HOW TO THROW BOMBS LIKE IT'S 1919

A Translation of Insurrectionary Anarchist Luigi Galleani's Bomb Making Manual
"La Salut é in Voi!" (Health is in You!)

"Mere possession of this wicked treatise would suggest that the owner was up to no good."
-Thomas Tunney, New York Police Department Bomb Squad Captain, 1914

Figure 1. The original cover of *La Salute é in Voi,* depicting French anarchist Ravachol Koenigstein, know for his bombing of high-level judiciaries. He is depicted in front of the guillotine on which he was executed in 1891.

Figure 11. Luigi Galleani in a 1919 mugshot.

Figure 12. Ettore Molinri

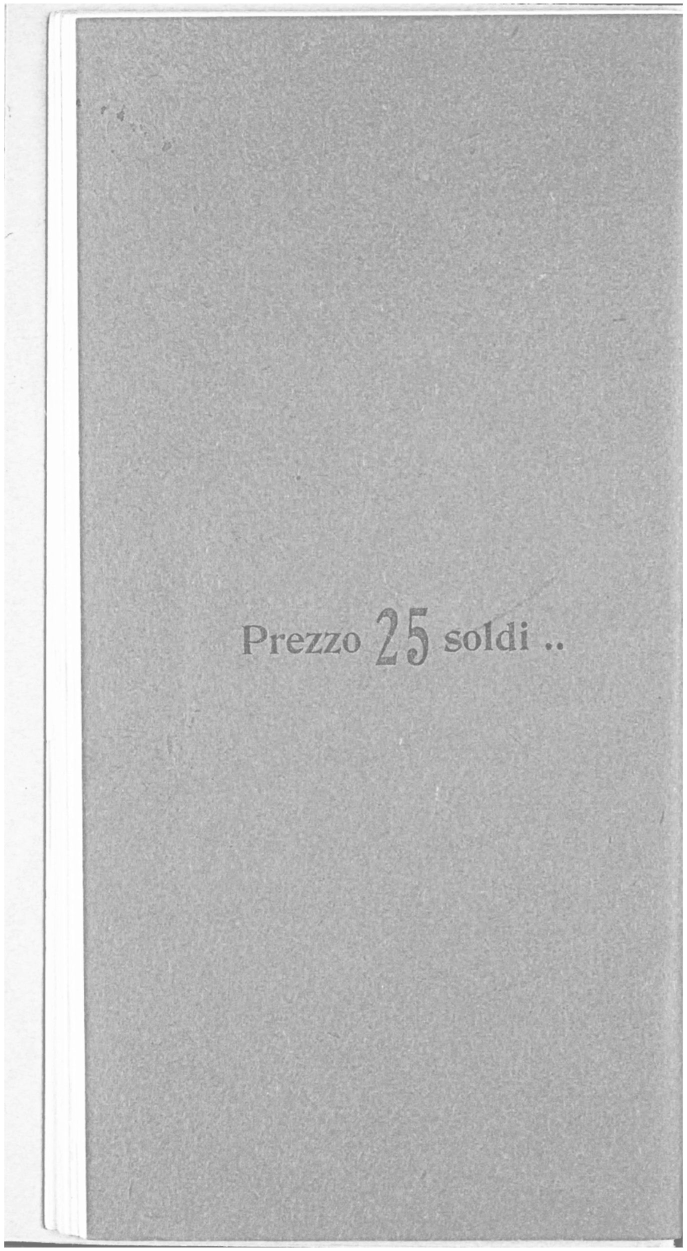

Figure 10. The original back cover of *La Salute é in Voi.* A Soldi is an old Italian currency equal to 1/20th of a Lira, or around 25 cents in 1906 and equivalent to around eight dollars today.

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DISCLAIMER

At the beginning of most zines with such incendiary content, a tongue-in-cheek warning can be found that explains that the following content is purely educational, that it is meant as satire, or that it all takes place 'in Minecraft.' Here is my warning:

For the love of Mother Anarchy, **PLEASE DO NOT FOLLOW ANY OF THE INSTRUCTIONS GIVEN IN THIS TEXT! MOST BOMBMAKERS OF THIS ERA BLEW THEMSLEVES UP**. Most of the successful bomb throwers had prior military or industry experience with explosives and didn't make their materials from scratch as described here. The chemistry instructions used in this booklet are generally accurate, but the procedures described are incredibly hazardous. There is a reason that no one is throwing around dynamite bombs or making their own nitroglycerin anymore.

There are plenty of resources out there for modern bomb-throwers, but this translation is not one of them. The motivation for translating such an out-of-date instructional manual is to share the history of anarchism and to preserve our radical literature over the centuries.

… ok just in case, here's a regular-style warning for legal purposes: **This text has been reproduced for academic purposes only. The reader is cautioned against the actual construction & use of the devices described.**

Notes on the Translation:

- All images have been added by the translator.
- There are two notes in the text made by the original authors, denoted by (1.) and (2.)
- Footnotes have been added by the translator to add context to or describe alternative translations of certain words.
- The font of the body of this text is "De Vinne," the best reflection of the original font. The cover font is "Modern Extended EF Book"
- The grammar and formatting seen in the original booklet has been reproduced as accurately as possible
    - Except for a printing error made in the original text where every lowercase "i" was accidently replaced by a "1."

INCENDIARY MATERIALS

If white phosphorus is dissolved in carbon disulfide and the solution is exposed to air, the carbon disulfide will evaporate, causing the phosphorus to ignite spontaneously. Therefore, if paper is soaked in this solution, it will eventually catch fire. Similarly, pouring the solution over flammable materials can ignite them; this can even be achieved by throwing the bottle, which breaks on impact and spreads the liquid, resulting in a fire. The speed of ignition depends on the concentration of phosphorus in the solution. A solution containing two parts phosphorus to two parts carbon disulfide will ignite almost instantaneously, making it impractical for many uses. Typically, much less phosphorus is utilized, sometimes using ten parts phosphorus to fifty parts carbon disulfide. If turpentine or petroleum essence is added to the solution, the ignition properties can be enhanced, although the process will take longer. To create a useful incendiary mixture, combine three parts carbon disulfide with one part essence of turpentine. Then, add as much camphor as can be dissolved by shaking it with a glass rod. Next, incorporate pieces of rosin (Greek pitch), very fine gunpowder, and phosphorus. The ignition of this solution will accelerate the more phosphorus you include. By conducting small-scale tests and weighing the amounts of phosphorus used, you can determine the necessary proportions for ignition to occur after a desired number of minutes or hours. It is important to store these solutions in glass bottles with stoppers, away from light. Always wear gloves when handling them to avoid burns, which can be very dangerous. Be cautious of cuts from tools that may be contaminated with phosphorus.

To neutralize the phosphorus solution in carbon disulfide, simply add dissolved copper sulfate (blue vitriol) in water. This will result in a black substance being deposited, which can later be separated from the pure, free carbon disulfide.

By filling thin-walled, brittle bottles with these solutions, you can create effective incendiary bombs that can be dropped on troops or during official processions. Additionally, you can pour them from a window using glasses or buckets.

To start fires at a predetermined time, place some paper or cotton soaked in the appropriately prepared solution in suitable locations. If you dust the paper with potassium chlorate and saltpeter, the effect will be more intense.

Bottle-bomb. — In certain cases, a bottle can serve as a bomb. However, because glass is very fragile and would break upon impact before bursting, it is advisable to take precautions. One method is to wrap a strong cloth around the bottle and dip it in a paste made from water and plaster mixed with nails and iron pieces. This process can be repeated several times with canvas and plaster, and iron pieces can be added as well. Finally, the entire assembly should be wrapped in canvas and secured with iron wire. These bombs are loaded similarly to metal ones, and the capsule is inserted through a cork, which can then be bound with wire. These devices turn out quite large and are effective for throwing from windows.

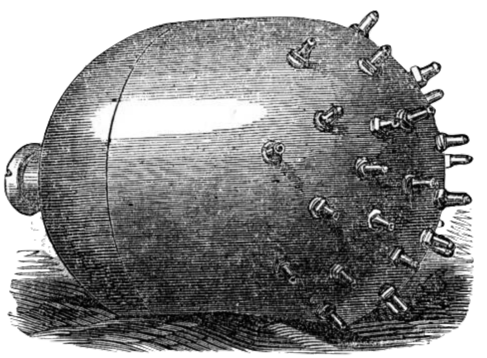


Figure 8. A depiction of the bomb designed and thrown by Felice Orsini.

Figure 9. A depictions of the failed assassination attempt against Napolean III. Four bombs were thrown but each missed, killing 10 and wounding 157 but leaving Napolean III unscathed.

TRANSLATOR'S FOREWORD

La Salute é in Voi[1], translated as "Health is in you," is a bomb making manual likely written by insurrectionary anarchist Luigi Galleani and his friend Ettore Molinari, an Italian chemist and bombmaker. It was first published in 1906 in the newspaper *Cronaca Sovversia* ("Chronicle of Subversion"), an Italian language anarchist publication written by Luigi Galleani while he was living in Vermont while in hiding from incitement to riot charges[2].

Luigi Galleani was an Italian immigrant who fled to America in 1901 after being exiled to a small island near Sicily for his participation as a leading figure in the Italian labor movement. He was a dedicated insurrectionist who advocated for propaganda of the deed and was know as an exceptional public speaker. He amassed a following of supporters who called themselves Galleanists.

The Galleanists participated in a nationwide campaign of mostly unsuccessful bombings and assassination attempts between 1914 and 1920, with a particularly aggressive series of attacks in 1919. This wave of anarchist violence was a major component of the first 'red scare,' which was a period of political repression against leftist movements from 1918 to 1920 in response to a perceived and arguably plausible threat of revolution. In response to the 1919 bombings, the attorney general Alexander Palmer organized a nationwide series of raids on anarchists, arresting over 10,000 and deporting 556.

La Salute é in Voi didn't provide any groundbreaking knowledge that couldn't be identified by a search through chemistry textbooks or encyclopedias of the day. However, it is among the first examples of anarchist literature that backs up its insurrectionary ideology with direct and actionable steps on making the tools needed to complete acts of praxis[3]. The bold voice of this text is matched by the bold actions of those who utilized it, giving it a uniquely sincere place on the bookshelf of anarchist history.

1. This may be an ironic title, alluding to Christian anarchist Leo Tolstoy's book "The Kingdom of God is Within You," a treatise on nonviolence and universal love which has the same title as this text in its Italian translation.
2. He was actually doxxed by the editor of a rival Italian anarchist newspaper, *Il Proletario,* in 1906, leading to his arrest.
3. Similar early texts include *The Science of Revolutionary Warfare* by Johann Most, and *War Against Oppressors* (which is also authored by Ettore Molinari, but has no known surviving copies).

INTRODUCTION BY LUIGI GALLEANI

Dear Reader,

We recognize that with greater contributions and more extensive knowledge, our work could have been improved significantly. The input we received was limited, and our understanding remains somewhat constrained. As a result, we present this initial pamphlet in its current form, which we had hoped would be more polished and comprehensive.

While we trust that more knowledgeable individuals will contribute better in the future, for now, we offer this piece, which carries a single, important claim. We aim to address the common misconception that subversives simply demand daily revolts—both individual and collective—without providing the necessary means and tools for such revolts.

We invite those with specialized knowledge to surpass our efforts, but we stand by these pages with one undeniable principle: we will not recommend or suggest any means to our fellow comrades in struggle that have not been rigorously tested and vetted.

Sincerely,
The Compilers

nitroglycerin into the upright bomb, which should be supported with wooden pieces and placed over rags to avoid any shaking. When the bomb is filled to the brim, leaving only enough space for the stopper and capsule, carefully place the stopper with the encapsulated fuse. It is crucial to avoid spilling any nitroglycerin; if spills occur, immediately wipe them away with a rag. It is advisable to prepare these bombs just before use. If you are not planning to use them soon, it is better to unload them and store the nitroglycerin according to recommended safety standards. These bombs are extremely powerful, and with that power comes danger; due to the potential for shock, we suggest using the following option instead:

Guncotton Bombs. — These are slightly less powerful than the previous type but are easier to make and pose less risk. They are created using metal cylinders with a fixed bottom and a screw-on lid. The cylinder has a hole in the middle to hold the capsule in place. To prepare it, fill the cylinder with moist guncotton and compress it directly into the cylinder. Once compressed, remove it and let it dry. After it has dried, place it back in the cylinder. If you have the cartridges ready, arrange them in a tight formation next to each other, leaving minimal empty air space. Afterward, screw the lid on securely and prepare the capsule and fuse as usual. These bombs can be stored for a long time.

Bombs that detonate upon being thrown. — These are based on a particular phenomenon, which has many other potential applications. If sulfuric acid is poured over a mixture of potassium chlorate and powdered sugar, the mixture will explode. To create a detonating device, take an ordinary fulminate capsule, fill it with the sugar and potassium chlorate mixture, and cover it with a piece of cotton cloth tied around the capsule.

Next, take a tube approximately 506 centimeters long and slightly wider than the capsule, with one end closed. Fill the tube halfway with concentrated sulfuric acid, then place the prepared capsule on top of the acid, ensuring that it doesn't fully submerge and contact the acid. By inverting the apparatus, the acid will pour onto the cloth, rapidly burning it (in about 8 to 10 seconds) and igniting the mixture. If you then insert this device, with the acid facing down, into a bomb filled with dynamite or another explosive, the bomb will explode upon being overturned. These bombs are highly effective as long as they do not carelessly spill.

down a zinc bomb. To make one, take a hollow wooden ball as large as the desired bomb, with walls as thick as those of the bomb itself. Place this half-ball, hollow side down, in the bottom of a box with higher sides than the ball, and grease it with oil. Then, create a liquid paste with fine chalk and water, pouring it over the ball until it is covered with more than two centimeters of the mixture. Allow the plaster to harden completely. You start by unpacking the cassette and turning the piece of chalk so that the ball lead faces upward. Drill four holes into the plaster and drive in four large-headed nails. Grease the oil and surround the entire setup with boards or cardboard. Then, pour more plaster over it until it covers the 12-centimeter nails. Once the plaster hardens, remove the sides and separate the two pieces of plaster, carefully prying off the half-ball of wood. This gives you a mold for casting zinc half-balls that are identical to the wooden model. Next, create a hole in the mold for pouring the metal. Allow the mold to dry thoroughly, avoiding heat that could cause cracks. Once dried, bind the two halves of the mold together, using the nails to hold them securely in place, and pour the molten metal inside. To melt the metal, combine zinc with pieces of tin in an iron spoon, crucible, or unpainted earthenware bowl. First, cover the mixture with a bit of coal dust, then place an iron or baked earth lid over it. This setup is placed over a gentle fire. If necessary, tighten it with a screw. The first time you pour the metal, do so slowly. If the mold is still wet, you might not achieve a good result. Repeat the process until you succeed. After creating half of the bomb from metal, weld them together in pairs, leaving a small hole for introducing the capsule.

For a dynamite bomb. — Take some pieces of dynamite and insert them into the bomb through the small hole. Using a smooth wooden stick, press down on the pasty mixture to combine it into one solid piece. Continue this process until the bomb is completely filled. To prepare the capsule, carefully insert it into the designated hole until it rises about one centimeter above the surface. The capsule should contain the fuse, which is securely resting on the fulminate. If the capsule is slightly smaller than the hole, fill the empty space with frayed material to ensure the capsule remains securely in place.

For a Nitroglycerin bomb. — Prepare a cork stopper that will seal the hole of the bomb and drill a tightly-fitting hole through it for the capsule. Use a nail to create the hole, rounding it with a red-hot iron to ensure a smooth fit. Then, using a glass funnel, pour pure

You from Conselice[4] to Santa Susanna[5] you
have seen
The painful passion and the horrendous torment
Of defenseless law
Of the helpless unarmed[6].

You have cursed, you have wept
reaping
prison, poverty, pity.

Blasphemy is fruitless, it beautifies weeping,
Listen!
History admonishes you, Science teaches you,
It murmurs to you from the the bloods earth
The death rattle of the fathers[7]:
Between the iron of spades and the flames of the
stake
god triumphs.
From conspiracies, from martyrdom, from battles
The homeland leaps free and undivided
On the ruins of the Bastille,
Two worlds crushed with iron and fire,
They will build your bosses fortune and glory

History opens the way for you, gives you science,
Weapons
From unavenged tombs, those dead from pellagra[8] and
grapeshot,
the fathers
Entrust you with their vendetta.
Dare!
From audacious revolts
Redemption will sprout.

4. A town in Italy where three striking rice harvesters were killed by the police during a demonstration in 1890. This was likely on the mind of Galleani and other Italian anarchists while reading this poem.
5. A Catholic church in Rome.
6. Alternative translation, "defenseless."
7. Alternative translation, "ancestors."
8. A disease caused by vitamin B_3 deficiency. It is endemic to northern Italy, where it affected over 100,000 people during the 1890's.

FIRST NOTIONS

Reagents. — In chemistry, reagents refer to the substances that are utilized during experiments.

Density. — The density of a substance determines how heavy it is for a specific volume. To express this, we indicate how many kilograms and grams correspond to a volume of one liter. For example, one liter of water weighs one kilogram, hence, we say that water has a density of 1. On the other hand, a liter of iron weighs 7 kilograms, so its density is 7.

Understanding density is crucial, especially since liquids in the market are often mixed with varying amounts of water. If the liquids are too diluted, they may not serve our intended purpose effectively. Knowing the density helps us verify if the substance we purchased meets our requirements.

When you mix water with a liquid, if the liquid is denser than water, like sulfuric acid, it will become less dense; conversely, if it's less dense, such as alcohol, it will be heavier. By knowing the expected density of the liquid, meaning its weight per liter, we can easily weigh it to determine if it's too diluted or concentrated. A difference of 30 to 40 grams from the expected weight per liter generally means the liquid can still be utilized effectively.

There is an alternative way to determine or check the density of a liquid. This method involves immersing a glass tube with a weight into the liquid; the extent to which it sinks will vary based on the liquid's density. For liquids denser than water, a device known as a **Beaumé aerometer** (pronounced Bomé) is utilized. Conversely, for lighter liquids, a **Gay-Lussac alcoholometer** serves the same purpose. Both instruments are marked with graduations, so specific degrees correspond to certain densities. For example, if you refer to nitric acid at 47° Beaumé (with the small zero denoting degrees), it indicates that the acid has a density of 1.500, meaning it weighs 1.5 kilograms per liter.

In practice, a slight variation of one degree from the indicated value doesn't significantly affect the results.

If you require a more diluted acid than what you have on hand, you can easily dilute it yourself using this rule: calculate the difference between the density of the acid you possess and the density of the acid

BOMBS

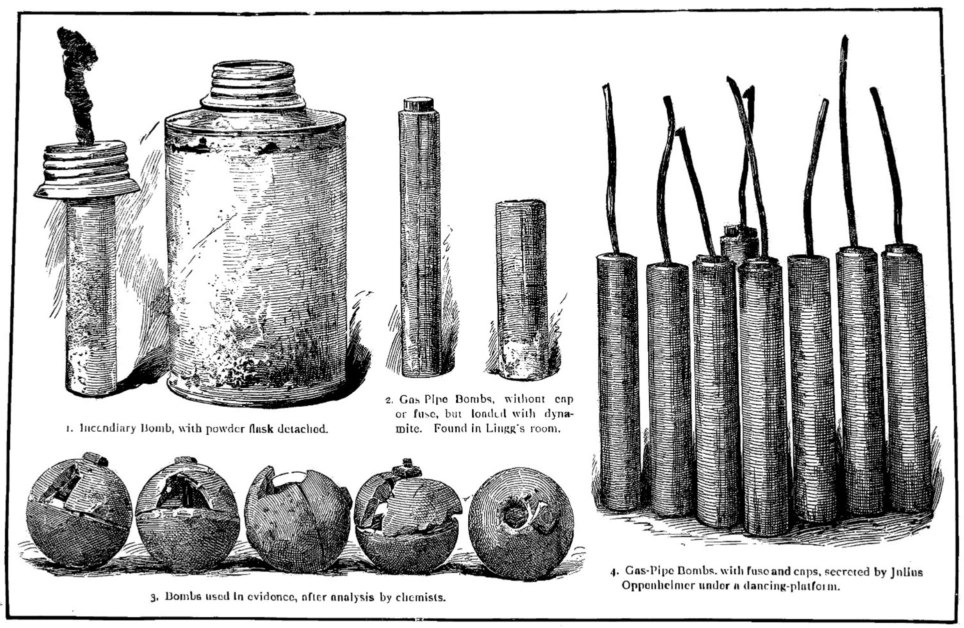
These are metal vessels filled with explosive material, which can break apart and damage their surroundings. They can come in various shapes, but spherical vessels are the most effective. To trigger them, one can use a capsule with a fuse that burns quickly enough to allow time to ignite and throw it. Additionally, one can surround the vessels with luminous capsules or other devices, designed so that upon impact, the explosive ignites and triggers the charge within the vessel. The effectiveness of the explosion is largely determined by the strength of the metal used, as long as the charge can cause it to burst.

The best metals for this purpose are iron or steel, followed by copper, brass, and bronze. Cast iron is acceptable, while zinc—either alone or alloyed with tin—is less effective. Lead is not necessary. THE THICKNESS OF THE METAL plays a crucial role in its performance. The wall must be at least half an inch thick, and it's better if they are one centimeter thick. When using containers with walls that are too thin, they can be wrapped tightly with iron wire, nails, and other pieces of iron for added strength. The size of the container varies depending on the type of explosive used and the expected effect. A bomb weighing half a kilogram with dynamite would have a volume of half a liter and could potentially injure 20 to 30 people under optimal conditions. To achieve the same effect with gunpowder, a volume of 4 liters would be necessary; whereas, with guncotton, a volume of just 24 liters would suffice. It is relatively easy to find suitable containers to serve as bombs. For example, large jars from bedding, metal balls that have a screw hole, or brass balls used for handle covers can all be adapted. Additionally, a mechanic or a foundry worker can create hollow iron balls, either as a single piece or in two halves that screw together, as well as sturdy metal boxes with screw-on lids.

In all cases, there must be a hole for the fuse, or several holes if one wants to make the bomb at Orsini[15]. If desired, anyone can melt

15. The bomb of Orsini was 2 kilogram spherical bomb with multiple protruding pins containing mercury fulminate. It was designed to detonate when any of the pins came into contact with a surface. It wad invented by Felice Orsini, an Italian revolutionary for use in an unsuccessful 1858 assassination attempt against Napoleon III, the last monarch of France. (See figure 8 and 9)

extensive damage is necessary to ensure a delay in repairs. To break a rail, dig beside it in the space between two cross ties, placing two 100-gram petard explosives—one on top of the rail and the other in the inner recess of the rail. To prepare the explosive, you should securely tie the wire around the rail. Then, place the capsule and fuse, covering them with soil. This setup will create a rupture of approximately half a meter. To achieve larger ruptures, you can prepare several of these mines at appropriate distances from one another and equip them with fuses of equal quality and length. Gather the ends of the fuses together, so that when you ignite them, the blast occurs simultaneously at all points. It is often beneficial to blow up SCAM-BII, which refers to the areas where multiple lines intersect. To disable any locomotive or steam machine, simply detonate three or four petards inside an inner tube of the boiler.



ANARCHIST AMMUNITION—I. From Photographs.

Figure 7. An 1886 depiction of bombs made by Louis Lingg. He was convicted as a member of the alleged criminal conspiracy behind the 1886 Haymarket bombing. In a statement to the court he said, "I tell you frankly and openly, I am for force. I have already told Captain Schaack, "if they use cannons against us, we shall use dynamite against them." … I am the enemy of the 'order' of today, and I repeat that, with all my powers, so long as breath remains in me, I shall combat it." He committed suicide in his cell the day before he was scheduled to hang by placing a smuggled dynamite blasting cap in his mouth and biting, resulting in detonation.

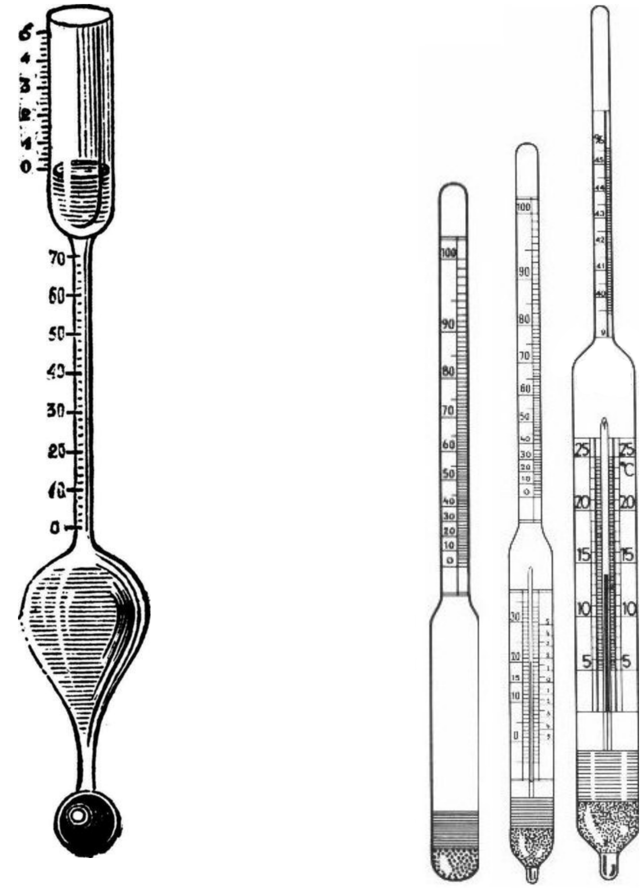


Figure 2. A Beaumé aerometer (left), and Gay-Lussac alcoholometer (right)

You desire. Double that difference, then add one-tenth of the difference to find out how many cubic centimeters of water to add to a one-liter bottle. Afterward, fill the bottle with the concentrated acid to achieve the desired density.

Sulfuric Acid. — In its pure form, sulfuric acid is colorless and resembles water, while concentrated sulfuric acid has a viscous, oily consistency. A slight brown tint is acceptable as long as the acid remains potent. The maximum density for sulfuric acid is 1.840, meaning that one liter weighs this amount. 1 kilogram and 840 grams of this substance corresponds to 66° Baumé.

It's important to store it in glass bottles with tight-fitting frosted glass stoppers to prevent moisture absorption, which can lead

to dilution. Avoid transferring it into metal or wooden containers, as it can cause corrosion. It also damages materials like canvas, paper, cork, marble, and rubber. If it comes into contact with clothing, it can leave red stains, but these can be removed by blotting the area with ammonia immediately. Handle it with care and do not touch it directly with your skin.

When mixing with water, remember to always pour the acid into the water, not the other way around, as adding water to the acid can cause it to heat up dangerously. For cleaning purposes, sulfuric acid diluted in water (10 times or more) can be used to wash floors, stairs, bottles, copper, brass, and other objects.

This acid is toxic if ingested. In case of accidental consumption, the antidote is to drink a mixture of magnesia in water followed by bicarbonate of soda.

Nitric Acid. — There are two types: ordinary and fuming. Pure ordinary nitric acid is a colorless liquid that may turn yellow over time without being harmful. Its maximum density is 1.450 (50° Beaumé).

Fuming nitric acid. — This has a light yellow color and produces fumes in the air, with a maximum density of 1.540. This type is more reactive. Both types can stain the skin yellow upon contact and have a suffocating odor. Use the same safety precautions as with sulfuric acid. Nitric acid is essential for dyers, photographers, gilders, and goldsmiths. Metal objects can be cleaned effectively using certain chemical processes, and gunsmiths utilize this technique to achieve a blue finish on weapons by dipping them in a heated solution.

For those looking to dilute concentrated nitric acid (like converting 47% nitric acid to a 36% solution), simply mix 10 parts of the concentrated acid with 3 parts of water.

Glycerin. — This a clear, thick liquid with a density of 1.265 at 30° C. It's important to keep it covered as it has a tendency to absorb moisture from the air. Glycerin mixes well with water and alcohol, making it a popular ingredient in cosmetics and soaps. Additionally, it enhances the body of wine—typically around 1 liter of glycerin for every 100 liters of wine— and transforms regular ink into a copying ink. Its preservation qualities also make it great for keeping fruits fresh for extended periods, while it effectively soothes and softens dry hands and skin, especially after exposure to harsh conditions or

helps in determining the amounts needed for other explosives, depending on the strength of the different explosives (as indicated on pages 14 and 15). For instance, if one kilogram of dynamite is required, then seven kilograms of gunpowder would be necessary. When placing the charge, focus on areas of greatest resistance, as this is where the rupture will have the most significant effect. For example, when demolishing a house, the charge should be placed in the corner formed by two main walls. The hole for the charge is to be made one meter or 1.5 meters from the ground and should be deep enough to reach halfway up the wall. If digging a hole is not possible, the charge can be leaned against the wall and covered with earth and stones.

To demolish bridges. — Double the amount of charge is required compared to walls. The best placement for the charge is at the pillars, as close to the ground and water as possible. The hole should be at least one-fifteenth of the thickness of the pillar. If the goal is to blow up an arch of a bridge, two holes should be dug in the center of the arch, directed towards the abutments, loaded with double the charge, and then covered with earth and stones.

For breaking trees, beams, telegraph poles, etc. — The first method involves tying together wreaths or petards in a wreath-like formation. To use dynamite effectively, place a capsule and fuse in one of the holes and surround the tree with the mixture at the point where you want to create a break. Ensure that the crown of petards occupies one-third of the circumference of the tree. **Second Method:** Make a hole that extends to the center of the tree. If the tree is particularly large, create two holes that are perpendicular to each other, and load them with regular explosives. Generally, telegraph poles are too thin to require the use of explosives for breaking; however, remember that to disrupt communications, the priority is to cut the wires or break the insulators (which may be porcelain or glass).

To disrupt railroads. — This process is straightforward but crucial; it is essential to consider the heavy surveillance on railroads, as well as the timing of train passages and the distance of signalmen. You need to determine whether you wish to derail a train, divert it, or simply interrupt the service. For derailing or diverting a train, prepare the mine using a guncotton fuse, known for its rapid reaction. Keep it hidden in a suitable place and set off the petards either when the train is directly over the mine or when it is approximately 15 to 20 meters away. If your goal is to disrupt service rather than derail.

APPLICATION OF EXPLOSIVE MATERIALS

We will provide some guidelines for utilizing explosive materials; however, it is important to note that we are no longer discussing chemical operations. It is essential to adhere strictly to the given rules when handling explosives. The specific techniques can vary and be adapted based on individual circumstances, available resources, and creativity. We emphasize the importance of conducting tests in a controlled environment before using any explosives. When testing explosives, always maintain a distance of at least 200 meters from the explosion site. If you accidentally approach the charge too soon, wait at least half an hour before getting closer. In such situations, it is advisable to place another charge nearby and detonate both simultaneously.

Important Note. — In all explosive applications, ensure that the capsule is properly exposed from the charge and that the fuse reaches the fulminate of the capsule without making contact with the explosive material. Igniting the explosive before the fulminate can lead to a failed detonation.

For demolishing walls. — Begin by making a hole and filling one-third of it with explosives, ensuring it is equipped with a capsule and fuse. The remainder of the hole should be filled with a material such as earth, stones, or sand, while allowing the fuse to pass through it, lined with coarse paper. This layer of material is crucial for maximizing the effectiveness of the explosion. For example, when using nitroglycerin in a hole made in marble, simply cover it with water. When calculating the necessary charge, consider the thickness and quality of the wall. To determine the appropriate charge, measure the wall's thickness in centimeters and calculate the volume by cubing this measurement (multiply the thickness by itself three times). To determine the amount of dynamite needed, first take the number of centimeters, multiply it by a product (whatever that may be), and then multiply the result by 0.7. From this new product, remove the last three digits to the right; the remaining number indicates how many grams of dynamite are required. To be cautious, it is common practice to use twice the amount of charge calculated, and one should never use less than one cartridge. Knowing how much dynamite is needed also

physical labor.

Soda. — Commonly referred to as sodium carbonate, appears as a white powder similar to flour or can be found in larger, ice-like pieces. It dissolves easily in water and has a variety of uses, including soap making, glass manufacturing, and textile dyeing. It's particularly handy for washing clothes and household items, and it works to neutralize acidic substances.

Mercury. — This is a unique metallic liquid with a shiny surface, more reflective than silver. It weighs 13.3 kilograms per liter and boils at 360° C, releasing harmful vapors when heated. If mercury is not pure, it loses its luster and should be filtered using a specialized needle-punched paper filter. It can be stored in various non-porous containers and interacts well with nitric acid, though it is insoluble in water and sulfuric acid. Mercury finds applications in the production of thermometers, among other uses.

Carbon Sulfide. — This is nearly colorless liquid and has a density of 1.290. It evaporates easily as its boiling point is 47° C. It ignites readily upon contact or even when near a flame. The substance has an unpleasant odor and is toxic; therefore, it must always be stored in a safe location, away from any fire. When working with it, it is advisable to do so in a well-ventilated area, preferably outdoors. Since carbon sulfide is insoluble in water and denser than it, it sinks to the bottom. If a bottle with a frosted cap is unavailable, carbon sulfide can be stored temporarily underwater.

It is capable of dissolving phosphorus, sulfur, fats, rubber, wax, and more. Its applications include purifying sulfur, combating phylloxera, dealing with mice and moles, degreasing wool, and extinguishing fires. Additionally, wax dissolved in carbon sulfide produces a varnish suitable for plaster statues.

Alcohol or Spirit of Wine. — For our purposes, the ordinary alcohol available commercially is not suitable. We require the purest form, which contains no more than 10% water. Pure alcohol weighs 300 grams per liter. Since it ignites easily, it is crucial to heat it using a water bath when necessary. This alcohol is used to increase the strength of wine, create liqueurs, produce fragrant essences, and make

spirit camphorate.

Wood spirit. — This is readily available in commerce and is commonly used to make paint and clean furniture.

Ammonia. — This is a gas but is typically found dissolved in water in trade. It is colorless and has a very penetrating odor reminiscent of putrid urine. Ordinarily, it has a density of 0.880. Its action is opposite to that of acids, and it needs to be kept well sealed.

Sniffing it can alleviate headaches, drunkenness, and syncope. It also helps to remove stains caused by acids.

Phosphorous. — There are two types of phosphorus, one is white and the other is red, which have quite different properties. We only need the first one.

White Phosphorus. — It is almost transparent, a little harder than wax, and has a slight odor of garlic. It melts at 45.0° C. In the air, it spontaneously ignites, so it must be kept submerged in water. Since it degrades in light, it should be stored in the dark and the bottle wrapped with dark paper. In the dark, it appears bright. White phosphorus is highly poisonous; it should be cut only while submerged in water, and the scissors must be cleaned thoroughly afterward. In case of poisoning, one should induce vomiting, followed by consuming egg whites or magnesium mixed with water. Phosphorus is very soluble in carbon disulfide and is used for making matches and poisons to kill mice.

Potassium Chlorate. — This substance is a white, odorless powder that is poorly soluble in cold water. It is used for making matches and fireworks. As a medicine, it is used for gargling, and to treat scurvy and typhoid fever.

Saltpeter. — It appears as powder or white crystalline bits and is soluble in water. It is used in fireworks and, when mixed with salt and sugar, is used to preserve meat.

Essence of Turpentine. — Also known as Aqua Regia, this liquid has a strong, characteristic odor. It is almost insoluble in water but soluble in alcohol. It dissolves phosphorus and sulfur, as well as resins and

CAPSULES AND PETARDS

Capsules. — Take a small copper tube that is two inches long, less than one inch wide, and closed at one end. The copper must have a thickness of less than 0.5 millimeters. Place 2 grams of well-dried mercury fulminate at the bottom of the tube and compress it slightly. Using a wooden stick, introduce a fuse of suitable size into the tube. Make sure it is cut evenly at one end and bring it into close contact with the fulminate. Finally, use your teeth[12] or a tool[13] to tighten the tube just enough to secure the fuse in place.

Petards.[14, 15] — These are simply cartridges containing any form of dynamite or guncotton, placed in a metal box instead of a paper wrapper. For example, when you take 100 grams of dynamite, place it in a sturdy tin box with one bottom. Compress the material slightly, and insert a capsule equipped with a fuse up to two-thirds of its length into the box. Tie the fuse securely to the box with string to ensure the capsule doesn't come out of the hole. Petards are used for demolishing walls, doors, railroad bridges, etc. They are much more effective when placed into a hole or covered with heavy weights on the side opposite to the intended destructive action. Multiple petards can be placed in the same wall, and only one needs to have a fuse attached. When one explodes, the others will detonate due to the initial blast. Using them outdoors, for example, along the base of a wall, you can create a kind of "rosary crown" by tying them together with rope or iron wire, attaching the capsule or fuse only to the one at one end.

12. No!
13. Yes.
14. A petard is a small bomb typically used for blowing up gates or walls, usually around 2–3 kilograms. It was originally invented in 1579 for breaching fortified positions such as castles. An alternative translation is “firecracker,” but the modern use of the term firecracker is for a much more diminutive explosive than described in this text.
15. The phrase “hoist with his own petard,” was coined by Shakespeare in *Hamlet.* In this context to ‘hoist’ means that the bombmaker was blown up, or ‘hoisted’ into the air by their own bomb, or ‘petard.’

popping powder—diluted with alcohol—onto the damp sheets before rolling them up. You can also insert a strand of lamp wick soaked in the diluted powder into the middle of the roll.

For a fuse that burns 1 meter in 15 seconds (¼ of a minute): For this type of fuse, prepare a cord or thread made from cotton. For every 45 grams of cotton cord, you'll need 400 grams of fine popping powder, 140 milliliters of spirit, and 5 grams of gum Arabic. Soak the cords well in a little rubberized spirit, then arrange them between two layers of the mixed powder. Compress the layers slightly and let them sit for 4 to 5 hours. Next, smooth or shape the cords by passing them through a hole of appropriate size on a table. Dust them with fine, dry powder and allow them to dry in the shade or a warm place. For an added effect, you can boil the threads for half an hour in water mixed with 10 percent nitrate of lead. Be sure to let the threads dry completely before using them. You can also manufacture paper fuses using the same system.

A one-meter length of this fuse burns in three minutes. It is prepared similarly to the previous method, but with the following substances: 7,320 grams of powder and 65 grams of sulfur.

The fuse that burns instantly: this fuse functions almost like electricity and can be used in critical applications, such as detonating a mine under a passing train, a procession, or a cavalry troop. To create this fuse, take well-prepared, dry, uncompressed guncotton, spread it out, and wind it into a wire no thicker than 14 inches, twisting it slightly. While it can be used in this form, it is more effective to prepare a long strip of paper cotton. Spread fine powder on the damp sheets and then wrap it around the cotton in wide coils. Attach the guncotton cord to the ends. When it is necessary to use the fuse underwater, simply place it inside a rubber tube of appropriate length, leaving one end out of the water to ignite it. Alternatively, you can cover the fuse with tar.

rubber. It is used for colors, oils, and paints.

Litmus Paper. — Litmus paper can be found in red and blue sheets at most pharmacies and chemical supply stores. The red litmus paper turns blue when it comes into contact with an alkaline substance, such as soda or ammonia. Conversely, the blue litmus paper turns red when it encounters an acidic substance. It is commonly used to determine whether a solution is acidic or alkaline and is also used in smears.

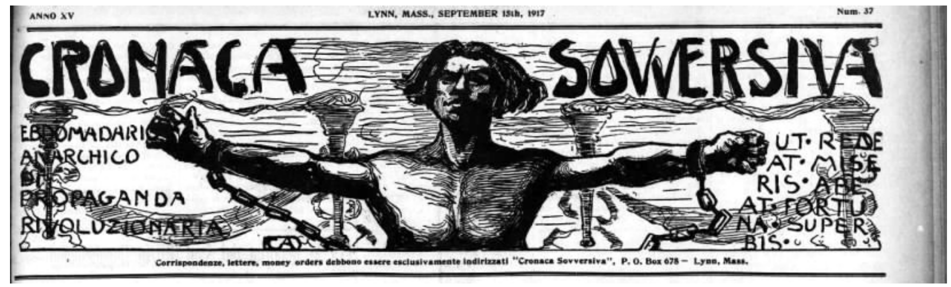
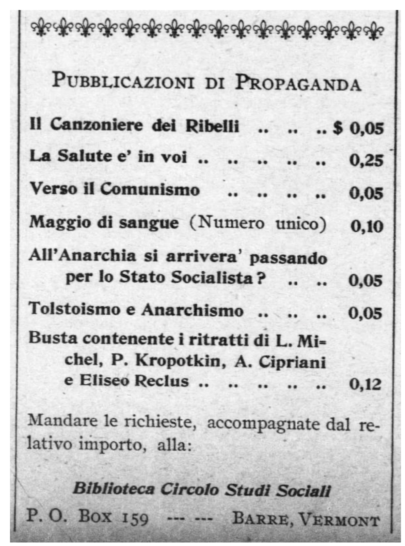


Figure 3. Cover image from *Cronaca Sovversiva*, Luigi Galleani described the paper as, "a rag of paper that lives on crusts and bits of bread, with the support and pennies of five thousand beggars."



Pubblicazioni di Propaganda

Il Canzoniere dei Ribelli	$ 0,05
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Verso il Comunismo	0,05
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All'Anarchia si arrivera' passando per lo Stato Socialista?	0,05
Tolstoismo e Anarchismo	0,05
Busta contenente i ritratti di L. Michel, P. Kropotkin, A. Cipriani e Eliseo Reclus	0,12

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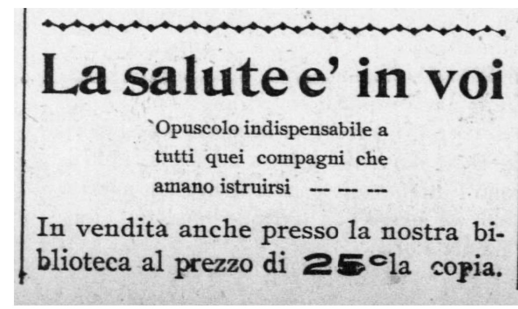

La salute e' in voi

Opuscolo indispensabile a tutti quei compagni che amano istruirsi --- --- ---

In vendita anche presso la nostra biblioteca al prezzo di 25c la copia.

Figure 4. An ad for *La Salute é in Voi*, seen in the November 23rd, 1907 publication of *Cronaca Sovversiva*. The text reads: "Health is in You, 'an indispensable pamphlet for those who love self instruction'--- Also on sale at our library for 25 cents a copy."

Figure 5. The first recorded reference to *La Salute é in Voi*, seen in the February 24th, 1906 publication of *Cronaca Sovversiva* that lists propaganda publications available for sale. The listed publications are as follows: "The Rebels' Songbook, Health is in you, Towards Communism, May of blood (single issue), Will Anarchy be reached by passing through the Socialist State? Tolstoyism and Anarchism, Envelope containing the portraits of L. Michel, P. Kropotkin, A. Cipraini and Eliseo Reclus."

Tools

These are the tools essential for our work.

Scales. — A good scale is essential; it should be able to weigh more than one kilogram and be sensitive to differences of at least one gram. A grocer's scale is commonly available and can often be found used. Remember to keep it clean.

Thermometer. — A thermometer is a closed glass tube with a bulge at the bottom filled with mercury. It is used to measure temperature (the degree of heat). As the temperature increases, the mercury rises in the tube. While there are various types of thermometers, it is recommended to get one graduated in Centigrade. In this type of thermometer, 100 degrees corresponds to the boiling point of water, and 0 degrees corresponds to the melting point of ice. The thermometer should have one-degree increments marked on the glass itself and should not be fixed to wood or metal, allowing it to be immersed in acidic liquids. When using the thermometer, hold it by the end without mercury and immerse the bulb in the liquid for accurate measurements. To measure temperature, use a thermometer. It is essential to ensure the thermometer is clean and dry before each use. When reading the temperature, be careful as the numbers are sometimes divided between both sides of the inner channel where the mercury rises. Start counting from 0° C (zero degrees). As the temperature rises above zero, it indicates warmth; conversely, as it falls below zero, it indicates coolness.

Filter Paper. — You will also need filter paper, which is a type of paper without glue, similar to white sugar paper. It is used to filter cloudy solutions and separate solids from liquids. Ensure you have several **glass measuring containers** of different sizes: one liter, ½ liters, and ⅕ liters, along with flasks that are colorless and very thin, specifically sized at 4 or 5 liters, and other volumes such as 2½, 1⅓, 1, ½, ¼; You will also need **glass rods** for stirring liquids, three **glass funnels** with capacities of 1½, ½, and ¼ liters, a **wooden stirrer**, a **spirit lamp**, and some basins.

Always keep glass equipment clean and dry and handle it with care.

PREPARING FUSES

Fuses are a type of combustible material that can ignite and produce an explosion when they contact mercury fulminate or other similar substances. They must be easily ignitable with a match or a heat source (such as a lit cigar) and must burn continuously without interruption. They are made from cotton, hemp, or linen cords or threads that have been treated and dried in a specific manner. The thickness of these materials should generally match that of the capsules they are used with. When creating fuses, it's crucial to ensure that there are no knots in the length of the fuse, as these can hinder the fire's progression. Fuses are readily available for various uses, including fireworks, mining, and smoking. However, it's important to understand the different types of fuses and their burn times. Knowing how long a fuse takes to ignite the explosive material is often critical. The quality of the materials and the handling methods can significantly affect the results. Therefore, it is recommended to conduct a practical test to determine the burn time of a specific length of fuse before using it. To make fuses, start by purifying the cords you plan to use. Boil them for 10 to 15 minutes in a solution made of 70 grams of soda per liter of purified water and then dry them in the air.

For a fuse that burns for 8 to 9 hours: use well-purified rope or threads that have been boiled for one hour in pure water or for 20 minutes in a solution containing 3 percent saltpeter. After boiling, squeeze out the excess water and let them dry thoroughly.

For a fuse that burns for 6 to 8 hours: immerse the wire or cord in a solution with 5 percent lead acetate (also known as salt of Saturn) and boil for a quarter of an hour or let them soak in the cold solution for 6 to 8 hours. Afterward, squeeze out some water, double the cord to achieve the desired thickness, and tie one end to a nail. To create the fuse, start by twisting together the ends to form a rope, smoothing it with a cloth, and then allowing it to dry. For 10 meters of this fuse, you will need 21 liters of water and 125 grams of salt of Saturn.

Paper Fuse: A single sheet that burns for 2 hours and 51 minutes: To prepare it, boil 70 grams of saltpeter in a liter of water. Soak some strong, unpolished paper sheets in the solution for a couple of minutes, then dry them. Roll the sheets up and secure the edge with a little glue. To enhance the burning process, sprinkle some very fine

To test the preparation of guncotton on a small scale, combine 13 grams of guncotton with 50 grams of nitric acid and 150 grams of sulfuric acid, following the specified conditions. By using 100 parts by weight of cotton, you can obtain up to 175 parts by weight of fulminating cotton.

Properties and Storage. — Guncotton resembles ordinary cotton in appearance but feels rougher to the touch and is not elastic.

It **explodes** when triggered by a fulminate of mercury capsule. To test this, you can take a piece about the size of a grain of rice and strike it between two hammers; it will produce a sound similar to a gunshot. If compressed, it can detonate when heated to 120° C. However, if it is not compressed and is well aerated, it can be ignited in small portions without detonating. When ignited, it burns with instantaneous rapidity, making it suitable for fuses that need to burn quickly, such as those used in bombs. To create a fuse, twist the cotton slightly like a rope and insert it into the capsule.

Guncotton does not dissolve in water or alcohol. To dry it, lay it out in the air, but avoid direct sunlight. If a controlled environment is available, it can be dried in a room heated to 30° C to 33° C, ensuring to monitor the temperature regularly to prevent accidents. It should never be exposed to fire. The fulminant compound is completely dry when it no longer loses weight. It explodes even if it contains as little as 2 percent moisture. If it contains more than 3 percent moisture, it becomes less sensitive to shocks, but it can still ignite and potentially explode upon contact with a flame. When the moisture content reaches 12 percent, it no longer ignites on contact with a flame and requires a strong capsule of mercury fulminate to burst. If the moisture exceeds 20 percent, it no longer bursts even with mercury fulminate and can be handled and stored safely. To store the compound safely, it must be well washed and have no acidic reaction. It can be stored moist and even submerged underwater.

To destroy the compound, mix iron sulfate (green vitriol) with hydrochloric acid (also known as muriatic acid). Soak cotton in this mixture and heat it in a bain-marie over a heat source. Once no more gas is released, the cotton will break down, leaving a dark mass that can be discarded.

Techniques

Measuring Temperature. — To measure temperature, immerse the thermometer in the liquid you want to measure and observe where the mercury stops. It is advisable to stir the liquid slightly to ensure that the temperature is uniform throughout. This operation is crucial in achieving accurate measurements when manufacturing explosives. Neglecting safety during this process incurs the gravest danger.

Using a Scale. — It is crucial to learn how to weigh accurately, safely, and without soiling the scale. For the weight to be exact, it is necessary for both plates of the balance to remain level and not tilt to one side or the other. When weighing liquids, do not forget to subtract the weight of the vessels. For solid substances, always place an equal piece of paper on both sides of the balance.

Using a Water Bath. — Heating in a water bath means heating a liquid not directly over a flame, but by immersing it in boiling water.

Filtration. — Filtration is the process of separating a liquid from a solid by passing the liquid through a material that retains the solid parts. To filter a substance, take a glass funnel and cut a square or round piece of filter paper. Fold it into quarters, holding three parts together while enlarging the fourth. This will create a paper cone that fits into the funnel. Carefully pour the substance you want to filter into the funnel and collect the liquid that comes out from underneath. When collecting the liquid in a bottle, ensure that there is some space left between the neck of the bottle and the opening of the funnel to allow for air to escape. To filter out mercury, one must pierce the filter with a needle.

Decanting. — Decanting refers to the process of separating a liquid from another liquid or a solid substance. The heavier material will settle at the bottom, allowing the lighter liquid to be poured off easily.

I have devised a method for this operation: You will need a glass funnel and a piece of very elastic rubber tubing that is 10 centimeters long and slightly smaller in diameter than the funnel's beak. Insert a glass or wooden stopper into the tubing, using a bit of force to secure it. Next, fit the tubing onto the funnel. Pour your

mixture into the tube and wait for the heavier components to settle at the bottom. To release the substance trapped by the stopper, stretch the tubing where it is sealed by the stopper to open the passage. You can use this method to test with water and oil. Remember to clean the apparatus thoroughly each time you use it.

Crystalizing a Substance. — To purify a solid substance, you can sometimes dissolve it in a hot liquid. As the liquid cools or evaporates, the substance will crystallize into defined shapes called crystals.
For example, boil some water in a small saucepan using a lamp. Once boiling, turn off the heat but leave the saucepan on a warm surface. In a small flask, pour a small amount of carbon sulfide and gradually add sulfur powder until it dissolves completely. Place the flask into the hot water of the saucepan and allow it to sit until the carbon sulfide evaporates down to half its original volume. After this, remove the flask and let it cool. Sulfide crystals will form as it cools. Once the sulfide has cooled completely, filter the mixture. Pure sulfur crystals will remain on the filter, while carbon sulfide will pass through and collect underneath. You can return the filtered carbon sulfide to the flask and heat it again if necessary. To prepare a bain-marie (a type of water bath) for cooling your mixture to half its volume, allow it to cool in order to form additional sulfur crystals. Exercise caution by avoiding work near flames or intense light, as sulfur compounds can be highly flammable.

Figure 6. A political cartoon depicting European anarchists as a threat to America, seen in the newspaper *Memphis Commercial Appeal* in 1919.

voluminous flakes using a comb. Store the cotton in a moisture-free environment until needed.
Fabrication. — For the manufacturing process, take 600 grams of purified and dried flaked cotton; 2.500 kilograms of nitric acid at 50° Beaumé (density 1.500); and 7.5 kilograms of sulfuric acid at 66° Beaumé (density 1.840). If you cannot obtain nitric acid of that strength, add a little more sulfuric acid; however, this may affect the quality of the final product. Mix the two acids slowly in a large bowl, and as the mixture heats up, cool it by placing the bowl in a container of cold water, being careful not to let any water enter the bowl. Once the mixture cools to below 7° C, add the cotton by pressing it down and removing it with a glass plunger. To prepare guncotton, first soak the cotton evenly and let it sit covered for 24 hours. After that, remove it and squeeze it well between two plates, then place it in 150 liters of cold water. After one hour, take it out, squeeze it again, divide it into several parts, and put it back into a tub of clean, cold water. This washing process, which removes the excess acid that has not combined with the cotton, should be repeated a few more times. Once washed, squeeze the cotton, tear it into very small pieces to create almost a mush, and then immerse it in boiling water for a few minutes. This step prepares the guncotton. Next, compress the cotton strongly between two plates and then between several sheets of drying paper using a press, a vice, or a very heavy weight, until it achieves a strong consistency. Ideally, it should weigh as much as an equal volume of water.

The guncotton must be compressed to ensure safe storage, as compression makes it easier to handle and takes up less space. Even at equal weight, it will have much higher strength. To avoid danger, the cotton should be compressed while still containing 25 percent moisture. If you want to compress guncotton when it is dry, you must first soak it in water until its weight increases by a quarter.

To create cartridges of guncotton, use a wooden plunger to compress it inside a wooden mold, which should be slightly conical to facilitate extraction. It is essential that a small cylinder, half an inch in diameter and 2 to 3 inches high, rises from the bottom of the mold. The cartridge will feature a hole designed for the insertion of fulminate of mercury. This cartridge, along with the capsule, will be wrapped in paper or thin cloth, similar to how dynamite cartridges are prepared.

instance, a bomb would almost turn to powder, rendering it ineffective. It is only used to create capsules that, when burst, detonate other explosives. Fulminate explodes very easily when struck between two pieces of marble, but it detonates much less vigorously when placed between two pieces of wood.

To preserve fulminate, it should be mixed with 20 percent water and divided into packets of 40 or 50 grams without crushing it. These packets should be stored safely packed in soft cotton. A little water should be added every 20 days to keep it moist. It can even be stored in water, but it must be kept in the dark. When ready to use, let it dry.

To destroy fulminate, dissolve about 70 grams of table salt in half a liter of hot water. Then, add 100 grams of wet fulminate while the solution is still hot, and heat it in a bain-marie until an ashy powder is deposited. This powder can then be discarded.

GUNCOTTON [11]

Guncotton is as potent as nitroglycerin and has the advantage of being easy to prepare and relatively safe to store. To create guncotton, mix one part flaked cotton with four parts nitric acid and 12 ½ parts sulfuric acid. The quality of the final product depends on the purity of the cotton, so it is essential to purify it beforehand. To prepare the cotton, first ensure that all foreign objects and clumps are removed, resulting in fluffy, bulky flakes. Next, dissolve 50 grams of sodium bicarbonate in one liter of water. Strain this solution and bring it to a boil in a well-cleaned saucepan. Dip the cotton into this boiling solution a little at a time, using a chopstick or stirring rod to agitate it for two to three minutes. Afterward, remove the cotton and wash it thoroughly in pure water. Then, wash it in a solution made from one liter of water mixed with 140 milliliters of nitric acid, and finally wash it several times in pure water until all traces of acid are completely eliminated.

If you prefer to skip these processes, you can purchase absorbent cotton suitable for dressings from a pharmacist. In this case, squeeze the cotton well, dry it next to a fire, and then fluff it into

11. Literal translation is "Lightning Cotton," best technical translation is "Cotton Fulminant," but "Guncotton" is most widely used.

Explosive Materials

The process of manufacturing explosive materials is not complex, but it is crucial to adhere strictly to all safety protocols to practice it effectively and safely. Any alterations in the proportions of substances or the sequence of operations can lead to catastrophic results or at the very least, cause you to fail to achieve the desired outcome.

Before attempting large-scale production of explosives, it is advisable to conduct a test using a quantity that is 15 to 20 times smaller. You should repeat this process until you achieve consistent results and gain the necessary experience and safety awareness. Therefore, for each explosive, we will specify the quantities for small test operations as well as those suitable for larger productions.

Prior to using any explosive, it is wise to conduct tests in a safe outdoor environment with a small quantity.

Regarding acidic liquids that remain from your operations, before disposing of them, you should either dilute them with 20 times their volume of water or, preferably, neutralize them by adding enough sodium hydroxide or lime until no further boiling occurs. This precaution is essential to prevent these liquids from corroding any zinc pipes they may encounter or emitting harmful fumes that could attract unwanted attention.

The materials used must be of high purity. They can be sourced from chemical merchants and pharmacists. It is advisable not to buy all the materials from the same shopkeeper to avoid revealing your intentions.

Processing should take place in a well-ventilated room, equipped with a reliable fireplace and designed to maintain privacy—ideally, it should have curtains or be situated in a way that prevents outside visibility. It is best to conduct this work on the top floor due to the potential odors and fumes that may arise.

In terms of explosive strength, the relative potency of different explosives is as follows: if we consider gunpowder to have a strength of one, then an equal amount of various explosives has the following relative forces:

- Panclastite: 6
- Dynamite: 7
- Dry guncotton: 9 (when mixed with 50% saltpeter: 5)
- Nitroglycerin: 9

- Fulminate of mercury: 10
- Nitromannite: 11

Other explosives, such as melanite, are based on similar principles and do not exceed the strength of nitroglycerin.

It is also prudent to estimate the costs involved. To produce a dozen nitroglycerin or dynamite bombs, one would require approximately 140 liras[9], broken down as follows:

Reagents

Nitric Acid	Kilograms[10]	8	Liras 24
Sulfuric Acid	“”	15	“” 30
Glycerin	“”	2.500	“” 12
Carbon Disulfide	“”	1	“” 3
Pure Alcohol	“”	1	“” 12
Potassium Chlorate	“”	1	“” 2.50
Mercury	Grams	200	“” 1
Ammonia	“”	250	“” 0.5
Other Secondary Products			“” 5
		Total Lira	93

Tools

Scale	Liras 8
Thermometer	“” 2.50
Measurers	“” 3
Glass Flasks	“” 6
3 Glass Funnels and 3 Glass Rods	“” 2
Spirit Lamp/Alcohol Burner	“” 1
A 30 - 35 Liter Wooden Tub	“” 3
Miscellaneous Additional Expenses	“” 20.50
Total Lira	46

9. 140 Lira in 1906 is equivalent to roughly $670 USD today.
10. Or pounds, translation uncertain but kilograms most likely.

As you pour, filter the contents of the basin and rinse the filter until the water passing through does not change the blue litmus paper. Next, spread the filter paper over a glass plate, and use a wooden spatula to collect the fulminate from the filter paper. To dry the fulminate, place it between multiple sheets of paper towels and leave it under a heavy weight for half an hour. After this, spread it out in a well-ventilated room or outdoors, but keep it in the shade away from wind and direct sunlight.

To determine if the fulminate is fully dry, weigh it, leave it exposed for 12 hours, and then weigh it again. Once it no longer loses weight, it is dry.

With 50 grams of mercury, you can obtain approximately 120 grams of fulminate.

To prepare a small test, take 5 grams of mercury, 60 grams of nitric acid, and twice 28.5 grams of alcohol, following the specified conditions.

Fulminate is the substance found at the bottom of shotgun cartridges. You can extract it by removing the capsules and placing them in hot water, which dissolves the fulminate. When the water cools, the fulminate will redeposit, allowing you to collect it. Once obtained, dry the fulminate as previously mentioned. It requires 130 grams of hot water to dissolve 1 gram of fulminate. Handle fulminate with extreme caution, as it is highly dangerous. Do not touch it with your hands or with hard objects. Use a wooden spatula and carefully pick it up with a piece of paper folded into a spoon. Before starting your work, spread several layers of newspaper on the table to absorb any shocks that may occur when setting down the flasks.

Properties. — Mercury fulminate is a solid, white or nearly white substance. It is very soluble in alcohol and hot water, but almost insoluble in cold water.

Fulminate can **explode** due to strong rubbing, hard shocks, heating to 150° C, contact with a burning object, or exposure to a small amount of concentrated sulfuric or nitric acid. It is poisonous. When left in small quantities and not locked away, it can be ignited with a candle without exploding; under these conditions, it crackles like a pinch of gunpowder spread on a table. If it is moist, it can be handled more safely. If the substance contains more than 30 percent water, it can be pulverized with a spatula over a piece of wood. It cannot serve as an explosive material on its own because it is too brittle. For

advisable to conduct the preparation outdoors or under an unlit chimney.

In a flask of about 6 liters, place the mercury and then pour the nitric acid over it. After 3 to 4 minutes, the mercury will begin to melt, producing heat and developing nitrous vapors. It is essential to shake the mixture continuously while taking care not to breathe in the vapors. When all the mercury has dissolved, the liquid will turn greenish. Allow it to rest until it has cooled. If any undissolved mercury remains, it indicates that there was too much mercury initially used. In this case, decant the liquid, remove the mercury, and then put the liquid back into the flask. Next, measure out 283 grams of alcohol and place it in a flask of 2 liters or more. When the acid in the large flask reaches a temperature of about 20° C, pour it into the alcohol in the 2 liter flask. It is important to pour carefully and efficiently during this process.

After you have poured the acid into the alcohol, immediately pour this mixture back into the large flask. If there is any shock or sudden boiling, do not be alarmed; it is not dangerous. Also, do not worry if a white substance is deposited. Usually, the colorless liquid will begin to boil after 5 to 6 minutes, initially slowly and then violently (2). It will darken and produce white vapors, which should not be inhaled as they are poisonous.

When the violent boiling begins, you should begin to add the remaining 283 grams of the substance. To calm the boiling liquid, add alcohol in small portions, ensuring to add it slowly, divided into 8 to 10 small additions. If the alcohol is added too quickly, it can be harmful, and if added too late, the boiling may become so vigorous that the liquid could jump out of the vessel, potentially splashing onto your face if you're not standing back. However, there is no risk of explosion.

After you have finished adding the alcohol, let the mixture sit quietly until the white vapors have dissipated. During this time, a voluminous white powder will settle at the bottom; this is mercury fulminate. Once the vessel has cooled somewhat, pour the contents slowly into a large basin containing 5 to 6 liters of clean, cold water.

(2.) If after 15 minutes the boiling has not yet started, warm the vessel slightly by immersing it in hot water. Once boiling begins, stop the heating and immediately turn off the lamp that was used for heating.

We recommend that anyone interested in undertaking this work first secure all necessary funding. Otherwise, they risk halting their efforts midway, prolonging the process, and exposing themselves unnecessarily. It is crucial not to overlook any precautions to avoid drawing attention from law enforcement. This includes refraining from public propaganda, not associating with known comrades in public, and avoiding work in locations that may be subject to searches.

Above all, we advise against getting involved in the production of explosives simply for the sake of making them. There is no point in creating something that can be easily obtained, especially if one lacks the experience and resources available to professionals in the field. In many places, dynamite is readily accessible; therefore, there is no need to attempt to manufacture it on one's own.

Various types of explosives and bombs should be selected based on what is easiest and most practical for the individual. Always keep in mind: **it is better to accomplish something small than to leave a larger task unfinished.**

POWDER

Gunpowder. — Gunpowder is the least powerful of the explosive materials. However, because it is easy to find and widely understood, we recommend that you do not forget it.

The powder must be dry; if it is wet, dry it by exposing it to air or sunlight in thin layers over sheets of paper. To test its quality, place a pinch of powder on a piece of white paper and ignite it with a match. It should explode almost instantly without leaving any residue or igniting the paper. If it burns holes in the paper, it indicates that the powder is either of poor quality or wet.

This powder can be used to create mines beneath roads, bridges, or buildings. To utilize it, place the powder in a closed container, compress it slightly, and insert an ordinary fuse about halfway in. Position the receptacle in place, cover it with dirt or stones, and light the fuse when appropriate. You can also introduce the powder into specially dug holes in walls or other structures.

Furthermore, it can be used for bottlebombs made of zinc or other low-strength metals, Whose construction we will discuss later.

NITROGLYCERIN

Note: Before starting the operation, carefully read the instructions numerous times until you fully understand the process and can recall it from memory.

To make approximately one kilogram of Nitroglycerin, you will need:

- Pure glycerin with a density of about 1.260 or 29º Beaumé Chili 0.400.
- Fuming nitric acid of density about 1.500, or 48º Beaumé Chili 1.20.
- Concentrated sulfuric acid of density of about 1.840 or 66° Beaumè Chili 2.400.

If you wish to produce larger quantities, special apparatus is required, so it is advisable to make the solution in smaller batches. To make smaller quantities, reduce the doses proportionally.

You will need 200 grams of nitric acid, placed in the well-dried flask with at least 3 liters of volume (1).

Submerge the flask in a tub that contains at least 25 liters of cold water (cool the water with ice if necessary). Slowly pour 2,400 grams of sulfuric acid into the flask while continuously stirring the mixture in the cold water to prevent overheating. Using the thermometer, monitor the temperature to ensure it does not exceed 12° C. Once the acids are well mixed, make sure to re-cool the water in the tub with ice. Gradually add 400 grams of glycerin to the acid mixture, pouring it very slowly—almost drop by drop. Always stir the water to keep it cold, taking care not to spill a single drop. It is crucial not to make the mistake of pouring the acids into the glycerin instead of the glycerin into the acids. Pay close attention to the temperature; measure it every time with a thermometer. As soon as the temperature exceeds 122°F, suspend the addition of glycerin and continue cooling until the temperature drops below 159°F. Then, you can start adding glycerin again.

(1.) If a flask of the specified size is unavailable, work with half of the specified doses. Thin glass flasks are preferable, as they cool more easily. If only large ordinary bottles or thin basins are available, proceed very slowly, especially when adding glycerin, and continuously stir using a glass rod. This precaution is important for all preparations where excessive heat can pose a danger. Always prioritize safety when handling these concentrated acids.

Once the cartridge is made, you remove it from the form and wrap it in paper. Gather the cloth and paper around the exposed part of the capsule on top and tie it securely with string. Finally, insert the fuse into the capsule, and the cartridge is ready for use.

Dynamite should be stored in cartridges or packets wrapped in greasy paper, placed in wooden boxes. It is crucial to keep it in a room where the temperature does not drop below 80 degrees Fahrenheit, as frozen dynamite becomes hard, insensitive to capsules, and dangerous. If dynamite does freeze, it should never be thawed near a fire; instead, keep it in a container at room temperature to allow it to thaw safely. To safely prepare the substance, heat it externally with lukewarm water (about 50° C to 60° C) until it becomes pasty again. If you're handling cartridges, you can simply keep them in your bosom for a few hours, as miners do.

When storing dynamite, it is essential to check every 15 to 20 days to see if it has become acidic. To do this, take a piece of blue litmus paper, moisten it with water, and apply it to the dynamite. Leave it in place for 10 to 12 hours. If the card turns red, the dynamite is acidic, and you should either use it immediately or destroy it. You must also destroy any dynamite that oozes, meaning if you see liquid droplets forming on its surface.

To destroy it safely, dynamite should be broken into pieces and ignited either directly or with a fuse, without a capsule, in an open area or beneath an unlit chimney to allow the nitrous vapors, which have a foul odor, to escape. This method ensures that it will not explode.

MERCURY FULMINATE

Preparation. — To prepare mercury fulminate, you will need the following materials:

- 50 grams of pure mercury
- 600 grams of fuming nitric acid with a density of 1.346, corresponding to 38° Beaume.
- 566 grams (2 x 283 grams) of 90° Gay Lussac pure alcohol. If 90° alcohol is not available, you can use 80° alcohol.

To create nitric acid at 38°, add 240 grams of pure water to half a liter of nitric acid at 48 degrees.

To minimize danger, work away from fire and lamps. It is also

Kieselgur, a type of very fine silica that is also used in soap factories, glass production, porcelain, mastic, modeling clay, artificial pumice, sealing wax, and more. To use Kieselgur, it must be finely pulverized, treated, dried in a stove at 80° C, and then allowed to cool before use. Alternatively, tripoli, a very fine powder, can be used as an absorbent. It should be thoroughly dried in a fire and then cooled. Fine wood sawdust is another option, but it must first be washed with a mixture of nitric acid diluted to 33% and sulfuric acid diluted to 50%; it should then be rinsed with water, dried in the sun or, preferably, in a stove at 80° C, and allowed to cool.

To make the dynamite mixture, place the solid, pulverized, and dried absorbent substance on a wooden or marble table. Then, add the nitroglycerin and knead the mixture using a wooden spatula or your hands. It is advisable to cover your mouth and nose with a handkerchief during this process. Knead until you achieve a homogeneous mass that is consistent and uniform in color. The resulting dynamite has a solid, pasty texture and may appear gray or reddish. It is generally odorless, although it might have a slight nitric odor, which is undesirable. The mixture has an oily appearance and does not explode when subjected to ordinary shocks, making it safe for storage and handling. If lit with a match or candle, dynamite will burn slowly and without explosion, emitting nitrous vapors. **To detonate dynamite**, you will need a strong detonator capsule a couple of centimeters long that contains 1½ grams of mercury fulminate (for blasting powder half a gram is enough). The capsule is inserted into the dynamite for ¾ of its length. A fuse is placed in the capsule so that it touches the charge.

To test the dynamite, you can take a piece the size of a grain of rice and a small piece of iron and strike them with a hammer; this will create a loud detonation, similar to a shotgun blast.

Dynamite typically comes in cartridges, making it convenient for demolishing walls, bridges, railroads, and other structures. Here's how cartridges are made: First, you take a cylindrical container made of wood or metal, sized according to the cartridge you wish to create. Next, you line the container with a cloth bag. After that, you fill the bag with dynamite, gently compacting it with a wooden plunger. Once you have added enough dynamite to achieve the desired length, you forcefully insert a capsule containing one and a half grams of mercury fulminate (equivalent to half a gram for gunpowder) into the dynamite. The fuse is placed in the capsule so that it will ignite the fulminate.

The most important aspect of this operation, to ensure a good result while avoiding any danger, is to prevent the mixture from heating up. Once you finish pouring in the glycerin, remove the flask from the cooling bath and allow it to stand for 10 minutes. Next, prepare a basin with about 3 liters of clean, cold water, and slowly pour the contents of the flask into it.

If you do not have a basin that large, you can use two smaller ones simultaneously to ensure the substance is not left in the flask for too long. The water will become cloudy, forming a thick, whitish oil, which is nitroglycerin. When the overlying water becomes clear again, discard it and pour in more water (not too cold, around 15° C) over the nitroglycerin. Stir gently with a glass rod without shaking the mixture.

Allow it to sit and then pour off the water, repeating this washing process a couple of times. Afterward, dissolve 40 grams of soda ash and wash a few more times until, when you submerge two pieces of litmus paper, one blue and one red, there is not any color change.

To completely separate nitroglycerin from water, you can use a funnel and decanting method as described below. Once you have done this, the next step is to dry the nitroglycerin. While it is not necessary to filter it, it is advisable. To filter, place a clean, dry sponge in a funnel and pour the nitroglycerin over it; the filtered liquid will pass underneath. **To dry** the nitroglycerin for immediate use, pour it into a basin and keep it in a stove at a temperature that does not exceed 40° C for two days. Alternatively, you can pour it into a mug and keep it in lukewarm water at around 40° C for the same duration. If you have more time, you can use a more convenient drying method: Place two bowls on a sheet of glass—one containing the nitroglycerin and the other with about ¾ liters of concentrated sulfuric acid. Cover both bowls with a large inverted basin, ensuring the edges are smeared with tallow to create a good seal with the glass plate. The sulfuric acid will absorb moisture from the nitroglycerin. After 3 or 4 days, the nitroglycerin will be dry, while the acid will be slightly diluted but still effective. To store the nitroglycerin, transfer it to a bottle that is appropriately sized so that it is filled to the top, and seal it with a cork that has a small hole to allow any developing gases to escape. If performed correctly, you can obtain 600 to 800 grams of nitroglycerin from 400 grams of glycerin. For small-scale testing, use 5 grams of glycerin, 15 grams of fuming nitric acid, and 30 grams of sulfuric acid with the indicated density.

Properties of Nitroglycerin. — Nitroglycerin is a yellowish, odorless liquid with an oily appearance and a density of 1.6 g/cm^3. It is insoluble in water but dissolves easily in wood spirit and gasoline. If nitroglycerin is dissolved in these solutions, it can be precipitated by adding a large amount of water. It begins to freeze at a temperature of 8° C.

Nitroglycerin can explode if it is subjected to impact between two hard surfaces, particularly iron. When contained (for example, in bombs), it can be detonated by a capsule of fulminate of mercury, producing its maximum explosive effect. Handling a significant amount of nitroglycerin can lead to intense headaches, although these typically do not last more than 24 hours. Drinking strong coffee without sugar, avoiding smoking, and breathing fresh air can help alleviate these headaches. If you need to handle nitroglycerin, especially when kneading dynamite, it is advisable to wear gloves, particularly if you have cuts or are prone to headaches.

Precautions. — Nitroglycerin is sensitive to shocks and abrupt sounds. Therefore, when working with it, avoid using hard and sharp objects, and take care to prevent bumps and shocks. Transporting nitroglycerin by railroad or regular vehicles is considered dangerous. To handle it safely, ensure that the nitroglycerin is non-acidic, meaning it does not turn blue litmus paper red. If it is acidic, wash it with water. Be cautious if nitroglycerin has begun to decompose and has taken on a greenish tint; in such cases, it is best to dispose of it safely. Dig a hole in a field, pour in the nitroglycerin, and cover it with earth. If the nitroglycerin is pure and non-acidic, it is relatively safe to handle. Handling nitroglycerin while it is frozen can still be dangerous, despite what many may claim. In fact, there was an American factory that froze nitroglycerin specifically for a major project to make it less sensitive to shocks, allowing it to be shipped by rail. It is crucial to take precautions when thawing it. To do so, place the bottle containing nitroglycerin in lukewarm water at around 30° C and leave it there until it becomes entirely liquid. Never expose it to fire.

Nitroglycerin should be stored in a room that is neither too hot nor too cold, ideally between 10° C and 20° C, and kept in the dark. Since it is unwise to store it for long periods on its own, it can be mixed with pure wood spirit in a ratio of one-quarter of its weight and stored in full bottles fitted with pierced corks. Be sure to replace the spirit as

it evaporates. When you need to separate nitroglycerin from the spirit, add 7 or 8 times its volume of water; the nitroglycerin will settle to the bottom. Alternatively, you can store it underwater, but make sure to change the water every day. In all cases, check every 3 or 4 days using litmus paper to see if it has become acidic, and if so, wash it promptly.

To Detonate Nitroglycerin. — Bring it into contact with a capsule containing 1 or 2 grams of mercuric fulminate, which can then be ignited using a fuse.

To Destroy Nitroglycerin. — If you need to destroy nitroglycerin due to safety concerns, the simplest method is to dig a wide and shallow pit, pour the nitroglycerin into it, and cover it with earth after waiting 10 to 15 minutes. Another method to safely burn nitroglycerin, is first, spread a thin layer of it and then light it with a match tied to the end of a stick. This method allows the nitroglycerin to burn slowly and safely.

To test if the nitroglycerin you have is effective, absorb one gram of it with ¼ gram of tripol, kneading the mixture thoroughly with a piece of wood. Take a small piece of the dough, about the size of a grain of rice, and place it on a piece of iron. Using a long-handled hammer, tap it lightly until it detonates safely, producing a sound similar to a shotgun blast.

DYNAMITE

Dynamite is a paste made from nitroglycerin and a powdered absorbent substance. It is easy to use, transport, and store. Since dynamite has become quite common, it is often more convenient to obtain it rather than manufacture the nitroglycerin needed to make it yourself. If you do decide to handle nitroglycerin, it is important to study how to do so safely. Dynamite is commonly used in stone and sulfur quarries (such as those in Carrara, Belluno, Boratella, and Sicily) as well as in road construction and military applications. It can often be obtained from miners or military personnel. An additional common use for dynamite in rural areas is for smuggling fish; this involves throwing a cartridge with a fuse (protected with tar or wax) into the water to catch fish. Always test any dynamite you receive before using it.

Dynamite Fabrication. — Good dynamite consists of 75 parts nitroglycerin and 25 parts absorbent material. The best absorbent is