them up out of the way with a slat inside till they are

needed and taping them down after the alarm. Plywood covers that fit tightly inside the window frames will give more protection from flying glass, which has caused a large proportion of the bomb casualties in England. Toilet facilities, bedding, food, and a radio, preferably battery operated, can be left in the room.

The OCD does not consider that ventilated, gas proof public shelters with accommodations for large numbers of people and provision for safe entrance and exit are necessary in any part of the country at the present time.

DECONTAMINATION

After the gas attack has passed, the danger from gas is by means over. There is something unnerving about the insidiousness of a gas attack; worse still is the damage that the blister gases can do hours and days after the bombers have gone.

Decontamination is the name given to the big clean-up job that follows a gas attack. It is aimed at the blister gases, and primarily at mustard, the hardest of all to fight. It is the responsibility of the citizens Defense Corps to organize and execute this work, and to decide how far it must be carried. One tankful of mustard spray will contaminate not only streets and buildings but automobiles, furniture, food, tools, trees and bushes, coal and firewood and everything else that is exposed.

What to Decontaminate

A decontamination squad going out after a gas attack would find that its first problem was a decision on priority. Which areas, which buildings, are urgently needed for vital public services? After these would come the areas and buildings that will help restore the normal flow of city life, such as grocery stores. Contaminated fields, vacant lots and perhaps parks will have to be left to rain and weathering after danger signs with the date of contamination have been put up at all the entrances.

Materials and Methods of Decontamition

Decontamination can be accomplished in a number of ways, some easy and some hard: by covering up the gas; by washing, boiling, or steaming it away, by dissolving it, or by neutralizing it with another chemical. With a favorable wind to drive away the vapor, fields can be burnt over. Defense Issue, 1942

Covering up a gas is a makeshift measure and may be dangerous, but it is sometimes done to seal it in until it decomposes. Three inches of earth, sand, ashes or sawdust thoroughly wetted down is the recommended procedure—more would be necessary for liquid mustard.

Plain water from a sprinkler or a fire hose is satisfactory for flushing lewisite off a street or any smooth surface. If plenty of water is used, there will be no danger of contaminating the sewers. Lewisite can be washed off a smooth surface; mustard must be dissolved or destroyed.

Anything from white shirts to tin cans that hot water will not hurt can be decontaminated by boiling.

Live steam under pressure can be used wherever it is available for automobiles or other smooth surfaces. Clothing can be steamed in a large can with water boiling in a false bottom—clothes hangers could be hooked on the underneath side of the lid. Four hours is a safe time.

Steam would rust delicate machinery, but if every part of a machine could be reached with a film of light oil following the steaming, it could be used.

The use of solvents in first aid has already been described; they could be used on any smooth surface in the same way, followed by hot water and soap and, if there were danger of rust, a coating of light oil.

Neutralization of the gas, although a tedious operation, is the most reliable. Vital areas and rough and absorbent surfaces which the mustard has penetrated will be neutralized.

Chloride of lime (calcium hypochlorite) is the cheapest effective chemical that has been found for the purpose, although various other commercial bleaching solutions found in laundries, for example, are also effective and might be easier to get hold of. Ordinarily chloride of lime has 30 to 35 per cent chlorine, and it is on this strength that the standard mixtures are based. H. T. H. and Perchloron are commercial compounds that contain 15 or 70 per cent chlorine; other bleaching solutions have as little as five per cent.

Chloride of lime is used against mustard in three ways: (1) as a dry mix with two parts of earth; (2) as a 50-50 mixture of water and chloride of lime, called slurry, scrubbed into surfaces; and (3) as slurry sprayed on rather than scrubbed in.

Because of the greater weight of dirt or sand, the dry mix is made with two shovels of chloride of lime to three of dirt. Slurry can be mixed with three shovelfuls of bleach to two gallons of water, or better by adding a little water to the bleach and mixing it into a paste, then thinning it down to the consistency of whitewash.

One pound of chloride of lime in either slurry or dry mix will decontaminate about one square yard of a not-too-rough, not-too-porous surface.

Dry mix is used on the ground. It is prepared near the place to be decontaminated, spaded into loose soil, spread over roads and wet down.

Slurry is either sprayed or scrubbed on streets, floors, and walls. Scrubbing is always to be preferred, as it will bring chlorine into closer contact with the gas. Spray should be left as long as possible, up to twentyfour hours, before it is washed off with soap and water.

Noncorrosive decontaminating Agent.—Chloride of lime is extremely corrosive and cannot be used on delicate machinery; containers for the slurry are also subject to corrosion. The type of sprayer used on fruit trees and garden plants is satisfactory for decontamination if it is emptied and washed immediately after use. The Chemical Warfare Service has developed a noncorrosive decontaminating agent which they use in 11/2 quart and three gallon sprayers. If it is made available to civilian defense corps, its cost, eight times that of chloride of lime, will naturally limit its use. A third type of equipment used by the army is a 300 gallon automotive spray tank using either



George Jeffrey, former Assistant Director, R. W. Martin, Assistant Director, Theodore S. Johnson, former Director, and William S. Nufer, Assistant Director of the State Defense Council, come out smiling after testing the recently developed molded rubber Army Training Mask. Mr. Johnson, first North Carolina Director of Civilian Defense, started from scratch, made bricks without straw, and turned over to his successor, former Mayor Ben Douglas of Charlotte, a going concern. It was Mr. Johnson who, with Governor Broughton, invited the Institute of Government to organize and conduct-training schools, which they sponsored. Mr. Nufer, who represented the State Defense Council at the War Department Civilian Defense School which two Institute of Government staff members attended, assisted in working out the North Carolina Civilian Protection Schools which the Institute of Government conducted.

chloride of lime or noncorrosive agent.

A lye solution (sodium hydroxide) is more effective against lewisite than chloride of lime, but if mustard and lewisite are used together, as they well may be, slurry would be the choice for decontamination. The water in the slurry would be sufficient to decompose the lewisite.

If a building can be *heated* and the gas volatilized and driven out safely, the trouble and expense of decontamination can be cut down considerably.

Decontamination of Food and Water

What specific action do the gases have on exposed food and water? The general rule is that anything which has a peculiar odor or taste should be destroyed. Only in a food or water shortage would any attempt at decontamination be made.

Chlorine, phosgene and tear gas give food a disagreeable taste and odor, but it may be saved by thorough airing and heating.

The blister gases and the irritant smokes poison food. Fatty or oily foods, citrus fruits, even if dried, flour, beans, potatoes, and corn are contaminated worst. Waxed paper is no better protection than ordinary wrapping paper, but cellophane, as has been said, gives good protection.

The blister gases and the irritant smokes also poison water, but there is little danger to a city's water supply from any of them. Ten gallons of mustard in a half million gallons of water gives a perceptible odor and taste, but is not dangerous. When necessary, mustard can be removed from water by adding 200 mesh activated charcoal 3000-4000 parts per million, ferric chloride 150 parts per million, and allowing the water to stand until the mustard coagulates. when it can be filtered with sand and chlorinated. Water exposed to lewisite or ethyldichlorarsine cannot be decontaminated.

For further study:

Protection against Gas. 75 pages. Illustrated, with a wall chart of the war gases. An excellent training guide for instructors and decontamination squads.

Training Guide — Chemical Warfare. Question, Answers, and Practical Exereises. 87 pages, illustrated. Chemical warfare from the soldier's side, a detailed guidebook. Chemical Warfare School, Edgewood Arsenal, Maryland.

Handbook for Decontamination Squads. 62 pages. Illustrated. OCD. One of the best of the OCD handbooks.

Decontamination. 34 photographs. Chem-

ical Warfare School, Edgewood Arsenal, Maryland.

First Aid in the Prevention and Treatment of Chemical Casualties. 31 pages. Illustrated, including color plates. OCD. Contains little information that is not included in Protection against Gas.

Standard School Lectures. Series 3, Gas Defense. OCD. or the gas instructor.

Decontamination. 34 photographs. Chemical Warfare School, Edgewood Arsenal,

Maryland.

CHOICE OF AN AERIAL WEAPON

Which of these three weapons, bombs, incendiaries, and gases, would most likely be used against a particular city? The use of gas is partly a matter of policy, as has been pointed out, but with the other two it is simply a question of the kind of target that the city offers.

High explosives.—To put an industrial target, a bridge, or a dam out of the picture, high explosive bombs would be required. It is true that their effect would be localized, but such structures are relatively fireproof, and most of the larger plants have efficient fire brigades, so that incendiary bombs might be ineffective. A medium bomber could carry four 500 pound bombs or two half-ton aerial mines, and the damage done would necessarily depend on the accuracy of the bombardier's aim.

Incendiaries.—This same bomber could carry 1000 two pound magnesium bombs. Dropped on frame structures, gas plants or oil storage tanks, they could start a hundred fires, some of which might become conflagrations. A covering of a quarter-inch of steel plate will break the fall of a magnesium bomb, but a hit with a demolition bomb on a storage tank, for instance, would again expose it to incendiaries.

Gas.—If, however, the purpose of the attack were not destruction of property but the crippling of production, communication, or transportation by injuring the workers, gas is the most effective weapon. Gas bombs might penetrate the strongest roof, contaminate large areas for days, and demoralize as well as injure the workmen. If used with high explosives, even the smaller sizes, to break windows and destroy gas protective construction, mustard dropped from spray tanks would cause widespread damage. A dive-bomber carrying two 40 gallon tanks of mustard could cover an area 1000x3000 yards with a fine spray. Most of this would fall to the ground,

the rest would cover the roof and sides of buildings, pour in through broken windows and build up strong concentrations indoors.

Protection of buildings.—As applied to industrial plants and office and public buildings, the destructive possibilities of an attack with high explosives, incendiaries, or gas should be weighed in each individual case, and a plan worked out to attain the following objectives formulated by the British ARP:

1. To safeguard the lives of the workers.

2. To limit bomb damage to buildings and machinery.

3. To protect men from the demoralizing effects of air raids and give them a sense of security and confidence.

4. To maintain production at the highest possible level during air raids.

Such a protective plan should provide: (1) Warning system and communications, (2) Concealment of lights, (3) Protection of workers, buildings, machinery, (4) Emergency fire fighting, (5) Rescue and repair work, (5) First aid and cleansing arrangements, (6), Gas detection, warning, and decontamination.

For further study the OCD has prepared a skeleton outline on *Protection of Industrial Plants and Public Buildings* and FBI has published Suggestions on the Protection of Industrial Facilities.

For further study of the entire technical side of civilian protection, we recommend:

Handbook of Civilian Protection, prepared by a group of experts of the College of the City of New York and published by the McGraw-Hill Book Company, 330 West 42nd Street, New York City, at \$1.25. 184 pages, with many illustrations. A meaty guide, valuable to civilian defense officials and to all citizens who need more detailed information than is given in the present Guidebook. In spite of the title, considerable material on civilian mobilization is included in the handbook.

Civil Air Defense, a Treatise on the Protection of the Civil Population against Air Attack, by Lieutenant Colonel Augustin M. Prentiss, one of the foremost army authorities on aerial warfare, also published by Mc-Graw-Hill. 338 pages, illustrated, \$2.75.

Civilian Protection Organization

By ALBERT COATES, Staff Member, Institute of Government Seventh in the Series of Civilian Protection Lectures

The bed of Procrustes.—There is a legend of Procrustes ruling in a forest, with a bed to which he fitted wanderers in his domain. If they were too short he stretched them to fit; if they were too long he cut them off to fit; if they were made to order and a perfect fit he let them go in safety.

The Office of Civilian Defense is not recommending a Bed of Procrustes for civilian protection organization in American cities and towns. Its plan and program is modeled to fit the needs of cities with populations ranging from 100,000 to 200,000; it must be correspondingly complicated to fit the needs of cities running into the higher population brackets and correspondingly simplified to fit the needs of towns in lower population brackets.

To illustrate: It suggests the possibility of combining divisions such as the Air Raid Wardens with the Police Division; the Utilities with the Public Works Division. It suggests the possibility of shifting particular services from one division to another, such as the Fire Watchers from the Air Raid Wardens to the Fire Division, the Rescue Squad from the Fire Division to the Public Works Division. It suggests the possibility of putting particular protective services, such as the Emergency Food and Housing Service, into a separate division of its own. In the last analysis it expects every community to use its own head and not the OCD's.

Civilian protection tasks.—If civilian protective forces are organizing against the background of the aircraft warning service and the air raid warning system, they are also organizing against the foreground of expected bombing raids; if they draw their hind sight from the one, they draw their foresight from the other. Even deaf and dumb and blind men know when the air raids come, what the bombers bring, and what their bringings do. The civilian protection organization finds its tasks and takes its shape in bombing scenes.

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What are these tasks?

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FIRE DIVISION

There is the task of fighting fires starting from saboteurs within the gates and from incendiary bombs in air raids and of rescuing persons caught in flames, pinned under falling timbers or trapped in the debris of crumbling walls.

For this task OCD recommends a Fire Division including (1) the regular firemen; (2) auxiliary firemen, enrolled at the ratio of 4 to each 1000 people; (3) rescue squads enrolled at the ratio of 2 to each 1000 people; (fire watchers, enrolled at the ratio of 10 to each 1000 people, under the air raid wardens division in the OCD plan, are included in the fire division in some places).



AUXILIARY FIREMEN

Basic training. — According to OCD, Auxiliary Firemen will need the following basic training: (1) 10 hours of first aid, (2) 2 hours of gas defense, (3) 5 hours of general instruction, (4) 10 hours of fire defense—a special course designed to prepare them for ground work with the regular fire department, including: (1) fire department organization; (2) apparatus, tools, and equipment of the fire service; (3) responding to an alarm; (4) hose practices; (5) ladder practices (carrying, raising, lowering both the straight and the extension ladder); (6) rope work; (7) blackout conditions; (8) safety precautions.

Auxiliary firemen completing this basic training will become accredited

members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training.—According to OCD, this basic training should be followed with advanced training to prepare auxiliaries for the more hazardous work of fire fighting: (1) forcible entry practices, (2) ladder practices, (3) minor extinguishment practices, (4) advancing hose lines, (5) combined hose and ladder practices, (6) salvage practices, (7) care of assigned equipment, (8) firefighting practices coordinated; (9) fire-fighting hazards.

Auxiliary firemen completing this special duty training will be entitled to "First Class" rating.

Regular firemen as well as auxiliaries need to learn how to handle incendiary bombs: when they come alone, when they come with high explosives, when they come with gas, when they come in varying combinations.

OCD and other agencies provide the following guidebooks of instruction:

Handbook for Auxiliary Firemen, 94 pages. Illustrated. One of the best of the OCD handbooks.

Fire Defense Organization. 4 pages. OCD. A guide for cooperation on the state and local level.

Suggestions for State and Local Fire Defense. 27 pages. Superintendent of Documents, Washington, D. C. 10c. A guide published by the Division of State and Local Cooperation, predecessor of OCD, but still valuable.

but still valuable. Training Auxiliary Firemen. 7 pages. OCD. The only publication that outlines the training course.

Fire Protection in Civilian Defense, 44 pages. OCD. A comprehensive, compact statement of the incendiary bomb threat,

Fire Fighting As Applied to Military Explosives and Ammunition. 42 pages. Chemical Warfare School, Edgewood Arsenal, Maryland.

An excellent training film, *Fighting the Fire Bomb*, is available through the State Defense Council for the instruction of firemen and of citizens whose homes may be threatened.

The Institute of Government provides supplementary instruction materials for the five-hour general course on civilian defense and protection organization—including the aircraft warning service and air raid warning system, the control center and the volunteer office.



RESCUE PARTY

Rescue Squads

If air raids come, bringing incendiary and high explosive bombs, aided and abetted by poison gas attacks, creating a multiplicity of hazards, rescue work ordinarily done by firemen as the first on the scene and supplemented by different public works departments, must be still further supplemented by organized rescue squads.

For this and similar reasons, perhaps, OCD recommends that Rescue Squads be organized under the Fire Division of the Civilian Protection organization. Local conditions and established practices in some communities may assign this unit to the public works or utility division.

Basic training. — According to OCD these Rescue Squads will need the following basic training: (1) 20 hours of first aid, (2) 10 hours of fire defense, (3) 5 hours of gas defense, (4) 5 hours of general instruction.

Rescue Squad members completing this basic training will become accredited members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training.—According to OCD this basic training should be followed with special duty training in (1) organization of the rescue service; (2) rescue procedure; (3) knots and lashings; (4) sheerlegs, derricks, etc.; (5) shoring; (6) lifting gear-jacks and rope tackle; (7) demolition; (8) oxyacetylene cutting.

Rescue Squads completing this special duty training will be entitled to "First Class" rating.

OCD provides a handbook for Rescue Squads for the instruction of this unit of the Citizens Defense Corps. In this Guidebook the Institute of Government provides supplementary instruction material for the general course and for the course in gas defense.





AUXILIARY POLICE

There is the task of keeping the peace in times of panic, controlling crowds and directing traffic in the neighborhood of fires, demolition bombs and poison gases, preventing looting of partially shattered homes and shops and industries, assisting the various protective services before, during and after air raids.

For this task, OCD recommends a Police Division, including: (1) regular policemen; (2) auxiliary policemen, enrolled at the ratio of 4 to each 1000 people; (bomb squads have been removed from the police division of the civilian protection organization and put under the ordnance division of the army.)

Basic training. - According to OCD police auxiliaries will need the following basic training: (1) 10 hours of first aid, (2) 3 hours of fire defense, (3) 5 hours of gas defense, (4) 5 hours of general instruction.

Auxiliary Police completing this basic training will become accredited members of the Citizens Defense Corps and entitled to wear the above insignia.

Special duty training.—According to OCD this basic training should be followed with special duty training, including: (1) police department organization; (2) law of arrest; (3) prevention of casual offenses; (4) traffic control and duty; (5) prevention of panic; (6) reports. OCD further recommends that wherever possible this special duty training be followed up with advanced training to qualify the auxiliary policeman for extended duty under emergency conditions, including: (1) prevention of wilful offenses, including arson and sabotage, (2) apprehension of criminals, (3) searches, (4) interviews, (5) arrests, (6) finger printing, (7) preservation of evidence, (8) presentation of testimony, (9) records.

Auxiliary police completing this special duty training will be entitled to "First Class" rating.

OCD and other agencies provide the following material for the training of auxiliary police:

War Duty Suggestions for Police Execu-tives. 26 pages. Federal Burean of Investigation, Washington, D. C. Adapting the police organization to war emergencies.

War Duty Suggestions for Police. 40 pages. Federal Bureau of Investigation, Washington, D. C. Supplementary to the FBI Civilian Defense Course for Police.

Protection of Industrial Plants and Public Buildings. 8 pages. OCD. Suggested organization plan.

Suggestions for Protection of Industrial Facilities, 50 pages. Federal Bureau of Investigation, Washington, D. C. The OCD has in preparation a Handbook

for Auxiliary Police.

War and Order, a film which illustrates graphically law enforcement problems in wartime as they have arisen in England, is available through booking offices.

The Institute of Government provides in this Guidebook issue of POPULAR GOVERNMENT instruction material for the general course, fire defense, and gas defense.

Regular police officers who have not already had this basic and special duty training will need it more than auxiliary police.

Ш MEDICAL DIVISION



MEDICAL CORPS

There is the task of helping people hurt in air raids through the precautions of first aid, the skill of physicians and the care of hospitals. These injuries might result from the fragments or the concussive effects of high explosive bombs, from falling debris, from fire, from gas, or from a combination of these causes.

For this task OCD recommends an emergency medical division including : doctors, nurses, nurses aides and orderlies, enrolled at the ratio of 3 for each 1000 people.

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Training of Volunteer Nurses Aides is carried out through the American Red Cross, and consists of an 80 hour course allocated as follows: (1) care of the sick in the hospital (one hour lecture and one hour



NURSES AIDES CORPS

practice daily) --- 34 hours; (2)supervised practice in the hospital (3 hours a day, 5 days a week)-45 hours. Nurses Aides are also required to complete the following basic OCD training: (1) 20 hours of first aid, (2) 2 hours of gas defense, (3) 5 hours of general instruction.

Volunteer Nurses Aides who have completed this training will be entitled to wear the above insignia.

OCD and the Red Cross provide the following material for instruction:

Emergency Medical Service for Civilian Defense. 9 pages. OCD. An organizational guide.

Volunteers in Health, Medical Care and Nursing, 11 pages, OCD. An outline of the available services, for Volunteer Office workers and prospective volunteers. Equipment and Operation of Emergency Medical Field Units, 15 pages, OCD. Guide for the Training of Volunteer Nurses' Aides, prepared by the American Red Cross 4 pages OCD

Red Cross. 4 pages. OCD. Handbook of First Aid. 72 pages. Il-lustrated. OCD. An outline of the course and "a guide for continued practice after completion of the first aid course." Not a textbook.

Advanced First Aid for Civilian Defense. 27 pages. American National Red Cross. Outline of a ten hour course for all mem-

bers of Emergency Medical Field Units. Protection of Hospitals. 21 pages. Il-lustrated. A detailed guide on protective construction and organization. OCD.

The Institute of Government provides in this Guidebook supplementary instruction material for the general course and the training in gas defense.

IV

PUBLIC WORKS DIVISION

There is the task of removing rubble and debris of bombed and broken buildings, clearing and repairing streets and roads, replacing traffic

signs and cleaning up the gas-contaminated areas.

For this task OCD recommends a public works division including: (1) demolition and clearance crews, enrolled at the ratio of 2 for each 1000 people, (2) road repair crews, enrolled at the ratio of 2 for each 1000 people, (3) decontamination squads, enrolled at the ratio of 1 for each 1000 people.



DEMOLITION AND CLEARANCE CREW

Basic training. — According to OCD, Demolition and Clearance Crews will need the following basic training: (1) 3 hours of fire defense, (2) 2 hours of gas defense, (3) 5 hours of general instruction. On completion of this basic training members of Demolition and Clearance Crews will be entitled to wear the above insignia.

Special duty training should be worked out in each community for the type of work the Demolition and Clearance Crew may be required to do. The Handbook for Demolition and Clearance Crews is the basis of instruction, and can be supplemented by photographs of demolition work undertaken in connection with housing development and WPA construction. Supplementary instruction materials for the basic course have been prepared by the Institute of Government and are included in this Guidebook.

Training for Road Repair Crews Basic training. — According to



OCD, Road Repair Crews will need the following basic training, identical with that which Demolition and Clearance Crews receive: (1) 3 hours of fire defense, (2) 2 hours of gas defense, (3) 5 hours of general instruction. On completion of this basic training they will be entitled to wear the above insignia.

Special duty training consists in (1) complete familiarity with the Handbook for Road Repair Crews, (2) skill in the use of simple road repair equipment, and (3) instruction by the squad leader and other skilled instructors who might be recruited from the offices of, for example, local street contractors.

Supplementary instruction material for the entire basic training course are included in this Guidebook issue of POPULAR GOVERNMENT.



DECONTAMINATION CORPS

Training for Decontamination Squads

Basic training. — According to OCD, Decontamination Squads will need the following basic training: (1) 10 hours of first aid, (2) 5 hours of gas defense, (3) 5 hours of general instruction. On completion of this training, they will be entitled to wear the above insignia.

Special duty training will include a thorough study of the blister gases, of the materials and methods of decontamination, and most important of all-after equipment is issuedpractice and exercise in (1) putting on and removing protective clothing, (2) mixing, spreading, and spraying slurry on streets and walls, (3) decontamination of equipment, and (4) decontamination of clothing.

Members of Road Repair Crews, Demolition and Clearance Crews, and Decontamination Squads who have completed the Special Duty Training as outlined and have successfully demonstrated their skill in

training exercises will be given a "First Class" rating.

OCD and other agencies have provided the following instruction material for the various units of the Public Works Division and their chiefs:

Handbook for Demolition and Clearance

Crews. 52 pages. OCD. Handbook for Road Repair Crews. 44 pages. OCD. Handbook for Decontamination Squads.

62 pages. Illustrated. One of the best of the OCD handbooks.

Protection Against Gas. 75 pages, with illustrations and a wall chart of the gases. OCD. An invaluable training guide for decontamination squads.

Decontamination. 34 photographs. Chem-ical Warfare School, Edgewood Arsenal. Maryland.

Protective and Remedial Mcasures for Sanitary and Public Health Engineering Services, a reprint from the January, 1942, Proceedings of the American Society of Civil Engineers, 33 West 39th Street, New York City. 37 pages. Illustrated. 10c. A valuable guide for waterworks, sanita-tion, and all other public works officials.

The Institute of Government provides in this Guidebook supplementary instruction material for the general course and the training in gas defense.

V

UTILITIES DIVISION

There is the task of planning effective blackout procedures, installing and operating public warning systems which will reach the people in the hour of danger, restore bombed and broken water and gas and sewer mains, light and power lines, telephone and telegraph communication systems.

For this task OCD recommende a public utilities division including: (1) the blackout service, (2) the public warning service, (3) communications systems, and (4) utilities repair squads.

Basic training for Utilities Repair Squads includes (1) 2 hours of gas defense and (2) 5 hours of general instruction. Upon completion of this basic training they will be entitled to wear the insignia.

Special duty training will consist in brush-up instructions at the discretion of the squad leader-a full technical course is not planned for Utilities Repair Squads, since OCD assumes that these units will be thoroughly familiar with their work. The requirement for a "First Class" rating is the ability to make repairs on one class of line in a competent and professional manner.

OCD and other agencies have provided the following instruction materials for the various units of the Public Utilities Division and their chiefs:

Air Raid Warning System. 18 pages, with diagrams, charts, and forms. OCD. Municipal Signaling Systems, including Specifications for Emergency Electrical Power Equipment. 24 pages. OCD. Electrical

Telephone Communications in Civilian Defense. 22 pages, with forms and maps. Southern Bell Telephone and Telegraph Company. A confidential guide for the use of telephone employees. Blackouts. 60 pages. Illustrated. OCD.

Complete on the technical side.

The Institute of Government provides in this Guidebook supplementary instruction material on the entire basic training course.

VI

AIR RAID WARDENS

There is the task of instructing the civilian population in safety measures during air raids, enforcing blackout restrictions, directing persons in the streets to shelter, watching for incendiary bombs, high ex-



AIR RAID WARDEN

plosives and gases and reporting these incidents to the local control center for immediate action.

For this task, OCD recommends an air raid wardens division, including: (1) air raid wardens, enrolled at the ratio of 8 for each 1000 people, (2) fire watchers, enrolled at the ratio of 10 for each 1000 people, (3) emergency food and housing workers, enrolled at the ratio of 1 for each 1000 people.

Air Raid Wardens Training

Basic training. — According to OCD, air raid wardens will need the following basic training: (1) 10 hours of first aid, (2) 3 hours of fire defense, (3) 5 hours of gas defense, (4) 5 hours of general instruction.

Air raid wardens completing this basic training will become accredited members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training.—According to OCD air raid wardens will need the following special duty training: (1) the air raid warden service, (2) reports and records, (3) equipment and procedures in the warden's post, (4) assumption of leadership in an emergency, (5) familiarity with the location of hospitals, schools, shelters, utilities, hydrants, call boxes and emergency exits from buildings in his sector.

OCD provides a Handbook for Air Raid Wardens for the training of this Civilian Protection unit. A training film, The Air Raid Warden, is available through booking offices.

The Institute of Government in this Guidebook provides instruction material for the general course, and fire and gas defense.



FIRE WATCHER

Fire Watcher Training

Basic training. — According to OCD fire watchers will need the following basic training: (1) 3 hours of fire defense, (2) 2 hours of gas defense, (3) 5 hours of general instruction.

Fire watchers who have completed this basic training become accredited members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training, carried out under the supervision of the Senior Warden of the sector, consists in practice in actual Fire Watcher posts along the following lines: (1) identification of streets by name and of buildings by address in daylight and at night, (2) methods of observation — systematic scanning vs. random observation, (3) reporting by telephone.

OCD provides a Handbook for Fire Watchers for the training of this group. The Institute of Government provides in this Guidebook supplementary instruction material for the entire basic course.

Emergency Food and Housing Corps Training

Basic Training. — The following basic training is recommended by OCD for Emergency Food and Hous-



EMERGENCY FOOD AND HOUSING CREW

ing Corps: (1) 10 hours of first aid,
(2) 3 hours of gas defense, (3) 5 hours of general instruction.

Volunteers who have completed this basic training become accredited members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training for Emergency Food and Housing Corps includes: (1) preparing, transporting, and serving food in quantity, (2) issuing clothing, (3) locating temporary housing; and (4) 20 hours of demonstration and practice work in room registry bureaus and largescale kitchens.

The Institute of Government provides in this Guidebook issue of POPULAR GOVERNMENT instruction material for the general course and the course in gas defense.

CONTROL CENTER

OCD recommends that the foregoing divisions of the civilian protection organization in each community —fire, police, medical, public works, utilities, and air raid wardens—focus in and function through a local control center, charged with the duty of coordinating the efforts of all divisions, directing them to the spots where the enemy strikes, and thus avoiding a leaderless confusion where individuals and divisions might flop around like chickens with their heads cut off.

This local control center might be described as the heart of the civilian protection organization, pumping the life-blood of the community to assaulted points that need it most; or as the head of the civilian protection organization, receiving warnings of impending danger and directing all needed protective services to meet these dangers if and when and where they strike; or as **the nerve center** of the civilian protection organization, where every blow of the enemy is registered as it falls and summons the united resources of the whole community to the point of shock.

The Control Center calls for a staff enrolled at a ratio of 6 for each 1000 people: (1) the commander of the Citizens Defense Corps, controller and deputy controller, (2) plotting officer, panel clerk, telephonists, etc., (3) messengers, enrolled at the ratio of 8 for each 1000 people, (4) drivers, enrolled at the ratio of 5 for each 1000 people; (5) the heads of protective service divisions operating through the control center.

The Commander, Controller and Deputy Controller need to know and understand the civilian protection or-



BASIC INSIGNIA

ganization in its entirety, in each separate part of the entirety, and the interlocking relationships of these parts with each other and with the organization as a whole. They can get this needed information from pamphlets published by OCD such as: The Staff Manual of the United States Citizens Defense Corps with 8 pages of charts, diagrams and explanatory text, outlining the duties of the control staff and of each division operating through it; The Control System of the Citizens Defense Corps with 30 pages of charts, diagrams and explanatory text; The United States Citizens Defense Corps with 29 pages of explanatory text and Training illustrative materials; Courses for Civilian Protection with 34 pages of explanatory text on basic and special duty training and requirements for Federal insignia; How to Organize Civilian Protection *in Your Community* with 8 pages of helpful charts and outlines of procedures; other pamphlets listed under the various protective divisions outlined in this issue of POPULAR GOV-ERNMENT.

Control Center Staff Training

Basic training. — According to OCD, the control center staff, except for messengers and drivers, will need the following basic training: (1) 10 hours of first aid, (2) 3 hours of fire defense, (3) 2 hours of gas defense, (4) 5 hours of general instruction. On completion of this basic training, they will be accredited members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training for control center executives should include, according to OCD, (1) map reading, (2) municipal organization, (3) utilities, (4) city geography, (5) law of authority (6) staff operation and functions, (7) messages and reports, (8) inspections and reviews.

Messenger Corps Training

Basic training.—For messengers, OCD recommends the same basic training as for control center staff above; on completion of this training they will be entitled to wear the above insignia.

Special duty training for messengers includes (1) city geography, (2) blackout training; (3) message procedure. On completion of this training they will be given a "First Class" rating as members of the Citizens Defense Corps.

OCD provides a Handbook for Messengers for the training of this corps; the Institute of Government provides instruction materials for basic training in gas defense, fire defense, and general instruction.

Drivers Corps Training

Basic training.—OCD recommends a stiff 40-hour course for basic train-



MESSENGER

ing of the drivers corps, including: (1) 10 hours of first aid, (2) 5 hours of gas defense, (3) 5 hours of general instruction, (4) night and convoy driving, (5) blackout driving, (6) map reading, (7) emergency road repairs, (8) test. On comple-



DRIVERS CORPS

tion of this course, they will be accredited members of the Citizens Defense Corps entitled to wear the above insignia.

Special duty training of drivers corps consists of training exercises and volunteered work to be arranged by local authorities, and the "First Class" rating is awarded on the satisfactory completion of such training.

The Institute of Government provides in this Guidebook supplementary instruction material for basic training in gas defense and general instruction.

VOLUNTEER OFFICE

According to OCD a city of 100,-000 people will need 6,000 volunteers to staff its protective services; a city of 50,000 will need 3,000; a city of 10,000 will need 600; and so on in proportion to size. OCD recommends that these workers be enrolled through a local volunteer office staffed by: (1) a director, (2) one or more clerical assistants, (3) workers; to enroll the volunteers, classify them according to their skills, assign them to the protective services which need them, help the division heads to organize the training courses to fit them for their respective tasks.

For the Director a community might turn to local persons with experience in a personnel bureau, as deans of students in high schools or colleges, public or private employment bureaus, public or private social agencies, community chests and the like. For the clerical assistants they might turn to WPA or NYA or to volunteers with clerical experience in local businesses.

According to OCD the recruiting, enrolling and placement workers need to be trained in such things as: (1) Functions of the Civilian Defense Volunteer Office, (2) Civilian defense needs and facilities, (3) How to interview department and agency heads, (4) Methods of recruiting, (5) Standards of volunteer service, (6) How to use the files of the Volunteer Office, (7) Types of volunteer jobs and qualifications for workers in each case, (8) How to interview a volunteer to check his or her suitability for a job, (9) How to fill out enrollment cards, and other forms for getting facts about jobs.

Further help may be obtained from the WPA office at the State Defense Council in Raleigh for the purpose of setting up uniform filing systems and records; from district offices of the State Employment Service; from personnel offices of local business firms.

Many methods have been used in recruiting and enrolling needed volunteers. Some communities have tried the plan of mass registration to enroll all volunteers within a day or two days or a week. Others have tried the plan of successive group registration for particular services as they are organized to begin their training. Others have started with one system and wound up with the other. Under any system the organization of specific groups should be perfected and the training begun soon enough after registration to prevent the let down which comes from the lack of follow through .

For some places the Volunteer Office conducts the registration of volunteers on its own initiative. In others, the Volunteer Office encourages the heads of the particular defense divisions to conduct their ewn. In others the Volunteer Office starts the registration and division heads supplement its efforts by urging persons interested in their particular services to go to the Volunteer Office and register. In all cases the Volunteer Office should be the central clearing house and filing center. One hundred thousand volunteers.

-The Civilian Protection program outlined in the foregoing pages calls for: 60 or more volunteers in towns of 1000 people; 600 or more in cities of 10,000; 6000 or more in cities of 100,000; 60,000 in the 1,000,000 people living in all towns and cities in North Carolina; with the unestimated thousands needed to tie in the rural neighborhoods if this program is to achieve effectiveness in city, town, and countryside alike. This means around 100.000 volunteers for civilian protection alone; and before this war is over fully as many more will be needed for the civilian mobilization phases of the program of civilian defense. This means 100,000 citizens in training now—with more to follow on their heels; for if these protective tasks are worth doing at all, they are worth doing well; and if they are worth doing well, men and women must be trained to do them as thoroughly and effectively under air raid conditions as soldiers and sailors are expected to perform in the thick of battle. Kipling's call for training of the men on the war front in this war is a call for training of the men on home front duty at civilian protection posts in hostile air attacks.

- "Sons of the sheltered city—unmade, unhandled, unmeet—
- Ye pushed them raw to the battle as ye picked them raw from the street
- And what did ye look they should compass? warcraft learned in a breath,
- Knowledge unto occasion at the first far view of Death?
- So! And ye train your horses and the dogs ye feed and prize.
- How are the beasts more worthy than the souls you sacrifice?

Challenge to Volunteers

The cities, the counties and the state of North Carolina have sent their living quotas from their home fires to the camp fires of the nation. They will keep on—from homes to camps to seaports to fighting fronts. They will be found on the seven seas, on the wings of the morning and in the uttermost parts of the earth. Can we match their battlefront work with our home front work? Can we train for the task of civilian protection at home as they are training for the task of military protection away from home? Can we get ready to

For the instruction of the Volunteer Office staff OCD provides A Civilian Defense Volunteer Office, What It Is, How to Organize It, What It Does, with 27 pages of text and suggested forms.

give as good account of ourselves in bombings over here as they are giving of themselves in bombings over there?

"We are fighting Germany for the privilege of sleeping through an early morning class if we want to," said Edward Kidder Graham in 1917 to students in the University of North Carolina, "but the victory of democracy will not be ours unless after winning the right to stay in bed we choose to get up. It is easier," he continued, "for some men to charge through barbed wire on the cold steel of German bayonets than to crawl out of a warm bed on a February morning to attend a first hour math class. . . . Yet, the whole problem of democratic civilization is symbolized in this test . . . whether men can discipline themselves.... That is the ultimate fight, and that is the fight that is to test the vision of freedom that has led men through the

centuries to fight and fail and fight on, and gladly, if they still might pass on the torch."

Can we find men and women in every city, town and countryside in North Carolina who will volunteer for these protective services, start the basic and special duty training at nights after the day's work is over and on week ends after the week's work is done, stick to it through the weeks of study and practice till they have won the right to wear the insignia of their rank—the right to stand on guard at the protective service ports in their communities in the hour of danger, to do their duty in the peril of falling incendiaries, high explosive bombs and poison gas;in the proud spirit of men and women who can breathe the breath of their own life into the words of him who said that only those are fit to live who are not afraid to die.

That is the faith for which our

brothers in the front lines and ourselves in the back lines and supply lines are being tested in a crucible of fire today: the faith that internal compulsions can move free men on the home front in this American land to work longer, harder and more effectively to produce more of the supplies of war than men no longer free under the pressure of external compulsions in Axis-dominated lands: the faith that the sting of a free man's conscience will spur him on to greater effort than the sting of a master's lash will spur a slave; the faith that free men will fight as hard to keep their freedom as other men will fight to take it from them; the faith that the initiative, energy, and resourcefulness of free men is beyond the reach of slaves-even in the production of planes and tanks and guns; the faith that longing for the fleshpots of Egypt will not blot out the vision of the promised land.

Suggestions to Local Defense Chairmen

By ALBERT COATES, Staff Member, Institute of Government Eighth in the Series of Civilian Protection Lectures

I

OFFICE OF CIVILIAN DEFENSE

National—Regional—State—Local I pointed out in an earlier lecture that civilian protective services take their shape in bombing scenes. England's civilian protection organization was forged and patterned in the heat of London fires. The United States Office of Civilian Defense and Military Authorities sent representatives to England where they studied British experience and came back with the plan, outlined in the foregoing lecture, adapted to fit the needs of the United States and flexible enough to be simplified or expanded in particular localities to fit the local form. How is this organization put together in the United States? In the cities, the counties and the State of North Carolina?

The national OCD.—The President of the United States declared a limited national emergency on September 8, 1940 and an unlimited national emergency on May 27, 1941. He established the National Defense Advisory Commission on May 28, 1940, created the Division of State and Local Cooperation on August 1, 1940, coordinated it with the Office of Emergency Management on January 27, 1941, reorganized it as the Office of Civilian Defense on May 20, 1941, and charged it with the coordination of federal, state and local activities in the national defense. These activities, according to the organization chart, fall in two main divisions: Civilian Protection and Civilian Mobilization. Regional Offices of Civilian Defense were set up in the nine army corps areas of the United States for the purpose of fitting the national pattern to regional needs. North Carolina falls in the Fourth Corps Area with South Carolina, Georgia, Florida, Alabama, Tennessee.

The State Defense Council.—At the request of the President of the United States, Governor Clyde R. Hoey appointed a State Defense Council for North Carolina on November 22, 1940. Governor J. Melville Broughton revised and reappointed it on June 12, 1941, organized it for action on June 18, 1941 with a full-time director and stenographic help, and gradually expanded it to include five assistant directors together with representatives of the Army, the United States Public Health Service, and the American Red Cross, and further clerical assistance.

Local Defense Councils .--- Following the reorganization of the State Defense Council in the summer of 1941, the Governor of North Carolina appointed chairmen of local defense councils in every county of the state and recommended that local defense councils include cross sections of the community in their membership, such as: "representatives of essential public agencies and local governments, civic groups, law enforcement officers, health and welfare agencies, chambers of commerce, and real estate boards." Separate councils outside the standard county organizations operate in High Point, Rocky Mount and Chapel Hill.

Π

Where can Local Chairmen and Members of Local Defense Councils



MAJOR GENERAL L. D. GASSER Assistant Director in Charge of Civilian Protection, OCD

Turn for Help in their Organization and their Work? They can turn to the Director and five Assistant Directors of the State Defense Council in Raleigh, and to the representatives of the United States Army, the United States Public Health Service, the American Red Cross and the various supplemental state and federal agencies attached to the State Director's staff, who are ready to go at any minute to any city, town or county to bring their own experience and the state's resources to the



JAMES M. LANDIS, Director Office of Civilian Defense

aid of any local council.

Through this State Council of Defense in Raleigh, they can get the services of effective guidance and advice from the Regional Office of Civilian Defense in Atlanta and the National Office of Civilian Defense in Washington, D. C.: staffed with personnel including, among others: Directors; Assistant Directors in charge of Civilian Protection, with specialists in the various protective services such as: fire, police, air raid wardens, medical, public works and



JONATHAN DANIELS Assistant Director in Charge of Civilian Mobilization, OCD

utilities, civil air patrol, blackouts and camouflage, with others added as the need arises; Assistant Directors in charge of Civilian Mobilization services with specialists in the various mobilization services such as: salvage, health, welfare, recreations, education, civilian morale and all the multiplicity of forces through which the home front can help in the winning of the war.

These National and Regional Directors, Assistant Directors and Specialists are busily engaged in:

> SOLLACE MITCHELL Assistant Regional Director in Charge of Civilian Mobilization

COLONEL IRVIN BELSER Assistant Regional Director in Charge of Civilian Protection





CHARLES H. MURCHISON Regional Director Office of Civilian Defense



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(1) studying the multiplicity of problems involved in protection, mobilization and related phases of national defense in all sections of the country, (2) organizing the machinery to meet them, (3) preparing guidebooks for the instruction of civilian personnel assisting the War Department in schools of training for instructors, (4) advising with regional, state and local defense officials on new problems as they arise, (5) providing limited equipment within a limited budget for cities and sections most likely to be the butt of air attack.

They can turn to the Institute of Government of the University of North Carolina at Chapel Hill. Two Institute staff members attended the War Department School of Civilian Protection and returned to organize and conduct (1) three Statewide Civillian Protection Schools at the Institute of Government building, attended by 150 persons representing 80 or more cities, towns, and counties; (2) followed by eleven one day district schools attended by 850 persons representing all sections of the state, (3) followed by the preparation of "Guides to Civilian Defense in the Cities, the Counties and the State of North Carolina'' to help in fitting the national defense program to state and local needs and opportunities; (4) to be followed by additional Statewide and District Schools for the training of local administrators and instructors as fast as the need is felt; (5) to be supplemented by a demonstration laboratory and a clearing house of information to which local defense councils and committees in every city, town and county in the state may turn to find out how other cities, towns and counties are handling similar problems.

From the beginning to the end they must turn to themselves. For the whole civilian defense organization, in theory and in practice, reverses the processes through which states, counties, cities and towns have carried their perplexities to Washington and left them on the nation's doorsteps. It allocates the national perplexities to the regions, states and localities from which they come and leaves them on the doorsteps of state capitols, county courthouses and city halls. Washington and Raleigh are helping only those who help themselves.

Ш

If I were Chairman of a Local Defense Council.—All advice is bad according to Oscar Wilde, and good advice is worst. All of us occasionally get fed up on advice, even as the black crow got fed up on another black crow's music to the point where he told him that even if it were good he wouldn't like it. In a spirit of humility, therefore, I offer the following suggestions, growing out of studies and conferences with local, state and national defense officials, with the request that they be examined critically and accepted, rejected, or supplemented in proportion as they fit the needs of particular localities.

I would not accept the chairmanship of a local defense council as an honorary appointment, even though no honorarium is attached.-For these local chairmen are trusted and charged by the Governor of North Carolina with the high privilege of organizing and mobilizing the homefront forces of their communities to keep the homefires burning and to feed supply lines with personnel, equipment, and the basic munitions of war: the presence of which will give the stuff of victory to our own soldiers as in many climes they fight in the heavens above, the earth beneath and the waters down under the earth; the absence of which will sap them as it sapped their brothers in the foxholes of Bataan and the batteries of Corregidor—until their powder had burned out, the wings of their airplanes drooped and folded, their shoes turned into bits of shreded leather, their clothes into a mass of rags and tatters, and their bodies too weak to run or walk into a charge even at the bidding of spirits undaunted and undying.

I would not betray the trust the Governor showed in me by this appointment. I would not want my fellow citizens to taunt me when this



STATE DEFENSE COUNCIL STAFF. Left to right, Norman Y. Chambliss, Assistant Director assigned to northeastern counties; George K. Snow, Assistant Director assigned to western counties; June Rose, Assistant Director assigned to southeastern counties; Ben E. Donglas, recently appointed Director of the State Defense Council by the Governor of North Carolina; Major Dewey A. Herrin, liaison officer between the State Defense Council and the U. S. Army; R. W. Martin, Assistant Director in charge of the Raleigh area; and William S. Nufer, Assistant Director in charge of the Aircraft Warning and Air Raid Warning Systems in the state. Both Mr. Rose, who has attended the War Department Civilian Defense School, and Major Herrin were instructors in the Statewide and District Civilian Protection Schools.

war is over with the words of Henry of Navarre to the follower who did not fight beside him in the battle that turned the tide in his country's history: "Go hang yourself brave Crillon! We fought at Arque and you were not there."

I would work out a plan to go by, write it down without delay and add to it or take from it in the light of experience as the work advances. There is one thing worse than the lack of a local defense council in a community; and that is a local defense council all dressed up with nowhere to go. One thing worse than doing the wrong thing is doing the right thing in the wrong way to the prejudice of a good cause. At the very beginning, then, local defense council chairmen throughout the state should look at the specific problems war has brought to their own localities in the effort to see what if anything they might do about them.

I would look into the life of my community to see: (1) If there are problems growing out of the Selective Service Act, calling for cooperation with local draft boards in the administration and enforcement of the multiplicity of regulations involved in transferring men from the city and country to the camps;

(2) If there are problems of advising and aiding families of men who have been called into the service and who have left behind dependents without enough to live on and with no way to make a living and the further problem of advising these men and their families on the effects of the Soldiers and Sailors Relief Act on the payment of taxes, rents, debts due and payable or likely to become so while they are in the military service, lawsuits started by them or against them, and related matters;

(3) If there are problems of army camps, creating emergency conditions centering in the cities and counties where they are located and spreading out to surrounding cities and counties, including problems of housing, food and water supply, sewage disposal and related problems of sanitation and health, recreation and entertainment for the workers building the camps, for the soldiers who occupy the camps, for the families and friends who come to visit the soldiers in the camp; (4) If there are problems of industrial centers, loaded with war production efforts, drawing in workers and their families to the point of dangerous congestion, and creating problems corresponding to those outlined in the preceding section,—and the converse problems of shrinking population in cities and counties from which these workers come;

(5) If there are problems of people thrown out of work and families left without support as they are moved by the hundreds from the lands condemned for camp sites and have to seek new homes in new places,—as the shift from the livelihoods of peace to the livelihoods of war curtail many businesses and employments, cut out others altogether, knocks the props from under more and send them out in search of new jobs and new lives;

(6) If there are problems of transportation growing out of the rationing of tires and gas and the virtual stoppage of new cars, threatening to throw out of gear the whole machinery of our social and economic relationships,—part and parcel of the larger problem of allocations and priorities, turning luxuries into necessities and necessities into forbidden fruits;

(7) If there are problems of finding and training men and women to step into the shoes and fill the gaps left by those leaving essential agricultural, industrial and governmental services to join the military forces,—gaps which must be filled as fast as they occur and faster if we would win the war;

(8) If there are problems of private and public health which will become more and more acute as physicians, nurses and health workers are drawn into the military service, leaving communities without the medical care and assistance needed to minister to the sick, absorb the added load of work in epidemics, control communicable diseases, keep up the health giving measures of maternal and child and school hygiene, sanitation and nutrition and nutrition and the like which save us from sowing the wind to reap the whirlwind;

(9) If there are problems of salvaging scrap metal: to make the guns and planes and tanks and ships which we must have; old rags: to make materials needed for emergency buildings, reworked textiles and war industries; old rubber: to make new rubber for motorized military forces and essential civilian needs;

(10) If there are problems of espionage, sabotage and subversive activities from the enemy within our gates who seeks to slow down, cripple, or destroy our war production efforts from the field to factory to seaport and to cut supply lines on the seas;

(11) If there are problems of cooperating with a variety of State and Federal Agencies such as:

a. The Federal Bureau of Investigation in its efforts to curb and cut out Espionage, Sabotage, and other subversive activities hindering the war effort—

b. the Local Draft Boards and Appeal Boards operating the Selective Service System—

c. the Rationing Boards for tires, sugar, gasoline and the infinite variety of things which must be rationed in increasing numbers as the war goes on—

d. the agencies charged with the responsibility of selling war bonds, defense saving stamps and of financing the war in a multiplicity of ways—



Paul R. Sheahan, Coordinator of the Mecklenburg Civilian Defense Council. In recognition of the excellent job he has done in Charlotte, Mr. Sheehan was asked to speak at the first statewide Civilian Protection School to Civilian Defense officials of all the larger towns in North Carolina.

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e. the salvage agencies, conservation agencies, production agencies, fair rent committees, and any other agencies which can help to strengthen the home front lines, the war front lines and the supply lines leading from the home front to the war front and directed to the winning of this war.

I would look facts in the face to see if there is any likelihood of hostile air attack, and therefore any use in setting up a civilian protecorganization providing its tion equipment and training its personnel so as to be ready if and when the bombers come. And in sizing up this situation I would consider the possibilities and probabilities of bombing raids as well as the certainties. To illustrate: I do not think my house is going to burn; and yet, it might. On the strength of that doubt I take out fire insurance and keep the premium paid. I do not want to see my house burn down in order to reap the benefits of my insurance. If my house never burns I still cash in on my policy and get my premium's worth each day and night in the satisfying assurance of safety from disaster which it brings. Perhaps we might look at the Civilian Protection program for each city, town and countryside in a similar way. Some American cities and towns are almost certain to be bombed. Which ones, we do not know; the Axis powers have not told us and even if they told us now, we could not on the records trust them. Damage done is the objective of a bombing raid. To the extent that preparations to cut down the damage done reduces liability to attack it might be said that preparations are preventive measures. To the extent protective preparations do cut down the damage done when bombers come, they might be justified on the theory which supports fire insurance, fire departments and fire drills.

IV

SECRET OF CIVILIAN MORALE

I would look into these problems of civilian protection and civilian mobilization feeding into all phases of all-out war effort; because the ways in which these things are started and carried through all go into the



THREE EXPERTS ON FIRE DEFENSE. Sherwood Brockwell, State Fire Marshal and instructor in the statewide Civilian Protection Schools, demonstrates his instruction materials to another of the instructors, Captain J. M. Mundy, Drillmaster of the Charlotte Fire Department, while Captain Kenlon H. Brockwell of the Army Fire Service, a chip off the old block, looks on.

making or the breaking of that morale which puts men on their mettle and keeps civilians and soldiers alike in fighting trim; for civilian morale as well as any other sort of morale is largely a by-product of other forces and is built by indirection.

Consider, for instance, the feelings of a man whose home has been condemned for camp site purposes when he sees its value fixed by the tossing of a coin instead of fair appraisal on its merits; or the feelings of folks who have told the truth about their rationings when they see certain of their fellows chisel and get by. Consider the difference in feeling of the soldier who found prices lifted in his face and the soldier who had been so cordially received while on manoeuvers that he cautioned his comrade against praising too loudly a dwelling as he passed for fear the people might give it to him; the difference in feeling of a soldier leaving for camp with no notice of his going and a soldier leaving in the presence of his friends and neighbors who have come to see him off in the consciousness that he is fighting for their lives and liberty as well as for his own; the difference in the feeling of men on the fighting front when they know their people are throwing themselves without stint or limit into civilian protection, mobilization and defense programs which strengthen the lifelines all the way from their own home neighborhoods to training camps to battle lines, and when they know their own home people are not yet awake or do not show it if they are.

Let all civilians consider the words of the poet:

"Many loved Truth, and lavished life's best oil

Amid the dust of books to find her,

- Content at last, for guerdon of their toil,
- With the cast mantle she hath left behind her.
- Many in sad faith sought for her;
- Many with crossed hands sighed for her;
- But these, our brothers, fought for her;

At life's dear peril wrought for her,

So loved her that they died for her."

The accredited leaders of civilian defense in the cities, the counties and the state of North Carolina, no less than our military leaders, might do well to inquire whether they might not find in their own people in the year of our Lord 1942, something of the spirit of the drummer boy in the year 1800 at the battle of Marengo. According to the story the well planned victory was turning into terrible defeat. "Beat a retreat," Napoleon shouted to the drummer boy, Page Forty-four

who had been picked up in the streets of Paris by the Boy General, Desaix. The boy stopped, grasped his drumsticks, and replied: "Sire, I do not know how to beat a retreat. Desaix never taught me that. But I can beat a charge. Oh! I can beat a charge that would make the dead fall into line. I beat that charge at the Pyramids; I beat that charge at Mount Tabor; I beat it again at the bridge of Lodi. May I beat it here?"

V

GUIDES TO ORGANIZATION

I would make the following suggestions, to local defense councils and their chairmen in setting up the civilian protection program of their local civilian defense organization.

The civilian protection task, as indicated heretofore, is recommended on the theory: (1) that hostile air attacks on American cities and towns have long been possible, are fast becoming probable, and may become certain in the sudden, rapid shifts of total war; (2) that American cities and towns ought to prepare to meet this menace so as to minimize resulting damage, thereby maximize attacking costs, and to this extent cut down the likelihood of air attack; and (3) that the form of organization should be fitted to the problems already outlined to you, growing out of air raids.

If it is reasonable to assume that hostile air attack is most likely to fall on cities and towns, it follows that cities and towns have a comparatively overwhelming interest in their own protection, and this town and city interest should be recognized in organizing the protective services, and that county, state and federal agencies should be urged to build around them in a cooperative program of protection for the surrounding countryside. Common sense therefore might call upon the county chairman to consult the mayor, city manager or city council in setting up the civilian protection organization and the selection of the Commander of the local Citizens Defense Corps, the Controller, the Coordinator, and the various division heads.

By the same token county authorities should have a voice because: the city is in the county; city people pay county taxes too and have a right to look to them for help within the limits of the law; city people need and have to have the help of country people in manning observation posts as part of the very warning system on which the civilian protection organization is based; and last but not least the city will need and want the county's help in financing local defense council activities.

I would carry the application of this coordinating policy to the various divisions of protective service:

Police Division. -- Common sense might call upon the county chairman or the person agreed upon as commander of the local Citizens Defense Corps to consult with the chief of police: in selecting the head of the Police Division, organizing it, and training the regular and auxiliary personnel. The police chief in a particular city or town may or may not be the man to head this particular division, but there is no doubt about the fact that he is the man to be consulted in selecting the head: for police auxiliaries are simply aides of the police to help them in emergencies; the regular police must organize and train them to the point that they can trust them; if they do not work together they might work against each other to the detriment of both; and the last state of affairs will be worse than the first. By the same token it might be wise to recognize the law enforcing rights and duties of the township constable, the county sheriff, the rural police, the State Highway Patrol, State and Federal Bureaus of Investigation where all are authorized to operate in local territory.

Other Protective Service Divisions. -Similar procedures are recommended in setting up: (1) the fire division: consultation with the city fire chief, private fire protection officers in local industrial plants, rural and forest fire organizations where they exist, as well as the State Fire Marshal who is the authorized and acknowledged head of all the state's fire fighting forces; (2) the emergency medical division: consultation with city, county, state and federal health authorities, physicians in private practice, local hospital authorities, the local representatives of the American Red Cross; (3) the emergency public works and utilities di-

visions: consultation with the local heads of city departments such as streets, water, sewage disposal, gas and electric utilities-both public and private, telephone and telegraph and radio and other communications systems, transportation agencies and others in local public and private employment which might have help to offer in emergencies, the State Highway and Public Works Commission with a far flung organization of district offices, personnel and equipment available upon request; (4) the air raid wardens division: consultation with the heads of other protective service divisions with whom the air raid warden and his helpers have to work and depend on for cooperation in the fullest measure if they are to do their duty in the trying times that lie ahead.

VI

I would make the following suggestions to local defense councils and their chairmen in setting up the civilian mobilization divisions of the local civilian defense organization.

Just as air raids intensify the existing problems of city and county governments including fire, police, emergency feeding and housing and medical care, public works and public utilities, and other services, so do the stresses and strains of modern war intensify and complicate the already existing city and county governmental problems such as health and welfare, relief and recreation, unemployment, delinquency and the rest.

Just as the civilian protective services are largely built around existing governmental agencies, so should the civilian mobilization services be built wherever possible around existing governmental agencies and auxiliary workers whenever needed be recruited, trained and made available to existing health, welfare, housing, recreation, relief and related officials already working on the job.

To illustrate my meaning in the field of public health, our normal peacetime health program includes, according to Dr. W. P. Richardson the health officer of the district including my home county: (1) efforts to control communicable diseases by such procedures as the investigation, isolation, and quaran-

tine of reported cases; immunization, through widespread vaccination of the people against such diseases as typhoid fever, smallpox, and diphtheria; tuberculosis case finding by screening with the tuberculin test, and examining by some x-ray method those who react positively, and supervision or sanatorium treatment of tuberculosis cases found; (2) efforts to control venereal disease through such procedures as finding and diagnosing cases, the operation of treatment clinics, the follow-up and investigation to locate contacts and to secure more faithful continuance of treatment; (3) efforts to promote maternal and child hygiene, through the provision of clinics for prenatal and infant examination and supervision by a physician, nursing home visits to instruct the mothers, and check on danger signals—high blood pressure for example, and group conferences and classes for mothers; (4) efforts to promote school hygiene, through periodic conferences with teachers regarding general and specific health problems, control of contagious diseases in school children, inspections of school plants for various conditions of sanitation and healthfulness, clinics for examination of various groups of school children; (5) efforts to promote sanitation, through inspections, in accordance with state or local laws of dairies, cafes, markets, food manufacturing establishments; inspections of water supplies and excreta disposal units and the promotion of sanitation in these respects; inspections and correction of malaria breeding places, and other sanitary problems; (6) efforts to promote good nutrition, in cooperation with agricultural and other agencies through formation of county committees to make available sound informational material, promote raising and preserving more food, promote better school lunches and lunch rooms, promote classes, special programs, and discussions in nutrition.

It is readily apparent to any thoughtful person that all of these health giving efforts are important in wartime as in peacetime, and that many of them are more important now than ever. It is just as apparent that with physicians, nurses, health and sanitary workers being called with ever increasing

1.

rapidity into the military service, and with the ranks of city and county health physicians dwindling fast, the whole civilian population may be left largely to the mercy of influenza epidemics which killed more folks than bullets in the last war, and to the ravages of other communicable diseases which might in the future as in the past prove more devastating to humanity and more sapping to the war effort than any air raids ever made.

Here is a crucial task calling for the training of nurses, nurses aides, first aid workers, helpers to professional workers in vaccination and venereal disease clinics, persons to organize and promote health meetings, conferences and classes and to render clinical assistance such as filling out vaccination cards and the like-all of which would relieve nurses and other trained professional workers from a mass of routine, free them to take off of the shoulders of physicians many duties which trained professional workers can perform, and thus in time free physicians for diagnosis, prescription of treatment and special problems which call for specialized knowledge of the highest order.

Similarly, auxiliary welfare workers might be trained in corresponding problems which are already putting a back breaking load on existing welfare workers. The same technique might be applied to the training of auxiliary recreation workers, juvenile delinquent workers, relief workers and so on throughout the whole field of services which promote the general welfare.

In setting up the division heads and programs in these fields of health, local defense councils and their chairmen can save themselves from many a headache in the end by consulting in the beginning with all groups having interests in these fields, including: city and county health physicians, state and federal health services, private medical practitioners, trained nurses, sanitarians and other professional workers in this field employed by private businesses and other agencies. In setting up the division head and program in the field of public welfare, local defense councils and their chairmen would do well to consult with county welfare officers, city welfare officers, state and federal

welfare services, community chest officials, YMCA and YWCA workers, Travelers Aid Societies, the Salvation Army, and the various civic clubs which have programs for underprivileged children and the like. In setting up the division head and program in other fields falling within the limits of the civilian mobilization division of the office of civilian defense a similar procedure is recommended in the interest of effective cooperative effort.

VII

Who Should Serve on Local Defense Councils?

It follows from the foregoing analysis that in the absence of special considerations local defense councils should include:

(1) Representatives of the interlocking, overlapping and ofttimes conflicting governmental units working on similar problems for the same people; perhaps the mayor or city manager from the city, the chairman of the county board of commissioners or county manager from the county, the local legislators from the state; this group might be expanded to include all city councilmen, all county commissioners, if it should prove locally desirable; or it might be expanded to include the administrative heads of city and county departments, or simply those department heads whose work more closely ties in with the civilian protection and civilian mobilization phases of the Office of Civilian Defense; or it might be further expanded to include local residents in district offices of state and federal agencies.

(2) Representatives of local civic and professional organizations of men and women, including farmers, employees, employers, representatives of political parties and all strategic groups of citizens.

(3) Representatives of the schools.

In fitting the city and the countryside together in this organization local defense councils might well utilize the rural neighborhood organization built up in nearly every county in the state.

If the number on the council is expanded to large proportions, an Executive Committee or Steering Committee may be desirable and even necessary.

ESPIONAGE AND SABOTAGE

By ALBERT COATES, Staff Member, Institute of Government Ninth in the Series of Civilian Protection Lectures

"The woodpeckers," said a news dispatch from an eastern North Carolina town, "have drilled holes in all columns of a local colonial home, including the fifth column.' Six or seven years ago "the woodpeckers" would have attracted attention to that sentence; today it is the words: "fifth column." When General Franco in the thick of the Spanish War remarked that four of his columns were converging on Madrid and would be met there by a fifth column which would rise up in the heart of the city, he gave a blanket name to a list of more or less offensive things usually described under the headings of espionage, sabotage and other subversive activities.

Samson and Delilah

These activities are as old as history. "Entice thy husband that he may declare unto us the riddle," said the Philistines to Samson's wifethe daughter of the Timnite, "lest we burn thee and thy father's house with fire"; Samson confessed to the effectiveness of her espionage when he later said to the Philistines: "If ye had not plowed with my heifer, ye had not found out my riddle." Curiously enough Samson did not profit by his lesson. For "it came to pass afterward, that he loved a woman in the valley of Sorek, whose name was Delilah. And the lords of the Philistines came unto her, and said unto her, "Entice him," and see wherein his great strength lieth, and by what means we may prevail against him, that we may bind him to afflict him: and we will give thee, every one of us, eleven hundred pieces of silver." Prolonged and persistent espionage produced the secret of his strength and sabotage followed quickly on its heels; for "she made him sleep upon her knees; and she called for a man and shaved off the seven locks of his head . . . and his strength went from him. . . . And the Philistines laid hold on him, and put out his eyes; and they brought him down to Gaza, and bound him with fetters of brass; and he did grind in the prison

house." This story comes too close to us for comfort.

Nehemiah's Fifth Column

The whole course of fifth column activities in recent years ran afoul of Nehemiah when he was rebuilding the wall of Jerusalem. "For it came to pass that, when Sanballat and Tobiah, and the Arabians, and the Ammonites, and the Ashdodites, heard that the repairing of the walls of Jerusalem went forward, and that the breaches began to be stopped, then they were very wroth; and they conspired all of them together to come and fight against Jerusalem and to cause confusion therein."

Sanballat spake before his brethren and the army of Samaria, and said, "What are these feeble Jews doing? Will they fortify themselves? Will they sacrifice? Will they make an end in a day? Will they revive the stones out of the heaps of rubbish, seeing they are burned?" Now Tobiah the Ammonite was by him, and he said, "Even that which they are building, if a fox go up, he shall break down their stone wall."

"But we made our prayer unto our God, and set a watch against them day and night," said Nehemiah . . . "and the builders everyone had his sword girded by his side and so builded." Thus from the records it appears that recent generations have not been the first to find that eternal vigilance is the price of liberty; nor were the generations of Nehemiah and Samson the last to have their Sanballats and Tobiahs, their Delilahs and daughters of the Timnites.

America's Fifth Column

The virus of fifth column activities has grown as armies in the field have become progressively dependent on supply lines and civilian populations to maintain them. As one soldier in the field in the Franco-Prussian war required one civilian to support him, in the world war in 1917 required five civilians to support him, and in this war requires fifteen civilians to support him, it is obvious that if our enemies can cut the supply lines running from the Pacific Coast to China and Australia and from the Atlantic Coast to England, Russia and South Africa, as indicated on the map-they win the war; and by the same token they win the war if they can cut the lines running from fields to factories to seaports within the United States. A ship sunk by sabotage in the shipyards goes to the bottom as surely as a ship sunk by submarines upon the seas,-the only possible difference being in the chance of resurrection. An aircraft factory wrecked by sabotage is just as much a loss as an aircraft carrier wrecked by torpedoes or dive bombers, and the skilled workmen who died in the explosions on land are just as dead as the trained seamen who died in the explosions on water.

The central point of Hitler's strategy therefore was to keep these supply lines from starting from our seaports through his efforts to prevent the repeal of the neutrality act which was working for our enemies; to prevent the passage of the lendlease bill which would work in favor of our friends; to prevent the ships leaving our seaports from getting to their destination; and finally to sabotage the land lines reaching to the sea. He prophesied in fact that the United States would fall to pieces at the hands of enemies within our gates.

The American Melting Pot.-The birth of this republic brought the notion of a land to which oppressed and hunted people from all lands might come for "life, liberty and the pursuit of happiness" for themselves and for their children. "As in the old burning of the temple at Corinth, by the melting and intermixture of silver and gold and other metals a new compound, more precious than any, called Corinthian brass, was formed," said the philosopher Emerson "so in this continent-asylum of all nations-the energy of Irish, Germans, Swedes, Poles and Cossacks, and all the European tribes-of the African and of the Polynesian will construct a new race, a new religion, a new state, a new literature, which will

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be as vigorous as the new Europe which came out of the melting pot of the dark ages." Pursuant to this invitation 1,600,000 came by 1846, 15,500,000 by 1890; by 1905 more than a million immigrants were coming every year. For a hundred years or more there were no restrictions on their coming. In 1882 we began to exclude criminals, paupers and insane: in 1885, contract laborers: in 1917, illiterates over 16; in 1924 each nation was limited to a quota of 2 per cent of its people already here; the yellow races were excluded altogether.

Hitler's prophecy was based upon the bet (1) that the differing racial stocks with their differing traditions, traits and tendencies forever at each other's throats in Europe and throughout the world, would bring their suspicions, jealousies, hatreds, and hostilities to American soil, resist the fusion of the melting pot and turn the United States into a madhouse divided against itself; (2) that these differing racial stocks could be kept divided by the Nazi agents to the prevention of any common purpose, action, or achievement and thus prostitute the basic elements of the American people into paralytic stalemates. In short, he bet on the belief that the melting pot wouldn't melt.

Divide and Conquer.—With Tentonic thoroughness the Nazis undertook to turn this wishful thinking

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into fateful fact. They sent out their propagandists to divide and conquer the United States from within while they divided and conquered the rest of the world from without. Starting long ago on the theory that once a German always a citizen of the fatherland, they set out to woo and German-Americans in the win United States away from their sworn allegiance, with a technique perfected in Austria, Danzig, the Sudetenland and anywhere their wooing went. To wooing words they added wooing coin, until they saw the "Jingle of the guinea heal the hurt that honor feels." When neither love of "fatherland" nor love of money worked their Nazi will they buttressed persuasion with reinforced command. commands with threats of confiscated property back home and of concentration camps for relatives and loved ones still on German soil.

Propagada, Espionage and Sabotage.—Through thousands of these Nazi spies in the United States today taught and paid to do the Nazi bidding, Axis powers are pushing propaganda in the form of (1) proselyting activities designed to convert groups with real or fancied grievances to the Nazi system; (2) "softening" activities designed to divide, frustrate and confuse us to the point of inactivity; (3) threats of reprisal against those who work and fight like Americans and promises of reward to those who quit like Quisling. They are pushing espionage in the form of spying efforts on our war activities along the farming front, the factory fronts, the fighting fronts and the transportation and communication lines between them, to inform the saboteurs within and raiding parties from without just how and when and where to strike. They are pushing sabotage in a thousand different ways-by spreading undermining rumors, by planting fake bombs, stink bombs, explosive bombs, by starting fires; by putting water in lubricants and fuel oils, acids and lubricants on stay and guy wires, acids and alkalies in boilers, syrups or lubricants in fuel supplies to overheat motors and burn out bearings, emory dust in machinery, and any kind of oil on rubber to work its slow destruction.

How can we cut down the effectiveness of propaganda, espionage WILLIAM C. OLSEN Consulting Engineer RALEIGH, N. C. • Electric Lighting Power Plants Valuations Sewerage Water Works Street Improvements Hydro-Electric Developments

and sabotage from the enemy within our gates? In September, 1939, the President of the United States charged the Federal Bureau of Investigation with the responsibility of investigating these destructive efforts of the enemy within our gates. The city, county, state and federal law enforcing officers of the nation have been summoned to its side and they stick and work together in periodic six-day training schools, regular quarterly conferences and daily investigations in the fields. Congress has passed laws to strengthen their investigating and enforcing hands: as early as 1934 it prohibited rebroadcasting any foreign broadcast from within the United States without permission; in 1938 it required foreign propagandists to register their activities in the United States; in 1940 it required the registering and fingerprinting of all aliens; and strengthened and extended statutes dealing with espionage, sabotage, and other subversive activities and under this extended power raids were doubled and redoubled on suspected centers of subversive action; certain alien breeds were at long last taken and transported from Pacific Coast lines beyond the Sierras.

No lack of alerting is found in men of the FBI. Citizens in all sections of the nation are joining hands with them and their fellow law enforcing units in the full and perfect faith that they are not head hunters, nor witch hunters, but hunters of subversive propagandists, spies and saboteurs; in the sure and certain knowledge that while military forces are fighting the four columns converging from without, the FBI and its allied forces are fighting the fifth column surging from within,under a leadership as brilliant and effective as MacArthur's in Bataan, and unparalleled in the history of American police.

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Engineering Contractors



 Other Assets
 277,336
 icyholders
 \$ 8,400,000

 Total Admitted Assets
 \$ 104,764,885
 Total
 \$ 104,764,885

five years of sound and progressive experience—that you will be completely satisfied as one of our policy-holders.

