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MOST PERFECT GAS MASK

American Product Twenty Times Better Than German.

PEACH STONES ARE REAL LIFE SAVERS

The Terrible German Poison Was too Much for the British and French; But American Chemists Quickly Prove Equal to the Task of Circumventing Any Deviltry the Enemy Chemists Can Hatch Up.

The reason why the pits of stone-fruits and the shells of nuts are good material for gas-masks is simply because when converted into charcoal, they are found to absorb a larger percentage of the poisonous gases than the charcoal made from woody matter of other kinds. It is easy to provide a chemical that will neutralize one particular gas, but when the familiar fifty-seven varieties are outnumbered by the products of the German gas factories, it becomes necessary to carry a special mask for each or to discard the idea of chemical neutralization and adopt another that will take care of all gases alike, which is what has been done in the selection of porous varieties of charcoal. Says a writer in The Scientific American (New York, October 5):

"Early in the use of gas, before the full possibilities of the attack were recognized, the attempt was made to supply the wearer of the mask with a separate reagent for each separate gas employed by the foe. But as the number of gases available for the attack increased, it became evident that this procedure had decided limits. * * * So the defense was directed into another channel, and a single universal reagent was sought—a substance which, placed in the mask, would react with any poison-gas that might be encountered, but would pass pure air without any alteration.

"Now this is a pretty large order, and complete attainment is doubtless out of the question. But the chemist has a resource which we have not yet touched. In order to secure protection against the hostile gases, the substance in the mask need not necessarily react chemically with these, in the ordinary sense of that word. It will be quite sufficient if they absorb them. * * * There are various substances which possess in greater or less degree this power of absorbing gases—the platinum sponge employed in the manufacture of sulphuric acid is an example raised to the nth power. But not all of them can be induced to omit from their sphere of influence air, the commonest of all gaseous media, and the one which must receive free passage through the gas mask. Carbon, however, and in particular carbon in the form of charcoal, meets the situation nicely. It does not absorb air, and it does absorb other gases freely.

"But charcoal occurs in various forms, according to the particular vegetable source from which it is manufactured; and the various forms possess varying degrees of gas absorptivity. After exhaustive tests the chemists find that first rank must be given to charcoal produced from peach-stones, the pits of apricots, prunes, plums, olives, and cherries, date seeds, and the shells of Brazil-nuts, hickory-nuts, walnuts, and butternuts. What tomorrow may bring forth in gas mask manufacture no man can say, for the last thing that a chemist would think of doing would be sitting down with his hands crossed, in confidence that the final word had been written in any of his chapters; but today we make our gas masks with charcoal from the sources mentioned.

"For every soldier in the fight there has to be a gas mask. Four million soldiers does not mean four million gas masks, because all the four million are not destined for actual fighting, and because those who are so destined are not all fighting at once. But every mask takes seven pounds of seeds and shells and a million masks—a reasonable minimum—means seven million pounds of the raw materials. Thirty-five hundred tons of fruit pits and nut shells is a great quantity; it is a quantity that can not be obtained except by the co-operation of every consumer of nuts and fruits. It is for this reason that the government has appealed to all of us to save these items out of the garbage pail and turn them over to the Red Cross agent who will collect them. Others shells and pits would constitute adulteration, and so must not be mingled with the ones enumerated. Especial emphasis might well be placed upon this clause, as it applies to cocoanut shells; for these are being conserved, too, for gas mask manufacture. The charcoal from them is available; but it is different from that from the other sources, and requires different treatment; so the cocoanut shells must be kept separate.

"The process of manufacturing the gas masks would make a most interesting story; but during the continuance of the war it is of course a story which cannot be told. It is clear enough that the pits and shells must be collected and burned into charcoal in furnaces of a standard type; and the enemy will hardly get much aid or comfort from the knowledge that before the unit containing the charcoal is allowed to go into a mask it is subjected to a severe preliminary test, to determine whether its charcoal screen is of sufficient density. But beyond this picture and story can not go far.

"We may, however, still say a word about the inspection of the finished masks. This is done by a specially selected force; and since a mask once passed by this force will not be tested again until some American soldier puts it on in the face of a gas attack, every effort is made to keep the inspectors keyed up to concert pitch. Sometimes this may even be carried to extremes; we learn on good authority of one serious minded inspectress who worried so conscientiously lest a defective mask be passed by her to cause the death of one of our boys in khaki that she lost five pounds a week for an incredible period, and had finally to give up the work to some one whose mental processes were less intimately connected with physical reactions. We are also told that as an inducement to the inspectors to good work, each of them is from time to time sent into a gas-chamber protected by a mask selected at random from those which he has passed himself."

It is reassuring to know that in the battles now raging, our boys are equipped with gas-masks twenty times as efficient as the German ones. Says an authorized statement given out by the war department and published in the daily press of October 6:

"German forces opposed to the steady advance of the American line on the Lorraine front have brought into play every method of defense considered effective in modern warfare. They are making a particularly heavy use of poison gas. Pershing's men have been unceasingly bombarded with mustard shells, and every effort has been made to drench the American advanced positions with deadly fumes. It is a remarkable tribute to the chemical warfare work in the United States that these efforts to block the progress of the offensive have been utterly futile.

"The American attacking forces are protected against gas by masks which actual field tests prove give twenty times the protection afforded by German gas masks. There is not, as a matter of fact, a single case on record of an American falling victim to a gas-attack when protected by the mask that is now being manufactured in the United States on a vast quantity basis.

"Fortunately, every American soldier who goes to France is a gas mask expert. He has been trained to adjust his 'land preservers' with almost incredible speed. The mask is put on with just five motions of the arms and hands. The man who fails to accomplish the feat within a time limit of six seconds is left behind when his unit goes to the front.

"Recently, in a practice drill, one company of American fighting men set a record of four seconds from the time the order was given to the final adjustment by the slowest man.

"It is an interesting fact that American gas masks stand up under tests that German masks can not meet. German masks will not give protection against a high concentration of gas. This was demonstrated recently when the British assembled a sufficiently large battery of projectors to put seventy tons of phosgene gas into the air at once, with consequences quite well known to the German general staff. There is no concentration of gas that American masks will not defy. This has been proved, not only on the battlefield, but in the experimental station in this country, where determined attempts to break down the resistance of United States army masks by heavy gas concentrations were absolutely unsuccessful.

"The American gas mask was developed by actual manufacture. The proper authorities obtained complete information about the French and British masks and full data as to the efficiency they demonstrated under the German gas attacks. Armed with this knowledge, an order for the making of several thousand masks was placed in this country. Members of the force of 300 officers and 2,000 enlisted men who are responsible for the production of this modern weapon of defense showed the courage of their convictions by volunteering for experiments. They donned the masks and exposed themselves to actual gas attacks. From time to time American ingenuity and inventive genius suggested improvements in the original methods. As a result, the officers of our Allies are frank in the admission that the American mask is the best on the western front."

MONTSEC HILL.

It Was Impregnable, But Was Surrendered Without Defense.

As the first Yanks to take possession there swept with their field glasses the devastated land before them, what rose ominous to the eye in the clear January air was that steep, bristling hill some four kilometers to the northwest. It was the hill the French call Montsec, because its abrupt crest rises dry and sandy from what used to be one of the fairest and most fruitful vineyards in all Lorraine.

Montsec, with its 330 meters, was forbidding enough in itself. Through the four years of their unwelcome tenancy, the Germans had so fortified and armored it that it rose a very Gibraltar in the line from Switzerland to the sea. To storm it from the front or even to surround and take it from the rear would, the newly arrived Yankees knew very well, be a most bloody task if the assailants were stubbornly and heroically met by such a garrison as the disemboweled old hill could easily shelter.

Yet in the early morning of September 12 the Yankee troops, sweeping nonchantly past the hill, learned from their equally nonchalant French friends on the left that a reconnoitering squad had mounted Montsec with carelessly slung Rosalles.

It had found the gun pits deserted, the tunnels echoing hollowly, the observation posts abandoned. It had found no living creature on all Montsec, save one affable internationalist setter, now variously known as Fritz and Montsec, and four blinking rabbits, penned against a shortage in rations.

A disemboweled hill! There is no other word for such a human anthill as the Germans made of the famous Lorraine mountain.

Everywhere within the hill run tunnels, some well paved and shored, some hollowed out in slovenly fashion, depending on the calibre of the resident troops who did the work. Tunnels entering from the bottom and meeting tunnels from the top. Tunnels opening out into underground chambers, some fitted up as barracks, some as kitchens, some as mess halls, some as pantries, some as arsenals. Tunnels connecting the various machine gun posts of which twelve pointed towards the Allied line. Tunnels screened against the chance observer. You might walk quite a way up the hill without suspecting any subterranean life unless you happened to spot a smokestack protruding unexpectedly from the ground.

Equipped with shell-proof quarters, with ammunition, guns and food supplies, boasting, besides its signal points, a fine wireless station, supplied with water and electric light brought from afar, Montsec was as self-supporting and impregnable a fortress as one often sees in these days of sandbag fortifications.—Stars and Stripes.

WIPE OUT THE RATS

They Cost the Country Millions of Dollars.

NEED OF WIDESPREAD CO-OPERATION

There Should Be a General Rat Killing In Every Section of the Country—A Vigorous Campaign Would Leave Much Food for the People—It Is a Work for Boys and Also a Work for Men.

By F. H. Jeter, Editor Agricultural Extension Service.

There is one parasite very common in South Carolina which is without a single redeeming characteristic, and which should everywhere be routed and destroyed. In fact, it has been stated and some fanciful writers have prophesied that a time would come when there would be a struggle between the human race and rats to decide which would possess the earth. Practical folks, of course, have very little fear of anything like this, but they do set the rat down as a costly and a dangerous nuisance.

The department of agriculture at Washington, through its biological survey, has recognized the seriousness of the rat in the program of food production and food conservation, and has classified him in a recent bulletin by Mr. David E. Lantz as the worst animal pest in the world. The losses from his depredations amount to many millions of dollars yearly—to more, in fact, than those from all other injurious mammals combined.

Of the four species which have been brought to America, for none is native, the brown rat is the most destructive and, except the mouse, the most numerous and most widely distributed. This rat was brought to America just before the Revolutionary war, and, in spite of the fact that man has since waged constant warfare on it, this breed has been able to gradually extend its range, and to steadily increase its numbers, because of its wonderful ability to adapt itself to all surroundings. He is sly and omnivorous, feeding upon all kinds of animals and vegetable matter, and from its home in filth visits dwellings and storerooms to pollute and destroy human food. While it does not eat so much of this food, it causes a much greater waste by pollution.

In fact it is estimated by statisticians that these creatures destroy crops each year, and other property, valued at over $200,000,000. It is hard to conceive of this amount of food and property being destroyed each year, when we notice the small amount of damage done by a single rat in a night, but if we take the earnings of 200,000 men, let them work hard each day, at reasonable wages for their labor, at the end of the year they will only replace in wealth what rats have destroyed in an equal length of time. On the average farm, if the grain eaten and wasted by rats and mice could be sold, the farmer could use this to pay his taxes. In fact; by the extermination of the rat there will be enough food materials saved to pay our normal taxes in this state.

Were it not for the fact that the rat has natural enemies, such as weasels, skunks, and some kinds of hawks and owls, the rate of increase would be very much greater. One investigator who kept two female rats in captivity for thirteen months stated that during that time they produced 26 litters, totaling 180 young, and another investigator figured that the progeny of one pair of rats would, in three years number 651,050.

Traps, poisons and other devices of man have served, in addition to its natural enemies, to keep the pest under some control. Cats and dogs also destroy many, then the male rat is frequently a cannibal who eats his own family. This is about all that can be put down in the favor of the rat, except for the fact that he does sometimes eat carrion. The world has been fighting the rats for centuries, without organization of any kind, but at the same time the world has been steadily feeding them and building for them fortresses for concealment.

According to Mr. Lantz, if these rats are to be found on equal terms they must be denied food and hiding places. The people must organize and rid the individual communities of the pest. There is yet a short while before the crops are harvested in which considerable good may be done in destroying the number of rats that will be fed during the coming winter. Organized efforts should be put forth on all farms, and in every community, to make way with the hiding places, and to so construct any building that they may be rat proof; then, with poison, traps and organized rat hunts, the pest should be exterminated as closely as possible.

The world is now on reduced rations, and the foodstuffs which these pests destroy is a serious matter. It is said that we might get a better idea of what the $200,000,000 value lost by means of rats, when we consider that this amount, would pay board bill, at $10 a week, of 384,615 men for one year. How long is it supposed that we would pay such a board bill of such a number of men who did nothing but go around spreading germs, burning buildings, and robbing hen houses? Yet, this is exactly what we are doing in the case of the rat. If these were men we would not stop until the last one was brought to the electric chair, or at least securely jailed, yet on the other hand, the sly, slinking rat is doing just these things every day, and is getting only passing attention.

Suppose we consider some of the things that he does. It has been proved, beyond all shadow of a doubt, that rats gnaw away the insulatioin from electric wires and cause houses to burn, seemingly without any cause, and destroy any food or other property which might be stored therein. He will go from farm to farm, and, in some cases, it has been proved that the deadly cholera germs have been carried from one affected hog herd to the healthy herd on the adjoining farm, and several hundred pounds of pork lost by this overnight journey. Bubonic plague, that most deadly of human diseases, is spread by this same evil little pests. He infests all kinds of filthy, dirty places which reek with germs, and brings these into germ-free places, depositing some wherever he wanders.

Poultry growers have found that it is practically impossible to rear young incubator chicks where there are considerable numbers of rats, as these take keen delight in killing as many as possible, sometimes destroying a whole hatch in one night. They find food in country slaughter houses, eating the offal of slaughtered animals, and, in this way, perpetuating the disease known as trichinae in pork. They also get as a source of food the remnants of lunches left by employes in factories, stores or public buildings, and this small amount of food, alone, is sufficient to attract and sustain a small army of rats. They shorten the life of sills and floor timber in the floor of many wooden buildings by digging tunnels around under them and piling dirt against them where they may find a safe retreat from nearly all enemies.

Birds are needed to help in controlling the insects affecting the crops, yet, rats prey on the eggs and young of many kinds of these birds, and keep them from increasing as they should.

It can be seen, therefore, that the necessity for keeping such pests in check is a very vital and apparent one, and there is no better time than now to wage a war against them. We are asked by the government to conserve our food and to save as much as possible so that our soldiers and our Allies may be properly fed, and the people at home sufficiently nourished, yet, all this while we are paying tax to this pest which returns to us no value at all.

As a method of destroying—there are many kinds of traps recommended, poisons may also be used, while dogs, cats and ferrets may do some good. The use of fumigation by which rats are destroyed in their burrows in the field by putting a wad of cotton soaked in carbon bisulphide pushed into the burrow, and the opening packed with earth to prevent the escaping of gas, is a good method. In this way all the animals in the burrow are asphyxiated. Other gases may be used in warehouses where these are tightly closed, and the rats either killed, or driven out, but it is hardly practical to use these in occupied buildings. Cats are a considerable help in overcoming the remarkable development in numbers, but these are of most value for mice, very few learning to catch rats. The ordinary house cat is too well fed, anyway, to undertake the capture of an animal as formidable as the brown rat. In fact, the continued eating of rats in some cases poisons cats.

Traps cost nothing in maintenance, except bait, and the five and ten cent trap, the wire cage sort, or the steel spring traps, are all good and recommended by the agricultural extension service. The bait used in these traps should be that which is different from that which the rat generally feeds on. Bits of toasted cheese, or bacon, may be used effectively. It must be remembered, however, that the rats are very sly, and that bait must be changed often, the trap kept clean, and preferably handled with gloves to entice the animal into them.

One man was very successful in catching rats by covering a barrel with brown paper and feeding the rats in a warehouse on top of this barrel for several nights. After they had learned to eat there with comparative freedom, he cut two slits crosswise the top and was reported to have caught over 3,000 rats before they became fearful of his arrangement.

In a large barn near Washington, a few years ago, piles of corn left in a loft were soon greatly infested with rats. A wooden pen was set down by each pile in the barn, the corn thrown out until the dogs were able to get at the rats, and in this way several men and dogs killed over 500 rats in a single day.

Poisons are also used with success, but must be handled with care. If a poisoned rat escapes into the partitions of buildings, the resulting odor is frequently very far from pleasant, and it is recommended in most cases to put the poison in unoccupied houses, or out buildings. Poison should never be put where domestic animals and pets can gain access to it, because it recognizes neither friend nor foe. Among the principal ones which have been recommended are barium carbonate, strychnine arsenic, phosphorus, and squills. Detailed methods as to the use of these can be found in farmers' bulletin 896.

No matter whatever method is used for destroyng rats, it is of the utmost importance that co-operation be done. It will do very little good to destroy the rats on one farm in a community, and none of the remaining farms, as they migrate very readily. From year to year organized efforts should be made to kill all the rats in a community. The boys should be interested in this and paid a bounty for all rat tails turned in. Clubs, societies, and organizations should make co-operative efforts to kill the rats. Buildings should be so constructed that the animals may be built out of shelter and food, and thus at the mercy of their natural enemies.

THREE GENERATIONS OF ROOSEVELTS

A family group of three generations of Roosevelts, with their service flag bearing three stars, one of which has turned to gold. The group is composed of Theodore Roosevelt's grandson, the baby of Archie; Theodore Roosevelt, Captain Archie's wife, Richard Derby, Jr., Mrs. Roosevelt, and Baby Edith Derby on the lap of her mother, Ethel Roosevelt.

Swap Crosses for Cigarettes.—German prisoners captured in the recent fighting, who have arrived at a British port, show a surprising depreciation of the once coveted Iron Cross, says an Associated Press correspondent. One of them traded his decoration for a cigarette, and an American officer, who accompanied the captives from France, said several of them spoke slightingly of the war token bestowed upon them by Emperor William.

A marked change in the demeanor of the new prisoners was also noticeable. Instead of the arrogant and almost insolent manner which characterized their predecessors, when the Germans were sweeping everything before them, the latest contingent seems humble and crestfallen. Almost every officer and one in ten of the men wore the ribbon of the Iron Cross.

The tobacco famine, which exists among the prisoners, makes it easy for American soldiers to collect souvenirs. The Germans will part with almost any of their belongings for a package of cigarettes.

American troops are leaving for France daily with bands playing and flags flying.

A bandit held up an express messenger and his assistant in the express car of a Grand Trunk railroad train as it was leaving Sunnyside, Ontario, Thursday, obtained a sealed bag containing $20,000, and leaped from the train. A few hours later the bandit held up the chauffeur of an automobile and drove away in the machine. The greater part of the stolen money was recovered in a house near the scene of the hold up. The bandit made his escape.

MINIATURE TANK USED BY THE HUNS

The latest novelty discovered in use by the Boche forces is this miniature one-man tank, used as a sniping post by the operator. The tank was captured by the Canadians during the recent offensive and one of them can be seen experimenting with it. When once behind it the operator can go forward or backward, but in rather an awkward position.

DEFENSES OF METZ

Taking of City Will Be a Big Undertaking.

FORTIFICATIONS OF GREAT STRENGTH

Easy Enough to Destroy the Town With Long Range Guns; But the Destruction of the Town Is of But Little Value, So Long as the Forts Stand In the Way.

"Metz is going to be a hard nut to crack," said a French general the other day, reflectively:

Inasmuch as the cracking is evidently destined as a task for the American army, it will be interesting to consider what the fortifications of Metz are like and why they are so formidable.

Metz is defended by a girdle of detached forts four to seven miles outside of the city. This is the modern method of defending a town. Its object is to prevent an enemy from getting near enough to the city to bombard it effectively.

Thereby is constituted what is called an "intrenched camp.". Antwerp is such a camp; so likewise (with their defenses) are Paris, Verdun and Belfort. Strassburg is another.

Metz is a first-class example. In 1870 (while still French) it was thus defended, but the outlying forts were unfinished. The Germans have modernized them and have added a second and outer ring of formidable works.

Each fort stands by itself, but all of them compose a system, being linked together by a complete chain of highly elaborate concrete intrenchments, with moats and other obstacles, bomb-proof shelters and magazines for ammunition and stores near the fighting line.

Roads and railroads connect the forts with one another. Other roads and railroads run like spokes of a wheel from the center of the system to the different defensive sectors. Thus the defenders, provided with perfect communications, have a great advantage, being able to operate on interior lines. They can at brief notice concentrate their forces against an attack at any point. And in doing so they are not obliged to expose their men or transport vehicles, inasmuch as adequate covered approaches to the fighting line are provided.

Behind the outer and inner girdles of detached forts at Metz, located at favorable points, are specialized fortifications designed to assist step-by-step defense; and in the rear of these is a so-called last line defense surrounding the city, where the garrison may resist to the ultimate limit.

To illustrate rather strikingly the development of the art of fortification within less than half a century, it may be mentioned that in 1870, at the time of the Franco-Prussian War, the last line of defense at Metz was a loop-holed wall of masonry twelve feet high! Imagine how long it would stand against modern guns!

The idea of detached forts for the defense of a city was first adopted just about a century ago. At first they were placed only 1000 yards or so outside the main wall. But as the range of siege guns increased it was necessary to establish them at a correspondingly greater distance.

Hence it will be understood why, within very recent years, the Germans have thought it worth while to spend huge sums of money in extending a ring of forts outside of the original girdle. There was, however, another idea in view. It so increased the size of the defensive circle that an enormous besieging force would be required to invest it.

The detached forts of former days were massive structures of mansonry, containing barracks for infantry and magazines and storehouses for ammunition and supplies. But the arrival of the rifled cannon made exposed masonry obsolete, and the year 1886 found the French pounding away experimentally at one of their own fortresses (Malmaison) with high explosive shells.

The destructive results were amazing, and their ensued a fresh resolution in the art of fortification. Always there has been a race in development between the means of offense and the means of defense. But on land as well as on sea the weapon of offense has clearly and decisively won—its final victory as one might say, having been celebrated when the Germans literally blew to pieces the forts at Liege, Namur and Antwerp.

Therewith, however, it became apparent that the defenses of Metz, Strassburg and other German cities must be regarded as in large part obsolete. Like methods of attack brought against tlfem would inevitably wipe them out.

Thus, from the present point of view and relatively to up-to-date methods of attack the forts of Metz, even taking into account all recent improvements are really no more formidable than the primitive works of a century ago—considered individually, that is to say. Their strategic value, on the other hand, is incomparably greater—meaning by that term their total defensive efficiency, enabling them to hold off from the city a great force for an indefinite period.

Sooner or later Metz will be surrounded and "invested," as the phrase is by the Americans and their Allies. The siege is likely to be long. But such a siege, if long continued, can end only with the surrender of the garrison. So well is that recognized that no military commander today would think of seeking safety for his army in an intrenched camp. The army under such circumstances would be as good as lost—a fact strikingly illustrated by the experience of Marshal Bazaine during the Franco-Prussian war. Prince Frederick Charles, the "Red Prince," uncle of the present kaiser, simply sat down outside and waited until the French were driven by starvation to surrender. He did not throw a single shell into the town. It was the most humane siege in history.

The most important military function of Metz is not that of a mere stronghold, but to serve as a base of supply and point of support for the German left flank. Strassburg, ninety-nine miles to the southeast, is a bridgehead, offering the Hun safe retreat across the Rhint, if defeated on the plains of Alsace.

It is in this direction, through Lorraine and Alsace, that Germany will be invaded. As soon as Metz is seriously threatened the Huns will be obliged to retreat to the Rhine. This is an idea that doubtless figures importantly in Marshal Foch's strategic plans.

Long-range guns, to keep the foe at a distance, are an essential element of the defensive system of an intrenched camp like Metz. The news dispatches indicate that the guns of Metz are already throwing shells into the American lines. But that is a game two can play at; and there is no doubt that the Americans could destroy the city by gunfire if they chose.

They do not choose to do so because Metz is a French city in German hands; and furthermore to destroy the town would not injure the forts or impair the defensive power of the great intrenched camp.

PROPHETS OF YESTERDAY.

Things of the Present Were Not Hidden to Great Souls.

Literary antiquarians are finding all kinds of prophecies covering events of today, and some of them are enough to awaken the spirit of marvel in view of the remote contingency as to the day of fulfillment. For example, what could have put it into the head of George Sand seventy-two years ago that American forces would ever occupy French soil? Mr. J. S. N. Davis sends to the New York Times this literary find:

"George Sand, in her novel 'Mauprat,' written in 1846, put into the mouth of Bernard Mauprat, in about the middle of the fifteenth chapter, the following words:

"'In his (Marcasse's) dreams he used to see an army of victorious Americans disembarking from numberless ships, and bringing the olive-branch of peace and the horn of plenty to the French nation,' etc.

"Mauprat in his old age is telling the story of his life and was here giving an account of himself and friends, their doings and thinkings, while in America with Lafayette fighting for American freedom.

"It would be hard to find a more literal fulfillment of any written expression."

Tennyson's "Locksley Hall" places its author as a safer guesser in view of the declared determination of science to conquer the physical universe; but the Catholic Citizen (Milwaukee) thinks his vision of seventy years ago an "almost uncanny forecast" not only of "the present world-upheaval, but even the instruments of warfare developed in its course, and the result to follow Armageddon." It quotes this passage:

For I dipped into the future, as far as human eye could see,
Saw the vision of the world, and all the wonder that would be;
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;
Far along the world-wide whisper of the south wind rushing warm,
With the standards of the peoples plunging through the thunder-storm;
Till the war-drum throbb'd no longer, and the battle-flags were furl'd
In the parliament of man, the Federation of the World.

The cue being given, another delver, a writer to the New York Sun, finds that in 1849 Victor Hugo, addressing the Peace Congress in Paris, foreshadowed the "United States of Europe." Mr. Isaac Markens comments before quoting the French poet that "Germany's subsequent role in the history of nations, more especially the theft of Alsace-Lorraine in 1871 and her Draconian policy of the past four years, leaves no doubt of Hugo's attitude with respect to Germany's representation in the proposed confederation, were he living today." Hugo then said:

"A day will come when you, France, you, Russia, you, Italy, you, England, you, Germany, all you nations of the Continent, shall, without losing your distinctive qualities and your glorious individualities, blend in a higher unity, and form a European fraternity, even as Normandy, Brittany, Bergundy, Lorraine, Alsace, all the French provinces, blended into France.

"A day will come when war will seem as impossible between Paris and London, between Petersburg and Berlin, as between Rouen and Amiens, between Boston and Philadelphia.

"A day will come when bullets and bombs shall be replaced by ballots, by the universal suffrage of the people, by the sacred arbitrament of a great sovereign senate, which shall be to Europe what the Parliament is to England, what the diet is to Germany, what the legislative assembly is to France.

"A day will come when a cannon shall be exhibited in our museums as an instrument of torture is now, and men shall marvel that such things could be.

"A day will come when we shall see those immense groups, the United States of America and the United States of Europe, in face of each other, extending hand to hand over the ocean, exchanging their products, their commerce, their industry, their art; their genius clearing the colonizing deserts, and ameliorating creation under the eye of the Creator.

"And to you I appeal, French, English, Germans, Russians, Slavs, Europeans, Americans, what have we to do to hasten the coming of that great day? Love one another. To love one another, in this immense work of pacification, is the best way of aiding God. For God wills that this sublime will should be accomplished."

Formidable American Flyers.—The American flyers are beginning to appear on the battle fronts in increasing numbers. There have been a few American flyers from the beginning; but during the past month the flyers whose training was started in various American aviation fields and continued in England and France, have been joining the fighters. Several times recently as many as fifty or sixty Americans have gone out together on bombing expeditions, and have not only wrought terrible havoc in the German towns they visited; but have sent to earth all the German flyers that undertook to interfere with them.

Lieut. Sidney White of Elizabeth City, N. C., last Thursday brought down a German airplane and successfully fought off five others that offered help to the Hun, on the western front.

PROBABLE TERMS OF PEACE.

Subjects Being Discussed by Washington Military Experts.

Discussion in Washington is centering on the probable terms of armistice which may be formulated by the Allied and American military advisers after the Allied governments have considered the German proposals transmitted by President Wilson. It was generally assumed by army officers that the president already has ascertained the willingness of the Allied governments to submit the matter to military men.

Military opinion in Washington is that Mr. Wilson has expressed the basic idea upon which an immediate armistice can be reached. The terms to render the German military power on land and sea absolutely impotent must be worked out by the supreme war council.

It will be the mission of the military advisers to translate general principles into concrete terms of fortresses to be occupied, submarine bases to be placed under guard, munitions to be dismanteled, rail lines to be secured against German use. Since an armistice on Allied terms means an end of the war, attention also must be given to demobilization of the German army, in itself a long process since the great force could not be turned back into civil life overnight.

The machinery for formulation of the terms already exists. The military and naval boards of the supreme war council at Versailles furnish the natural avenue for the assessing of the views of the military leaders and bringing them into harmony in a definite statement of the conditions upon which fighting could come to an end and Marshal Foch, as supreme commander, and Generals Petain, Haig, Pershing, Diaz and Gillian, the Belgian chief of staff, are ex-officio members of the naval board.

The president proposes that the terms to be drawn up by these military and naval agencies are to be submitted to the respective governments associated against Germany for ratification before they are given to the German government. The supreme war council, composed of the premiers of the Allies, and of President Wilson, probably would pass upon the programme since it is only armistice conditions and not peace treaties which are to be considered.

As to the terms themselves the situation on land so far as the western front is concerned appears simple. To make certain that the U-boat fleets are put out of action, however, by any terms except the surrender of the submarines themselves appears more difficult. Occupation of Helgoland might serve to bottle up both the submarines and the German high seas fleet so far as the North sea outlets are concerned, but there is another gateway, via the Kiel canal and the Skagarrak, lies between neutral water.

On the western front, which dominates the situation elsewhere, it is regarded as obvious that occupation of the Metz-Thionville "Mutterstallung" as the Germans call that great fortress, would be essential. Speculation in this connection has an unusual interest in Washington since it is regarded as probable that the Germans would in any case stipulate that American troops take over the fortress until final disposition of Alsace-Lorrain is determined at the peace conference.

Holding the Metz-Thionville gateway, supplemented possibly by occupation of the Rhine fortress of Strassburg, some officers think would enable the Allied forces not only to dominate the German forces on that front, but would give also an open road into Germany itself should a resumption of hostilities be threatened.

Terms for the evacuation of Belgium and northern France probably would precede the statement of conditions that must later be enforced along the German-Belgian frontier. It is believed the Allied chiefs will propose a definite plan for the rearward movement of the German forces under which the enemy's armies would successively retire. The plan marked out, it is thought, would provide for exposure of the German forces to flanking operations that would cut them to pieces should any treachery be revealed.

What fortresses on the German-Belgian frontier might later be required for occupation is not so clear, since it is thought that in any case the reservation of the Rhine road to Berlin by the occupation of Metz and possibly Strasburg might make precautions in the north less essential.

Other obvious requirements would be, it is thought, surrender by Austria to the Italians of fortresses in the Alps that guard the Austrian border and the road to Vienna; probable evacuation of the whole east coast of the Adriatic and the occupation of such bases as would bottle up Austrian naval power completely in that sea. Possibly the surrender of their naval base of Trieste might be demanded.

To safeguard Rumania and enforce peace conditions in Russia, it was said the road to the Black sea must be cleared, which would require surrender by the Turks of the fortresses of the Dardanelles. Surrender also of Russian battleships and destroyers in the Black sea, seized by the Germans, would be demanded, it was thought, and possibly the surrender of Turkish war craft as well.

Boys Saved the Sugar.—The national headquarters of the United States boys' working reserve has announced that 7,000,000 pounds of sugar was saved for the country this season by members of the reserve.

Michigan farmers were on the point of plowing under their sugar beet crops on account of lack of labor when United States boys' working reserve boys volunteered to go into the fields and save the harvest.

"One hundred and sixty-five thousand boys in American high schools and colleges have enlisted in the boys' working reserve. As many more boys who were not in school are actually at work on the farms.

"This is one of the features of war modification that is to have an influence after the close of the war. An idle boy is in great danger of being employed by his satanic majesty. American boys have been swept along at very fast pace through vacation idleness.

"An idle vacation can undo much of the good done in the school year. Indeed, an idle Saturday sometimes undoes all that the school has done in five days."—Journal of Education.