

Medico-chymical dissertations on the causes of the epidemic called yellow fever : and on the best antimonial preparations for the use of medicine / by a physician, practitioner in Philadelphia.

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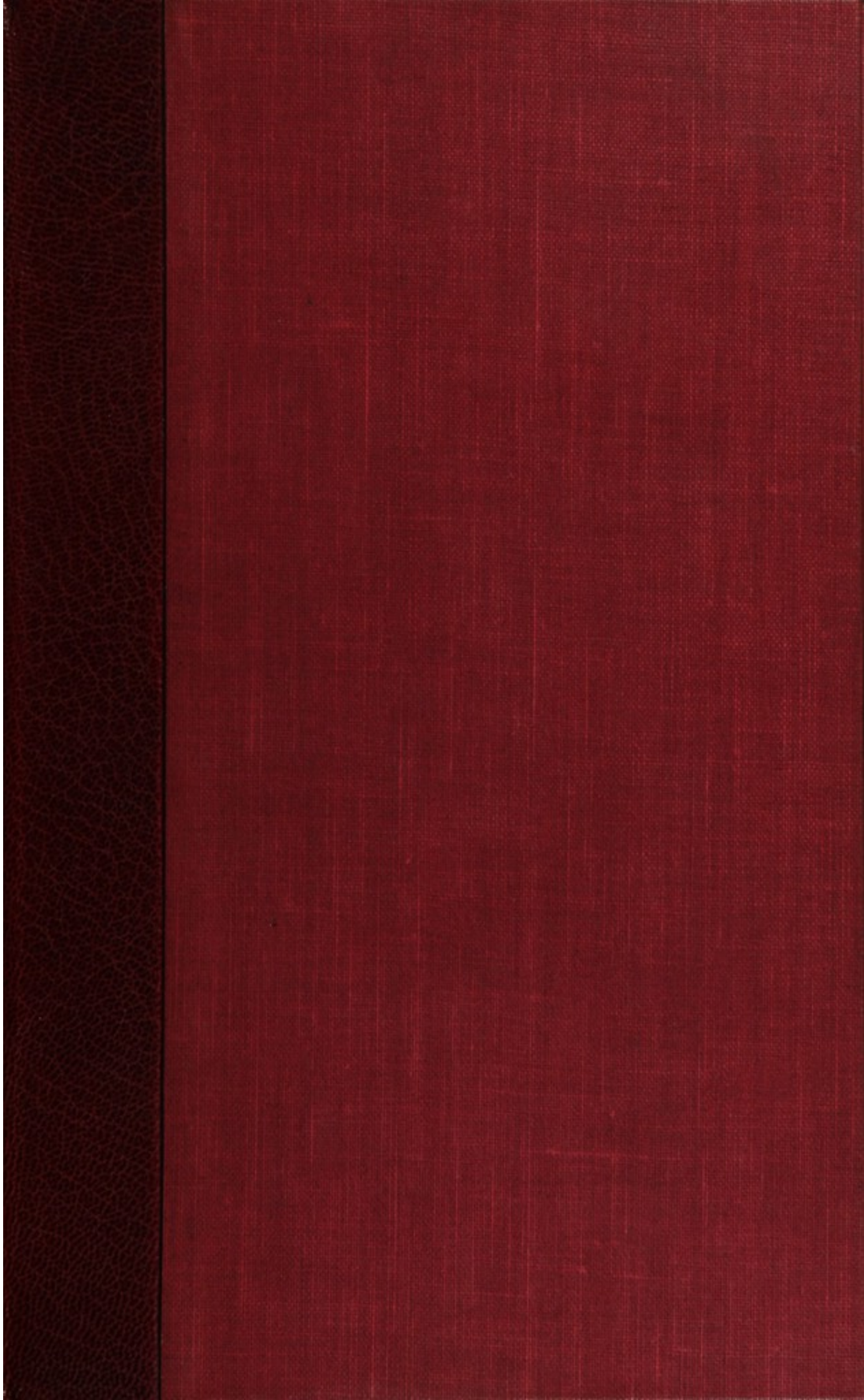
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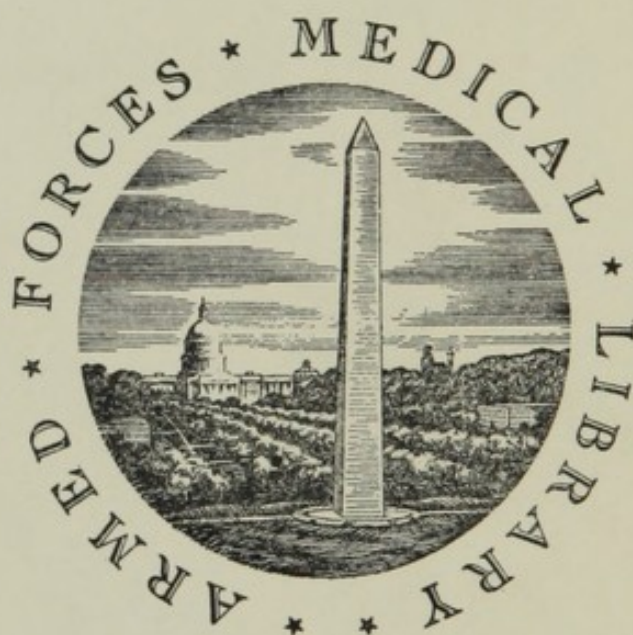
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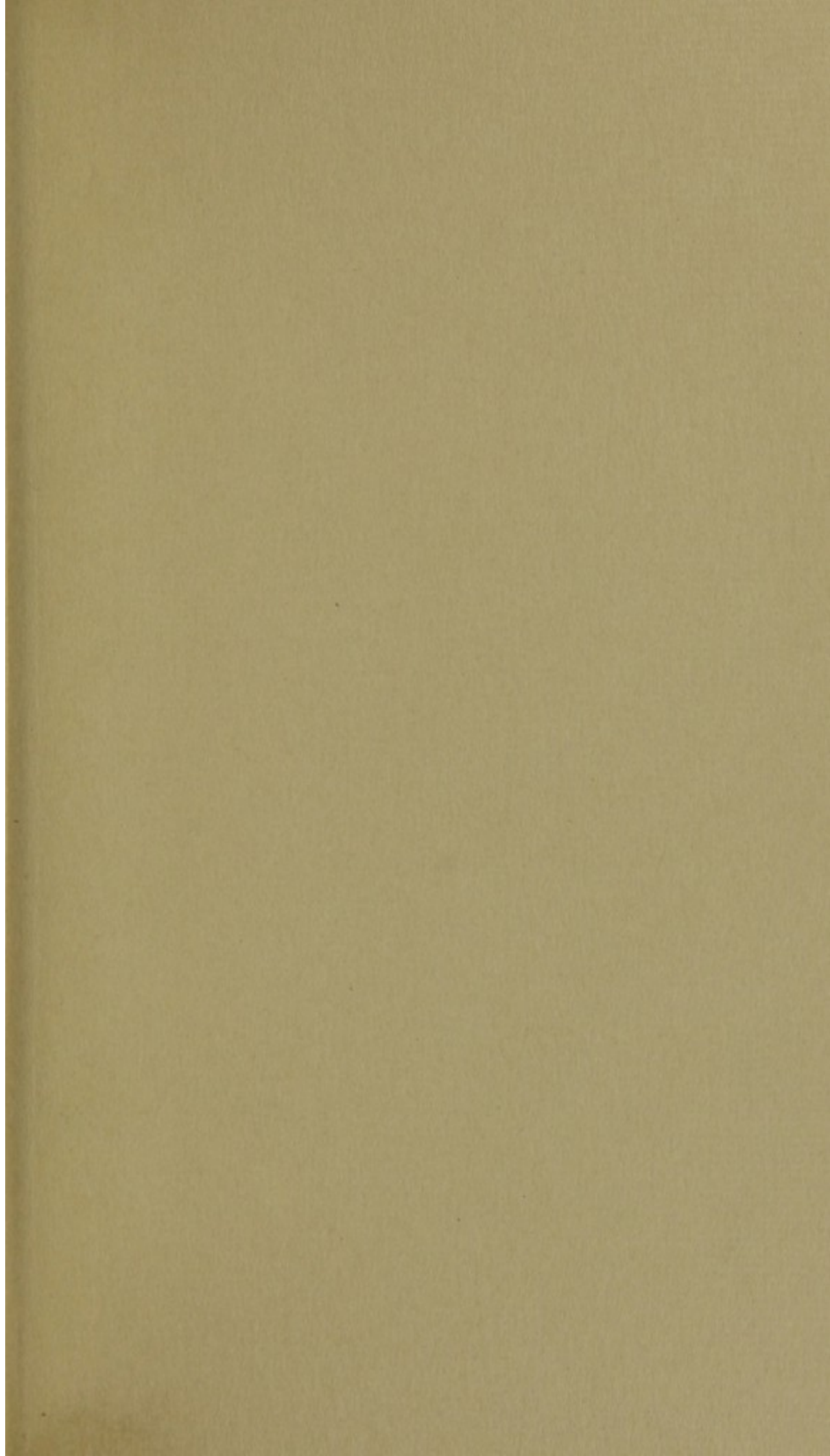


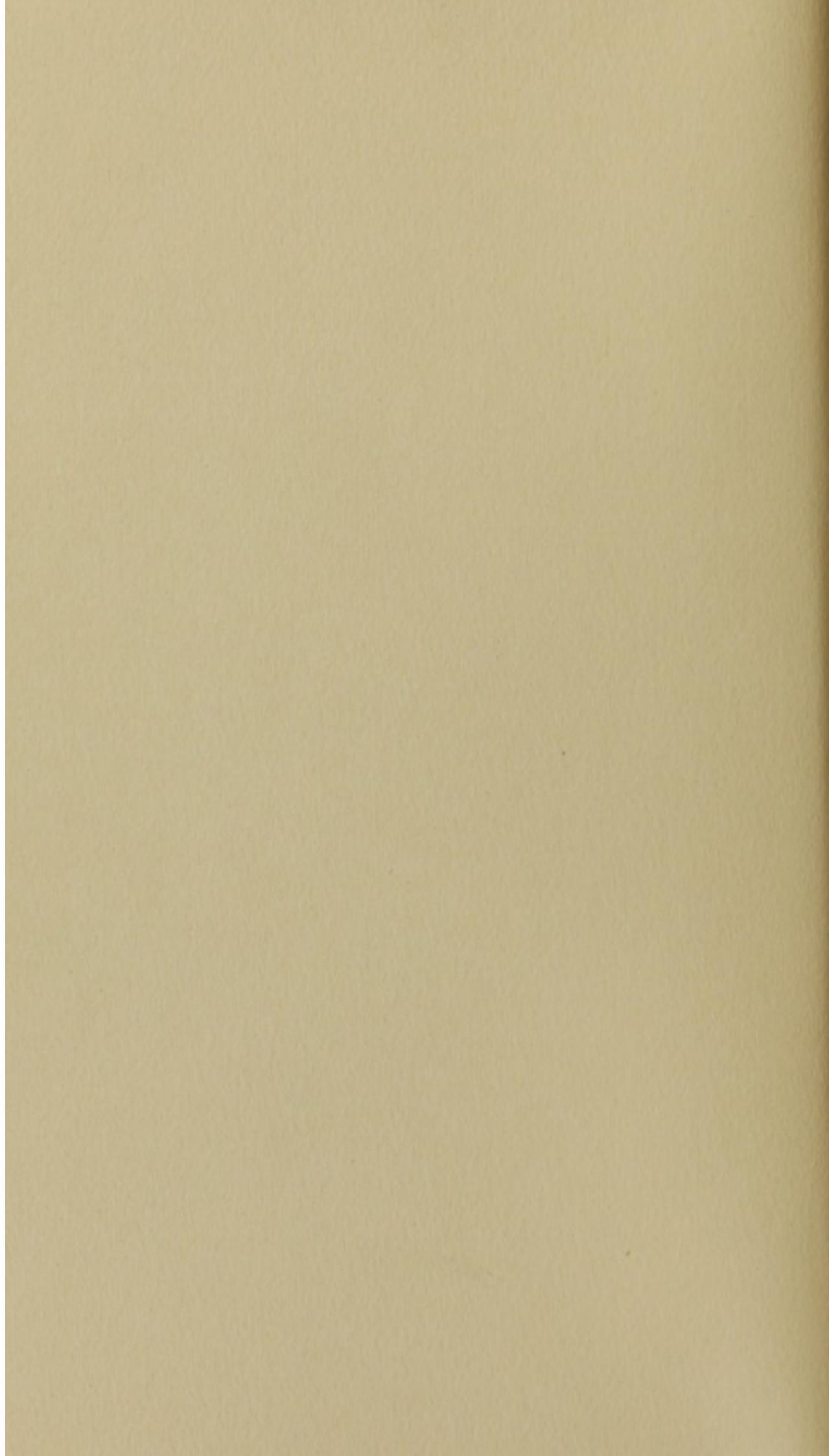
UNITED STATES OF AMERICA



FOUNDED 1836

WASHINGTON, D.C.





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on
Yellow Fever

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Pascal's Quinine (Feb'y)

MEDICO-CHYMICAL

DISSERTATIONS

ON THE

CAUSES OF THE EPIDEMIC CALLED

YELLOW FEVER;

AND ON THE

Best Antimonial Preparations

FOR THE

USE OF MEDICINE.

BY A PHYSICIAN, PRACTITIONER IN PHILADELPHIA.

PHILADELPHIA:

FROM THE PRESS OF SNOWDEN & M'CORKLE,

NO. 47, NORTH FOURTH-STREET.

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1796.



WINDSOR

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DISSERTATION

On the first prize-question proposed by the Medical Society of Connecticut, in the convention holden at Hartford, on the 14th of October, 1795.

“What are the chymical properties of the effluvia of contagion of the epidemic of New-York, in the year 1795; what its mode of operation on the human body; and does said epidemic differ from the usual fevers of this country except in degree?”

Nec tantos corpus sustinet æstus ferventesque auras.

Ovid. Met. lib. ii.

A Satisfactory answer to the above question would complete any investigation that could be pursued with regard to the epidemic which raged lately in some of the principal towns of the United States. A true and simple theory, by leading to the discovery of the best remedies both of nature and art, would, no doubt, be a treasure among our alarmed fellow citizens, and reflect an immortal honour on the learned society with whom the question first originated. There is certainly no fatality forbidding the expulsion of an infection which stifles the breath of life; because the capacity to acquire a sufficient knowledge of the laws of nature, is a gift bestowed upon us by the Supreme Ruler, to the end that we may derive from it all those blessings which it is susceptible of yielding. Let us therefore never cease to explore the phenomena and laws of nature; particularly in whatever has a direct tendency to the preservation of life, by removing the dangers which so often threaten it. If our attempt proves but imperfect, we will still deserve some ac-

knowledge for whatever we may say and write for the health and life of our fellow citizens.

I. There exists neither proofs nor any sort of objection against the opinion, that the fever in New-York, this last autumn, was the same which raged in Philadelphia during the summer and autumn of 1793, and at other periods, thro' several towns of the United States. We will, therefore, make no difference between the nature and the symptoms of this disease on the several occasions mentioned; since they are so generally known and remembered, that almost every one can sufficiently enumerate what were their cases and periods.

II. Whether this disease has been contagious and imported, or local only and epidemic, are questions which have been agitated by some of the most eminent physicians of this continent. The advocates of the first have plausibly supported their opinion by repeated reports of a similar disease raging in the West-India islands, with which there is a frequent intercourse. This opinion has dictated measures and precautions which are generally approved. But many others have thought that the malignant or yellow fever of these islands was the inflammatory typhus, but higher in degree, and aggravated by the wants, miseries, and fatigues inseparable from a state of warfare in tropical countries. They did not discover in it any contagious symptoms; and, by a variety of striking instances, they demonstrated, that persons of certain constitution, and such mode of living, were seldom or never subject to this disease. I have not the least intention to contradict either of these opinions. We think such a fever is epidemical, whilst its remote or primitive cause proceeds wholly from the state of the atmosphere; but that cause we will see afterwards acts as a contagion infecting the body with all the principles of its own putrefaction. Above all, I will remain within the limits of the proposed question, the only one which aims to a purpose immediately useful—to a real improvement of the medical art.

III. In order to give an answer as satisfactory as possible to the prize-question, we must strictly ascertain the general prognostic of the disease commonly called the *yellow fever*;

thence trace the disorder back through its diagnostics and symptoms to its primitive cause in which we will find many chymical phenomena.

IV. The certain prognostic of this disease is a complete decomposition of the whole mass of blood, which is effected in the course of six or seven days. So great a change in the fluid which is the only support of life, must necessarily produce diagnostics, and symptoms of a striking pathology; because, the blood being once in a state of putrefaction, infects all the system: then, like an heterogeneous matter, it may be rejected by the muscular forces, breaking open its own vessels; but if retained, it forms within the body many sources of mortification. Before we attempt to prove how the perfect combination of the substances constituting the blood may be destroyed, let us examine the certainty of our prognostic, 1st, By the analysis of symptoms peculiar to the malady: 2dly, By the accidents attending it: 3dly, By anatomical observations.

V. Symptoms of inflammation, spasm, and putridity, are more or less intense in every febrile disorder; but they always take place and are much determined by the quantity and quality of the morbid matter to be evacuated from the system, as well as by the different means which nature must employ, to produce such evacuation. Now, if we consider how alarming those symptoms are, in the *yellow fever*, we cannot help concluding they proceed both from the considerable quality of the morbid matter, and its deleterious quality; which consideration leads us to suppose, that the blood putrified, is, by itself, that morbid matter. Let us examine some of these symptoms, and what are the diagnostics caused by the putrid fermentation of the blood.

An extraordinary heaviness of the body, with redness of the eyes, are the obvious forerunners of the disease. The stomach seems generally sooner affected than any other viscera, by convulsions, anxiety, and a painful pressure. Vomiting of a great quantity of bile, is the next effect among many individuals. A dull pain of the loins, of the articulations of the limbs, and a very strong head ache, precede

some remitting paroxysms of fever ; then, the pain changes its seat from the limbs, into the nape of the neck, scapulæ, and along the spine. Such must be the necessary symptoms of an obstructed circulation. The second or third day symptoms of putrefaction are observable, with inflammation of some viscera and obstructions of others : still more distressing cases must take place, whether the horrid black vomiting and an obstinate dysentery, or eruptions of *exanthems* of different sort upon the body, while the cessation of both internal and external secretions take place, and seldom yield to the most powerful medicines. Thence the suffusion of a deadly pale colour spreads from the neck and breast all over the body, which, two or three days before death, exhales its effluvia of putrefaction. During these rapid periods, the fauces are foetid, the tongue is successively dry, very red in its edges, and crusted with yellow or black, in the middle : the pulse has been mostly tense, hard, depressed, convulsive, and sensibly reduced to the thinnest capacity and greatest weakness. Through all these dreadful diagnostics, the best indications are hardly answered to but with some other dangerous effects. If by diluting and acidulous draughts we try to appease the burning heat of the alimentary channel and precordia, we surely increase the weakness of the patient. Let us by repeated bleedings give more freedom to the circulation, and we perhaps pour off the only remaining part of the blood which is yet not contaminated. Let us prescribe antiseptics of various kinds, and perhaps we add many degrees more of irritation to some existing inflammation : such is the distressing march of that disease which every observing practitioner must have recognized, with all its symptoms, during its rapid periods.

VI. Such havock in the frame cannot proceed but from a certain quantity of blood, which, being decomposed, becomes, in the arterial system, like a morbid, irritating, infecting, and heterogeneous matter. It could be discharged by the operating power of fever, through many excretory organs ; but its specific quantity, gradually increased, over-

comes the muscular and nervous force, hence arise the spasms, inflammation, obstructions and inward mortifications, and so many obstacles to its evacuation. If the putrified blood could find out issues and vessels broken, how could we suspend an hemorrhagy as soon as it would prove fatal? Do we not know that in such cases it is poured off, to the last drop, and that the black vomiting mostly terminates in death?

VII. Is not the yellow colour which suffuses itself all over the body, a few days before death, a strong confirmation of our opinion? If the icterus or a preternatural suffusion of bile, through the whole mass of blood, were its only cause, why would we discover so many obstructions or inflammations all along the alimentary channel? Why should not that icterus be manifested in the first period of the malady, with all its peculiar symptoms of an itching sensation in the skin, and the extreme yellowness of the blood? Why would laxant and aperient medicines be inefficacious to relieve that icterus? Why would it be accompanied with so many symptoms of putrefaction, and vomiting of a black, acrid and corroding substance? Would the icterus, in fine, be but irregular and partial, attended with *aphths*, ulcerations in the fauces, and many scorbutic appearances in the mouth? We must, therefore, conclude, that the yellowness in that fever is another proof of the decomposition of the blood, as it proceeds only from the capillary vessels which do not contain any more red particles, and are filled up with a yellowish serum.

VIII. Many anatomical observations were made in the hospital of Bush-hill, of Philadelphia, during the epidemic of 1793. They add numerous proofs to the general prognostic of the decomposition of the blood. There was found within the arterial system, only black and fetid blood, mostly rejected, in great quantities, through the cavities of several viscera, which were often mortified, detached, and floating in that corrupted matter. The heart contained nothing, and was of a pale colour, of a flabby consistency and as if it had been washed. Some blood was frequently found

in the vena cava, but it was always in white or red brown clots*, &c.

IX. We know, from the best physiologists, that draining the blood of its aqueous particles, must alter and enticken its fluidity, and render it unfit for the different animal functions. We know also, that an uncommon heat of the atmosphere, as well as many internally heating causes, would contribute very much in reducing the blood and humour, to a state to which we may ascribe several autumnal fevers, even many malignant, anomalous, putrid, and epidemic diseases. In the present question it will be of the utmost satisfaction to demonstrate a striking concordance between the results of the new chymistry, and the documents or observations of the most celebrated physicians.

X. Decomposition supposes the disengagement of one or many constituent elements of a body from the equilibrium of their own affinities, by which they were united. As soon as that equilibrium ceases they come into new or binding combinations, which change entirely in their character, powers, and different modifications. The decomposition of animal and vegetable substances is extremely complicated, and never takes place but by fermentation, which, in its peculiar definition, is a *putrefactive* one. Therefore, in this subject we will ascertain the decomposition of the blood to be nothing else, but its putrefaction; since for animal and vegetable substances, it is the same either to be decomposed or reduced to putrefaction. To explain accurately all the laws and results of that phenomenon, we should want a numerical precision hardly possible to be ascertained, so we cannot proceed but from all the general observations upon the dissolution of our bodies, and upon their substances and principles entering into various combinations after they had united for our life and existence.

XI. To discover what might be the cause of the decomposition of our blood, in the *yellow fever*, we must not dwell

* Vide an Enquiry into, and observations upon, the causes and effects of the epidemic disease of Philadelphia, by J. Deveze, 1793.

on any particular view or system. For instance, many people might say that a contagious *miasma* whether imported or locally produced, when it is introduced into the blood, might cause a putrefaction. We know that there are some proofs of such a dreadful effect, and we are acquainted with the deleterious qualities of mephitic air. There are, no doubt, some other causes which destroy the equilibrium of our component parts. There are, in fact, chymical phenomena, which may arise in a town or neighbourhood where there are pestilential effluvia; but there is not sufficient ground to admit this theory in the present case, because we are very little acquainted with the nature of a contagious *miasma*, which, like the present, seems not more confined to one place than another; which is the same in maritime towns and in those remote from the sea coasts; which can be accounted for in airy and dry situations as well as in confined and marshy ones; which also would have been the same on board of vessels and among seamen, as in the West-India islands, within the tropics, and in the continent of North-America. Whenever the principles upon which an opinion ought to be established are wanting or contradictory, we must proceed to a theory which may be better supported; and so, in the present instance, we shall be obliged to do, there being so little probability, and such contradiction, that the introduction of different sorts of effluvia into the blood, has been the very cause of the same disease.

XII. There is another ground of conjecture to be examined. Could not the bile cause the decomposition of the blood, by its deleterious nature, as it mixes with itself by an internal secretion, to the chyle, and as from its reservoirs, it may be also absorbed into the blood? Some chymical experiments performed on that animal fluid, have shewn that its serum is highly putrid, and that its principles ever produce a strong fermentation. All physiologists are unanimously aware, that the fruits, the heat of the summer, and the autumnal dampness, concur in corrupting the bile which afterwards causes several putrid, malignant, and

intermitting fevers. We would rather wish for sufficient proofs to support even such a doubt ; for, how does the bile contaminate and decompose the blood, while it is an immediate secretion from the blood, receiving from it its component parts, and while it can, by the bare force of the system, be elaborated, purified, or at last determined to its evacuation ? Hence any spontaneous evacuation of bile, succeeding in the *yellow fever*, is a mere proof of the corruption of that animal fluid, rejected by the muscular forces of its reservoirs. But if it is evacuated, it does not infect the system ; therefore we must again explode a supposition for which we can hardly find out one peremptory demonstration.

XIII. Having arrived at that natural conclusion which explodes any hypothetical system, we are naturally directed to make a logical enquiry into the general laws and phenomena of the decomposition of animal substances, in order to discover the causes of the putrefaction of the blood. If we can treat this question *a priori*, by a regular explanation, we must, of course, find out, some useful observations and arguments *a posteriori*.

XIV. Phenomena lately observed in the putrefaction of animal and vegetable substances, indicated that water was the first and only agent by which they could undergo their alteration and decomposition. Whatever we shall be able to ascertain on that subject will be derived from the principles of the new chymistry, the astonishing and successful investigations of which continue to take the place more and more of the old and customary prejudices. It is ascertained, that if water is deficient or superabundant in the animal substances, beyond any necessary proportion, in both cases it must have a great influence upon the composing parts, to change their order and equilibrium, as well as to introduce some other combinations which are the real cessation of the first. The same result must take place whenever the water of animal substances, is, by some agent, reduced to a different state from what it should be : for instance, if, instead of being a fluid, it becomes ice or gas, either form would merely invert the affinities and equilibrium, which are fit and predisposed only for its fluid state.

XV. I interrupt this analysis to observe, that we need not enumerate all the component parts of the blood, because it would be superfluous to know in what order and with what precision they disunite, and what combinations thence take place. It is sufficient to observe, that the blood contains for its fluidity a great quantity of water, together with all those principles composing animal substances, chiefly the carbon, the azot, the phosphor and sulphur, the iron, &c. ; that it receives its caloric from the atmospheric air, which is absorbed by respiration ; and that it is not only renewed by the general laws of secretions, but by the mechanism of respiration in the cavities of the lungs, where it disengages its carbon and hydrogen.

XVI. The new chymistry has perfectly discovered the analysis as well as the synthesis of water. Its component parts are the oxygen or vital air united to the hydrogen saturated with more or less caloric from ice, to such a degree of the caloric, as is sufficient to make an aqueous gas. Thus 85 parts of vital air, being united to 15 of hydrogen, give precisely 100 parts of pure water. It must be observed, that this union cannot be made but by the means of an electrical commotion. This result has been accurately obtained by experiments, and with such precision, that it cannot be involved in any further doubt.*

XVII. The caloric is a substance which penetrates thro' the pores of all bodies, disunites their molecules by separating them from each other, and diminishes their own attraction. It consequently must dilate and melt their solids, rarify the fluids enough to render them invisible elastics, compressible and uniform. Thus all liquids are combinations of solids more or less saturated with the caloric ; and the gazes are mere dissolutions of the different bodies in the caloric, which is the most divisible, the lightest, and most elastic of the known substances. As the power, however, of the caloric would prove unlimited, nor would it keep any proportion in its action, but that resulting from its

* Vide Lavoisier's Chymistry.

quantity, and, consequently, would necessarily disorder every thing in creation, the chymists have happily discovered and explained, that the pressure of the atmosphere settles by itself a necessary equilibrium between the dilating effect of the caloric, and the very attraction between the particles of a body, so that it cannot dilate the substances but to a certain degree.

XVIII. Let us take an abridged idea of the general phenomena of the putrefaction of animal substances, which are hitherto but imperfectly understood. They are composed of hydrogen, carbon, azot, phosphorus, and sulphur, which are all in a state of combination, whether solid or fluid. Were they deprived of their motion and of that uninterrupted renewing which constitutes life, they would directly reduce their attractions to more simple combinations, and thence produce binary ones, such as the carbonic acid, the nitric acid, the ammoniac, the hydrogen gas, &c. which when disengaged proportionally lessen the mass of animal substances. The hydrogen and the azot, give the ammoniac, which is the most abundant source of putrefaction, and is soon discovered by an insupportable fœtor. The carbon and the oxygen form the carbonic acid; whilst the same oxygen, with the azot, produce the nitric acid. Moreover the carbon, the sulphur, and the phosphore, may be found dissolved in a certain quantity of hydrogen gas. Hence the diversity of infection and the *phosphorescence* of all animal substances when in a state of putrefaction. If several other modifications are observed, they are, no doubt, owing to many external circumstances, such as the temperature of the atmosphere, and the different degrees of its moisture.

XIX. Among all the invariable laws of nature, let us now take notice of that only which is sufficient to suspend and change the affinities of the substance composing the blood: viz. the absorption of its aqueous particles by the caloric of the atmosphere, or the formation of an aqueous gas, derived from it, by the power of such agent.

XX. As soon as water has acquired 80 degrees of caloric (Reamur's Th.) it becomes an elastic vapour which oc-

cupies a more extensive space. By its specifical lightness it disengages itself from all bodies, and to find its equilibrium it can break open and remove the greatest obstacles. Thus it is obvious how the remaining substances of an animal fluid are in state of decomposition, having lost the essential proportion in which they were combined.

XXI. When such phenomenon happens in the body, an abundant perspiration transudes from all its parts and chiefly from the breast. If the aqueous gas is transmitted in the cavities of the lungs, its oxygen unites with the carbon, and this combination is the carbonic acid which is so manifestly present in the breath. Whilst the aqueous gas is disengaged from some other organs, its hydrogen must unite to the azot, their affinities being very great, and give the ammoniac which every body knows to be abundant in the sweat and urine. Several other combinations must take place, as soon as the general proportion of water is lost. The oxygen and the azot, give the nitric acid. The sulphur, the phosphorus, the phosphate of sulphur, and soda, all of which are abundant in the animal substances, may have their own combination, and make of the body an abundant source of ammoniacal, alkaline, nitric, contagious, and infecting effluvia.

XXII. It may be said, indeed, that such phenomenon, being the cause of the putrefaction of the blood, and therefore of the yellow fever, must be fatal to any individual unfortunately taken with it; but if we may judge by experience, we have consoling hope that good care and attendance may prove efficacious to one half of those infected with it.

This objection will surely be removed from the minds of those who will recollect what we have said above, of a decomposition that cannot be made but gradually, and as a sufficient quantity of the acting substance is added. Thus it is observed in any chymical process in which a precipitation cannot be complete, but when the saturation is really pursued to the minutest proportion: thus, heat absorbs so much of the aqueous gas from the body; not all at once, but in a

sufficient interval of time, and with a proportional addition of the caloric. Now, if before the fatal decomposition is wholly effected, the patient is timely assisted by art and nature, and if he receives a sufficient supply of aqueous fluid to repair the losses he has sustained by the caloric, and to evacuate whatever substance the decomposition has rendered infecting and heterogeneous, then we entertain the strongest hope that the patient may, and can recover, and experience has proved it.

XXIII. Another objection is derived from the heat of the atmosphere. It would indeed produce a similar decomposition of the blood, and the same fever every where, and when the caloric is raised higher in degree than it has been in New-York or Philadelphia. Yet we know that the natives of all tropical countries in both hemispheres may live as healthy and as long as the Europeans. This appears the strongest objection against our theory; but, by the principles of our chymistry, is as easily removed as the former. The loss of the aqueous fluid absorbed by the caloric is less dangerous under the line, because the animal substances are there more aqueous, and acquire less of those particles which fermentate and produce a plethoric habit. There the continual heat of the atmosphere cannot exhaust the blood, because it contains much more water. We see, in fact, that the people of those warm countries are not strong, plethoric, nor endowed with the same corpulent constitution as those of the northern. They are rather weak, and of a pale complexion. Europeans who settle among them become very soon of a similar habit; so much is the aforesaid constitution of the body absolutely that of the inhabitants within the tropics. It protects them, however, against the burning heat of their climate, and preserves them from that putrid fermentation which the caloric, in our countries, may easily produce, with all its fatal consequences.

XXIV. Our theory of the blood forming a manifold combination, to which the addition of caloric is dangerous, inasmuch as that fluid is saturated with animal substances, is confirmed by the mode of living in the eastern states.

Their excellent pasturage, so well calculated for raising cattle, furnish them with a plentiful supply of animal food, which, in many parts, is their chief subsistence. They mostly have the same in the winter, as well as during the summer. Seldom do they use that variety and refinement of cookery which affords more sensuality than nourishment. Their drink contributes equally to the drying of the animal fluids, being mostly of a spirituous nature; and even their wines contain a great quantity of alcohol.—Who is ignorant that the alcohol dissipates the aqueous particles still more than the heat of the atmosphere!

The observation may be brought forward in support of our assertion. Many foreigners, mostly French, who during these three years of war, took shelter in the United States, and whose mode of living is much more upon vegetables and French wine, did not appear very much subject to the raging epidemic, though most of them, and chiefly those from the West-India islands, are remarked to be of a weaker and thinner constitution and habit.

XXV. In those towns and countries where the *yellow fever* raged, it has been remarked, that the disease always happened to be violent in proportion as the atmosphere became dryer and warmer; and stopped, at length, when the season so far advanced as to bring cool and refreshing air.

XXVI. Hitherto we have suggested the true principles for some preventives against so fatal a disease. We may now settle the general indications, both for practical cautions against it, and for the method of treatment. We hope that our observations will be adequate to the above theory as well as to the results of experience.

PRACTICAL CAUTIONS.

WHATEVER may be our theory of the caloric which, excludes every idea of a contagious disorder, we must not disapprove of the means employed by the public authorities, though they are frequently founded on the principle of an imported disorder. No cautions should be spared

when the health and lives of the citizens are in danger ; but among these measures none could be of more direct utility than the cleaning and washing our houses, streets, and footways. Still more might be done in this respect if running streams could be brought on a level within our towns, in order to supply them with water without much trouble or expense ; for pumps cannot give conveniently water enough but for private wants. Thus the highest degree of heat in a damp atmosphere, would have little power on our bodies, because the caloric would be already saturated by much terrestrial water. Thus, would the inhabitants be provided with an artificial moisture whenever a hot season would threaten them with its fatal effects. For, let us not readily believe, that towns lying upon large rivers are sufficiently supplied by such a moisture ; since the evaporation of their waters is inconsiderable, the rays of the sun having little power on deep waters, and the currents of air carrying off the evaporated particles without obstacle. For this reason it has never been perceived that the nearest proximity of a river would produce the least moisture. To this general caution we would add particular ones, which will afford the greatest advantage. The approach of summer ought to prescribe such a mode of living as is most proper to render the blood sufficiently aqueous. This effect will result from the daily use of ripe fruits, and of those vegetables which art and taste may introduce upon our tables ; for there are immense quantities of greens and seeds, which, in many other countries, afford a sufficient nourishment, and do not require much seasoning, to make them both wholesome and agreeable. Let us mention another caution, which is too little observed in the United States, and which will contribute more than any thing else to procure fluidity enough in the humour, to prevent any putrid fermentation : I mean the very moderate use of spirituous liquors. Chymistry proves that the alcohol has a very great affinity with water, and has a strong tendency to waste and dissipate all watery particles. Spirituous liquors, therefore, of any kind, have

a tendency to excite that uncommon thirst and rigidity which are so often observed among people addicted to them. They produce a constant dryness in the alimentary channel; by long use they cause a decomposition of the blood, and a certain disposition to the putrid fermentation of the animal fluids; and, at length, those fatal diseases which await the drunkard as his just and certain punishment.

However, notwithstanding all these general cautions, the best means to prevent any putrid, malignant, and inflammatory fever is, the frequent use of warm baths. Let the objection of their enweakening the system, be of but little moment; since we can perfectly ascertain, that they debilitate but to a certain degree by being too repeatedly used. One may be sufficiently prepared against a temporary weakness by such a diet, and such internal draughts and medicines, as have a strengthening effect. Any degree of weakness resulting from warm baths is more spoken of than is real; for those who are accustomed to them, will declare that they even derive from them a much greater activity and suppleness in their limbs. But how trifling is the inconvenience of a slight relaxation in the habit, when we consider the great quantity of aqueous particles that a warm bath may transmit into the system, by opening the pores, and which remove all danger of putrid fermentation! A warm bath gives more freedom to the circulation, and as much fluidity to the humours as the perfect harmony of all the functions require. We may frequently apply strengthening medicines to encrease the energy of circulation; but perhaps we only produce rigidity of the fibres, whilst a warm bath gives that softness and elasticity which are like another soul to an organized body. Many think that cold baths would better answer the purpose of giving refreshment and moisture. But how? A cold fluid has an astringent power, it shuts entirely the pores, and leaves nothing to be taken by absorption. Hence it follows, that the warmer the atmosphere, the more we should avoid its contacts with cold water.

The last and necessary advice to prevent efficaciously any disposition to the epidemic, is, to keep the strength of the

body from being continually exhausted by the caloric and by profuse sweats. The people of the French West-India islands, use, for this purpose, claret wine, which they drink mixed with water. Wines are astringent and carminatives; and, the use of them, unless they are adulterated with too much brandy, has a very good effect during the heat of summer. To these measures, let us invite our fellow-citizens to add those which are particularly necessary to each constitution of body. During the season in which this fatal disease generally makes its appearance, every precaution should be taken to preserve the health in a pure and uniform state, and to remove such previous complaints as may give rise to a fever. Great care should be taken to make use of light purging medicines, taken in a liquid form, and never to suffer any crudities to remain in the first passages; they are easily discovered by a head-ache, by an impure breathing, and by the want of appetite.

Such are the best indications we can derive from the above theory; and which will be judged, no doubt, conformably to the general results of experience. We shall retrace them again by recapitulation in three different points; 1st. To preserve the fluidity and aqueous particles of the blood; 2dly. To prevent its putrid fermentation; 3dly. To keep the bodily strength and natural vigour*.

* I have said, in § II. that the yellow fever is an epidemical disease by its cause, and that it acts afterwards as a contagion. This doctrine tends to unite all those contradictory opinions and controversies so often repeated on this subject. Indeed, the theory of the caloric reconciles them; because the idea of a contagion, that is to say, of a noxious substance admitted into the body, which embroils the affinities of our animal substances, is very congenial to a state which deprives them of one or many of their component principles. In both cases there is a real disorder of affinities; a morbid matter resulting from the decomposition; and there are effluvia of a putrid fermentation. Now, as it is so universally reckoned that gasses produced by animal fermentation are contagious, I have not the least doubt, that in the case of the yellow fever, in which the blood decomposes itself, it will be dangerous to be exposed to the contact of its infecting and foetid effluvia. No doubt,

METHOD OF CURE.

HYPOCRATES, Sydenham, Boerhaave, and all eminent physicians recommend considering, that the more rapid the course and periods of an epidemic are, the more we should apply to a prudent method, and mild operations of medicines. Indeed, among the most violent crises of nature, why should we expose them to a greater irritation, and contradict their happy or natural resolution? This rule ought to have appeared still more necessary in the treatment of the American epidemic. We could ask all experienced practitioners, whether they did not find themselves frequently disappointed in their expectations and physiological rules, whilst nothing in their hands was found to prevent most terrible and unexpected accidents? The instant of seeming good health was distant but a few minutes from death. We have seen the *horripilatio* of a first paroxysm of fever, centering all the vital warmth in the breast, and suddenly stifling the breath of life. We have seen, that, by a high state of the first fermentation of the blood, large vessels have been broken to cause a fatal hemorrhagy before the second period of the malady. We have seen putrid and horrid *cynanches* suffocating the patient, without any means to stop the inflammation and open the deglutition. We have seen weak and thin persons taken with some uneasiness, complaining during a few moments, and dying without the smallest fit of fever. We have seen epileptical paroxysms of an alarming nature, shaking, suspending, and dis-

they will sooner determine an animal fermentation in the contaminated bodies, which are also under the atmospheric action of a dry heat, and of the saturating caloric, according to the aforesaid laws and affinities. In fact, have we not seen many of the nurses and relations of our patients, who had neglected the necessary cautions, taken with this *contagious epidemic*, while those who had been more prudent, escaped its baneful effects? It would be, therefore, highly imprudent, and contrary to our theory, not to admit all those measures which are practical in any sort of contagion.

turbing all animal functions, before any symptom of the epidemic could break out. We have seen, at last, terrible and most unexpected accidents, provoked either by the first operation of the disease, or by particular circumstances in the persons who were taken. A reflection we are also compelled to remember is, that if, among the general havoc of the disease, we have reckoned any instances of a happy cure, we could not always ascribe them to our care and attention, since they often proved unsuccessful in the cases of many others, and we cannot boast of them, only as pointing out the best disposition of the patient, and also a less degree of this infecting disorder.

Were it not for such considerations we could firmly depend upon our indications and theory, which we will propose, however, with the confidence of an experienced success. We will avoid tracing any specific method whatever, which, in many circumstances, ought to be altered to receive necessary modifications.

The first indication in the treatment of the yellow fever requires us to restore to the blood, and to all the animal fluids, as many aqueous particles as they have lost by the caloric; afterwards we must procure efficacious evacuation of any heterogeneous matter, resulting from the decomposition of the blood; it is, in fine, the peculiar task of the physician, to oppose sufficient remedies to the unavoidable diagnostics, as to the irritation and spasm, to the inflammation of viscera, to vomiting and convulsions, &c. according to all the rules of the clinical art.

The first indication demands a prescription of copious draughts of a diluting, cooling, acidulous nature, such as barley and gruel waters, chicken or veal broths, and milk-whey. But as these liquids have but a slow effect in a disorder which is so rapid in its fatal periods, while they annihilate the tonic power of the intestinal channel, and of the præcordia, we recommend one or two warm baths as a previous measure to be timely administered, before the progress of alarming symptoms prevail. We have had the most happy effects from this prescription. It very soon afforded to the blood

the most beneficial moisture, abated its fermentation, opened the pores, and transmitted into it as much water as that animal fluid seemed want, and very soon helped the frame in producing a gentle evacuation of the impurities of its decomposition. If, according to what we have said above, some relaxing effect of the nervous system is to be feared, let us fortify the patient by some spirituous, aromatic and cordial medicines. That relaxation in another respect is useful, because it is diametrically opposed to such spasms, irritations and inflammations as the disease is continually marked with. Venesection, proportioned to the violence of the symptoms, and to the strength of the patient, ought to be ordered before taking the warm bath, in which the patient should stay no longer than one hour, and no less than a quarter of an hour.

The second indication, which requires repeated evacuations of the morbid matter, resulting from the decomposition of the blood, ought to be active and efficacious to prevent the rapid progress either of the inflammation or putridity. Any fixed internal pain, dullness of the pulse, pressure of the breast and stomach, therefore, demand repeated bleedings*. If the patient is of a weak habit of body, or of an excessive fatness, still it is better not to omit the bleeding, having recourse immediately after to strong epispastics, to raise the force of circulation. All these measures being well managed with diluting and tonic draughts, there will be room and occasion to administer repeated cathartics, and even drastic medicines in a liquid form, en-

* I am not acquainted with any new physiological system upon blood letting in acute diseases. The above recommendation is derived entirely from our system. Whenever the blood is in a state of putrid fermentation, we oppose its progress by diminishing the mass and the quantity of that animal fluid. This indication, however, has its limits; whenever regular evacuations, whether by sweat or other secretions, begin to be settled, it is very momentous to preserve the remaining organical forces. Happy those who arrive at that period, without having been prompted to the absolute annihilation of that last share of organical life and circulation, without which no diseases are cured, nor health recovered!

deavouring, however, to have them mixed with powerful solvents and some tonics. It remains with the physician to judge of the necessity of repeating them, and whatever modification they may require. We must add something on antiseptic medicines, which been too much used during the yellow fever in Philadelphia. Their power is undoubtedly efficacious, whenever the source of putridity lies in the alimentary channel or in the reservoirs of the bile; but surely they are of no use when the principle of the putridity originates in the system, and when the blood is in a state of decomposition. Then, the antiseptics irritate by their acrimony, and debilitate by their penetrating volatile principles. As they cannot act against the immediate cause of a putrid fermentation, they neutralize some of the decomposed substance, and remain not only useless, but become injurious, by annihilating the animal vigour. The camphor, chiefly, has a strong tendency to produce this effect. No one can make use of it with impunity; since it becomes really an anti-phrodisiac amulet*. Let us remember that any thing which diminishes or destroys the usual strength, becomes fatal during the time and course of an epidemic.

We shall not terminate this article without noticing the method of treatment used by Dr. Rush, of Philadelphia†. He recommends a drastic dose of 15 grains of jalap, and 10 grains of calomel, to be taken every six hours, with diluting and copious draughts of barley water. Repeated bleedings, *according to the constitution of the patient*, were added to complete the treatment. This method has frequently been successful; and there were many who happily recovered by it. The doctor, we must observe, answered two urging indications: he diminished the mass of the blood, which was the origin of the putrefaction; his drastics, made very solvent by the calomel, were, in a second view, well adapted to produce powerful evacuations of the morbid mat-

* *Camphora per nares castrat odore mares.*

† Vide "An account of the bilious remitting yellow fever, &c. by Benjamin Rush, M. D. — Philadelphia 1794."

ter resulting from the putrid fermentation of the animal fluids. Much has been said against this method, which presents a violent course of operations, many dangers of inflammation, and the inconveniencies of salivation and the dissolution of humours; but these are not to be feared, while they are managed and directed with such modifications as are expected from an attending physician. We must besides remark, that the indications which we observe in this method of treatment, coincide with those we have proposed, and would remain without any objection whenever practised with proper measures to restore to the blood the aqueous particles absorbed by the caloric.

CONCLUSION.

THE answer to the prize-question is, consequently, that "the chymical properties of the effluvia or *principles* of the epidemic of New-York, which raged also through several towns of the United States," are those of the abundant heat, or excessive caloric of the atmosphere; that this caloric operates on the human body, by saturating itself with all the aqueous particles of the blood, until it reduces it to its putrid fermentation. It results also, from this theory, that the yellow fever differs entirely from the bilious intermitting of this country, which is owing only to the alteration or putrefaction of the bile.

At the adjourned convention of the Medical Society of the
state of Connecticut, holden at Hartford, on the 17th
day of May, 1796,

RESOLVED, *That the thanks of this society be presented to Doctor FELIX PASCALIS OUVIERE, D. D. and M. D. of Philadelphia, for his ingenious answer to the first prize-question " On the chymical properties of the effluvia or contagion of the epidemic that raged in New-York, in the autumn of 1795 ; its mode of operation on the human body ; and its difference from the usual autumnal fevers of this country."*

DANIEL SHELDON, Sec'ry.

Litchfield, May 23, 1796.

DISSERTATION

ON THE

Best Antimonial Preparations

FOR THE

USE of MEDICINE.

DISSEMINATION

ON

THE NATIONAL LIBRARY

FOR THE

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DISSERTATION

On antimonial preparations which best answer the different indications in fevers, and on the necessary modes of their exhibition. Proposed as a prize-question by the Medical Society of Connecticut, the 14th of October, 1794.

DIVES OPIS NATURA SUÆ. Hor. Sat. 1.

TO the learned medical societies we are indebted for most of the improvements which have been made in the healing art. By uniting the experiments and observations of different persons, they have transmitted from age to age whatever may contribute to the preservation of the human race. Thus each generation is enriched with a treasure that had been unknown to the preceding one; and while every thing, both in the social and political order, even in spite of the wisdom of legislators, is liable to changes and vicissitudes, it is to be remarked, that they are fit for improvement, and become useful under the influence and transactions of learned men.

Every one knows how astonishing and beneficial have been the discoveries in the healing art under the influence of the medical societies of London, Edinburgh, Paris, and several others, during this last century. They have furnished more real assistance to mankind, than has been done by individuals since the days of Hippocrates.

But, to insist on the benefits resulting from the transactions of the learned societies of Europe, is to prepare an homage to those of America. If we may judge of the important services which the latter will hereafter render to humanity from the progress they have made during these last years, and from the respectable rank which United States

have already obtained among nations, we may reasonably conclude, that the learned societies of the new world may one day rival all the academies of Europe.

I. Antimony (*Stibium*) is a semi-metal, of a grey bluish colour, composed of an assemblage of spires or plates adhering to each other. It was known to the ancients, who used it only in external applications.

II. In its primitive state antimony is usually combined with sulphur, sometimes with iron or lead, and a small portion of arsenic, or finally with some alkaline vapours. With these different principles it affects various colours and crystallizations; whence the modern naturalists distinguish five different sorts of crude or primitive antimony.

III. About the time of Paracelsus, the alchymists and physicians discovered that antimony had a very sensible effect on the stomach, and was a strong emetic and purgative. They accordingly prescribed it internally, and, as they tried it chiefly on monks, and the experiments proved very fatal, the metallic substance obtained the name of *anti-moine*, (antimony.)

IV. The first chymical operations that were tried on antimony, always divested it of all heterogeneous matters, in order to restore it to a certain proportion of its principle, with one-third of its weight of sulphur, and one-hundredth of arsenic.

In this second state it is distinguished from the first by the name of *regulus of antimony*. This is seldom found native. Some of it, however, was found in Sweden by Mr. Antoine Shwab, and some has been seen in France, having all the qualities of that which is extracted from its ore.

V. It is useless to develop all the chymical operations to which the regulus of antimony may be subject, or the numerous results of such operations. A list of the principal known forms and operations, according to the celebrated Lavoisier, must suffice to point out such as are admitted into the *Materia Medica*, among which we will afterwards distinguish those that must resolve the question proposed by the Medical Society of Connecticut.

Ancient names.	Modern names.
Liver of antimony, - - -	{ <i>Antimoniated alkaline sulphuret.</i>
Saffron of metals, - - -	{ <i>Semivitrified sulphur oxyd of antimony.</i>
Diaphoretic antimony, - - -	{ <i>White oxyd of antimony by nitre.</i>
Cerusse of antimony, - - -	{ <i>White oxyd of antimony by precipitation.</i>
Muriated antimony, - - -	{ <i>Muriat of antimony.</i>
Powder of algaroth, - - -	{ <i>Oxyd of antimony by the muriat acid.</i>
Vitrified antimony, - - -	{ <i>Vitreous sulphurated oxyd of antimony.</i>
Ore of antimony, - - -	{ <i>Native sulphuret of antimony.</i>
Flowers argentine of regulus of antimony, - - -	{ <i>Sublimated oxyd of antimony.</i>
Emetic tartar, - - -	{ <i>Antimoniated tartrit of potash.</i>
Kermés Mineral, - - -	{ <i>Red sulphurated oxyd of antimony.</i>

VI. These are not the only preparations known. As many more might be made or imagined as there exist acids in nature, which could take antimony for their basis. But the *Materia Medica* cannot expect to derive great advantage from them; for, besides that experience would have already ascertained the success of any such combination, nothing more can be hoped from a new composition than what is already known of its principles, and its application.

VII. Before we give our opinion on the antimonial preparations, which appear to us the best in medicine, we will give a general idea of the virtual properties of all those that have been in most estimation and use.

VIII. *Crude antimony* answers hardly any one indication in fevers. It is a hard, and not a volatile substance, which cannot enter into the *secundæ viæ*. Its sulphur counteracts all its emetic virtue. It is probable that when it was found efficacious in swellings in the viscera of the abdomen, &c.

it was mixed with some fixed alkali, which, after dissolving it, formed a real liver of antimony, or a real *antimoniated alkaline sulphuret*, which is an excellent solvent and depurative. I find that effect in the *antivenereum decoctum laxans* of the Pharmacopœa of Paris, the basis of which are sudorific woods and the fixed alkali.

IX. The regulus of antimony was formerly much used in fevers. As it has lost a great part of its sulphur it is a terrible emetic or a very strong stimulant, always an unsafe and dangerous remedy, which ought to be proscribed from careful and prudent practice.

X. The Materia Medica hardly admits of the liver of antimony, or *antimoniated alkali sulphuret*. In this preparation, the regulus being divested of its sulphur, and alkalised by the detonation of the nitre, it is a still stronger emetic than when it is by itself. Huxam, Sydenham, and Boerhaave have discovered in it a great solving power. When an emetic wine is made of it, it is used with success in ferrous apoplexies. The liver of antimony is the basis of the famous remedy of Rotrou.

XI. We cannot recommend the saffron of metals, *crocus metallorum*, *semivitreous sulphur oxyd of antimony*. It is nothing more than the foregoing preparation washed and separated from all saline matter, arising from the detonation of the nitre. It is also a violent and unsafe emetic.

XII. The nitre quickly dissolves the regulus of antimony. Equal parts of these substances being brought by a quick fire to the detonation of the salt, in the bottom of the crucible is found the fixed alkali of the nitre and the antimony, in the state of white lime. This is the antimony diaphoretic. *White oxyd of antimony by nitre*.

This preparation, when not washed, is a true neutral salt of antimonial sulphur and marine alkali. It is really a dissolvent and laxative; but as other preparations better answer these indications, this last may, without any loss, be retrenched from the Materia Medica.

When the diaphoretic antimony is washed, the water carries off all its saline particles, and what remains is the pear-

ly matter of Kirkringius; the cerusse of antimony. *White oxyd of antimony by precipitation.* It is to be remarked that this preparation is either useles or dangerous; because, if it be well made, it is but chalk without virtue, and if it contains any of the regulus it is a violent and almost corrosive emetic.

XIII. Nitre furnishes another preparation, the butter of antimony; *antimony muriated.* This marine salt whose basis is regulus, has a consistency of butter; it is one of the strongest caustics known, a poison internally, and a powerful escharotic externally.

The *butter of antimony* may be washed, and, by the intervention of an alkali, we may obtain a precipitation known by the name of powder of Algaroth, *oxyd of antimony by the muriatic acid.*

The experiments made of it have frequently proved unfortunate, because it is a real butter of antimony disguised or weakened when it is not well washed, otherwise it is only a chalk without virtue.

XIV. When by the help of a slow calcination, and the evaporation of the sulphurous particles, a grey chalk has been obtained, it may be brought to fusion. There remains a vitreous matter of an orange colour. This is a violent puke. Its chief use is to serve in the preparation of the emetic tartar. We call this the *antimony vitrified.* *Vitreous sulphurated oxyd of antimony.*

XV. Ore of antimony, *native sulphuret of antimony.* This is a precipitation of liver of antimony by means of an acid. This is a very useful preparation in medicine, an emetic to be relied on, a powerful dissolvent, and a good diaphoretic. It is moreover useful in cutaneous disorders. As we intend to propose a preparation that we think preferable, we will not insist on it any further.

There are other antimonial preparations known in the Materia Medica, such as the *vitriol of antimony*, the *antihectic of poterius*, the *flower argentine of antimony*, the solvent remedy of Rotrou, &c. &c. It would be both tedious and useles to analyse them in this work, as they do not differ

much from those we have already mentioned, without having more efficacy or virtue.

XVII. *Emetic tartar, antimoniated tartar of potash.* This is the solution of the glass of antimony, by cream of tartar. This remedy has been known these two centuries in Europe. When it was first introduced into medicine, its strength was not sufficiently known, and as several trials of it proved unsuccessful, the laws proscribed and permitted it, by turns. However, it is so useful, and so safe, that in skillful hands it is a powerful remedy, and deserves particular attention. We will therefore consider it, 1st. As an emetic, 2dly. As a purge, and 3dly. As a dissolvent.

XVIII. As an emetic, the tartar emetic is preferable to ipecacuanha, when the subject is strong, and the sensibility of the nerves is not irritated; when a bilious humour is to be evacuated, in cases of serous apoplexy, and palsy of the same sort, and in metallic colics.

As a physician cannot be ignorant of the bad effect of an emetic on the arterial system, in cases of plethora or sanguineous turgescence, and in cases of excessive corpulence, it belongs to him to judge of the necessity of bleeding beforehand, or diminishing the strength of the vomit. The operation of the tartar emetic being always sure, there is less danger in employing it in small doses, especially for women and children, and such as easily vomit, whose proportions may be pretty generally fixed, at one grain for every ten years. In serous apoplexies and metallic colics, the doses may be gradually increased; and where the weakness of the stomach, and the delicacy of the nerves require, it must be mixed with cordial, anodyne, or antispasmodic juices.

XIX. As a purgative, the tartar emetic seems to be peculiarly efficacious in several febrile maladies; as for instance, in the continual fevers with paroxysms, and in the bilious and putrid ones. It often happens, that the intestinal channel is infected with tough corrupted bile, or that the system appears clogged with the weight of its fluids, having the symptoms of infiltration, of a bloated state, of relaxed fibres, of paleness, and of jaundice. Then the

emetic may, and must be given by attenuation; that is to say, a grain diluted in two pounds of water, with two drams of Glaubert salt, may serve as a usual drink which does not provoke vomiting, but by a gentle and constant stimulation cleanses the intestines and draws to their excretive organs, almost every thing that infects the system. Moreover, this remedy excites a favorable action which is diffused through the nerves, accelerates their movements, and favours resolute crises. If, in the case we have just mentioned, there be inflammatory symptoms, it will be prudent to let this remedy be preceded with some emollient diluting drinks, made a little acidulous.

This *emetico-catharticum* is of great utility in the whooping cough of children. It melts, dissolves, and evacuates all that acid, viscous and pituitous matter, which are to them, sources of mortal diseases.

XX. The same remedy is used as a solving with great success in pectoral and asthmatic complaints, in swellings of the glands, in the ancient catarrhs, the swellings of the viscera of the abdomen, of the mesentery, and in some cutaneous complaints. In all these it is a real solving, provided its emetic quality be restrained by some cathartic, and it be diluted in a sufficient quantity of mucilaginous fluid, as flaxseed water, or althæa decoction.

XXI. Kermes mineral, * *red sulphurated oxyd of antimony*. This is the best antimonial preparation that physic can employ in a great number of diseases and indications of fevers. Different chymists have used different processes in making it, which we will dispense with analyzing, and will only give the origin and the most simple analysis of kermes mineral. A French surgeon, named Laligerie, boasted much of this remedy at Paris. He said he had it from a German apothecary, who had been the disciple of the ce-

* The French derived originally the name of that red chymical preparation from that sort of gall-insect (*chermes coccus tinctorius ilicis*) which was formerly used in dyeing wool and silk a beautiful red colour, and which was, besides, employed in their Pharmacopœa to make a certain cordial syrup called *confectio de kermés*.

lebrated Glaubert. He gave his remedy to the Carthusian monks, and it appears, that in 1720, the latter sold it to the duke of Orleans, regent of France.

XXII. To make kermes mineral, you must boil, during two hours, a pint of rain water with four ounces of nitre, fixed by coal, and one pound of antimony broken into small bits; you must then strain the boiling liquor to separate from it the same antimony, which must be boiled a second time, with three ounces of liquor of fixed nitre, and one pound of rain water: these must be boiled for the third and last time, adding to them two ounces of the liquor of nitre, and a pint of rain water. The last operation is to strain the kermes and let it settle, washing it till it becomes insipid, drying it, and burning brandy over it; after which, it is to be reduced to powder.

XXIII. The result of the preceding chymical operation, must yield a powder of red colour, bordering on brown. It is generally thought to be nothing but the liver of antimony, dissolved by the fixed alkali, and that this *liver* contains, when dissolved, a part of the regulus of antimony. Skillful chymists have endeavoured to discover the exact proportions of alkali of antimony, and of its sulphur in kermes; but their observations were various, which was attributed to the variation of the principles of the modes of composition.

XXIV. It would be difficult to prove the properties of kermes mineral, with reference to its principles. We know that modern chymistry, which has penetrated into the chaos of gasses and air, can hardly analyse the different results of their union with primitive or known substances. Thus magnesia changes its nature and turns a *neutral salt*, by passing through the oxygen, whilst a fixed alkali becomes much more caustic by the addition and contact of the atmospheric air. Two such contrary effects prove causes and affinities which cannot well be accounted for, unless when they are simple. But does kermes operate by its three principles, replete with vital air, or by each of them separately? Is it decomposed in the *primæ viæ*? Does it become a stimulant in the *secundæ viæ*, &c. &c.? All these

questions, doubtless very interesting, may become susceptible of a system, the investigation of which, would interrupt us in the principal object of our enquiry, of the real properties of kermes mineral, and its application in different diseases.

XXV. We must establish as a principle, that kermes mineral unites all the exciting and evacuating qualities of the antimonial preparations with which we are acquainted, the neutralising properties of alkalis, the dividing, opening and dissolving properties of the liver of sulphur. So many qualities entitle kermes to rank with the most excellent remedies of physic; especially when administered by a careful hand.

We will now analyse this specific: 1st. As an emetic; 2d. As a purgative; 3d. As a tonic; 4th. As an anti-acid; 5th. As an incisive; 6th. As a diaphoretic; and 7th. As a diuretic.

XXVI. It is well known, that on the smallest developing of the reguline part of antimony, it excites vomiting. There is little of this effect in kermes; but it becomes sufficient if it be progressively increased from one to three or four grains. As the *Materia Medica* possesses very faithful emetics, it would seem rather strange to employ one that is somewhat indecisive. However, notwithstanding this inconvenience, it is to be preferred, if we desire from its application, auxiliary properties, as in the cases where it is necessary to give to the bile a dividing principle, in cachetic persons in whom it is necessary to oppose something to the confusion of the fluids, in pthical persons, with a seat or *focus* of suppuration, in nurses and children, in whom the acidity of the milk enthickens all the secretions of the *primæ viæ*, and obstructs them in their deepest recesses. The necessity of providing against some or many of these circumstances, must therefore point out the use of kermes mineral as a vomit. Great advantage would, indeed, be derived from its being mixed with ipecacuanha, or with a small dose of tartar emetic, in case of the necessity of procuring pretty strong motions.

XXVII. The purgative property of kermes is acknow-

ledged by all physicians who have observed its operation.— They inform us, that even when administered as an emetic, a part of it goes off downwards as a cathartic. It is, indeed, well known, that if the obstruction of the intestinal channel is principally owing to the tenacity or viscosity of putrid *fabures*, it is necessary to employ incisive and dividing means, that the matters may be diluted, and pass to the excretive organs, by the effect of the peristaltic movements. Such is the important purpose effected by kermes mineral. However, as it stimulates but little, it appears very seasonable to mix it with some other cathartic, as half an ounce of Glaubert salt, or some other. This medicine is very proper during the intervals, as also the exacerbations of a bilious remitting fever, in the milk fevers of nurses, by reason of the obstruction of the glands of milk, in suppressions and cessations of menses, because, in all these cases there may be milky or lymphatic congestions, which always require incisive, anti-acid and solving remedies.

XXVIII. The neutralizing and anti-acid property of kermes mineral cannot be very considerable, as the alkali that it contains is almost all saturated. Experience, however, proves it to be very useful to children at the breast, in whom acidity of milk is the source of almost all their maladies. This is the cause of all obstructions in the *primæ viæ*, the sourness of which is perceivable by the smell. Hence proceed a number of diseases whose consequences might be prevented by the use of absorbents, anti-acids, and *incisive medicines*, among which kermes obtains the most distinguished place.

XXIX. It is principally as an incisive and diaphoretic remedy that kermes obtains the greatest success. This specific, seconded by the animal heat, penetrates even into the texture of the viscera. It impregnates those viscous matters, those putrid substances, and those acerb biles which adhere to the intestinal channel, and which are always to be supposed to exist during the first days of humoral, remitting, or intermitting bilious fevers. It does still more: from the *primæ viæ* of *chilification*, which it quickly clears of all

obstructing matter, it penetrates into the solids in a mass; without following the long windings of circulation it destroys the thickness of nervous plexus, and of the muscles, which was owing either to infiltration, to œdem, or to spasm; opening all the pores, it gives to the vital fluids an easy circulation, a happy energy, and a salutary movement which begets warmth and transpiration. Whoever observes the different situations produced by fevers, and common to all fevers, without excepting those of an inflammatory nature, will discover the surprizing utility to be derived from kermes mineral.

Supported and accompanied with some diluting drink, it will cut and evacuate with more gentleness than the drastic and emetic stimulants which one is obliged to use even at the hazard of increasing an actual irritation. Of course it will be useful in that lowness of spirits, so nearly allied to a prostration of vital force, which is observable after reiterated paroxysms, as, by invigorating the circulation, it will restore to the fluids their motion and their liberty.

It is doubtless from this last manner of operating that kermes mineral has been considered as a tonic, and prescribed in the pectoral Lohoch of the Pharmacopœa of Paris.

XXX. The dissolving and laxative quality of this specific ought to make it operate quickly on the primæ viæ in all kinds of synochus, complicated with the swellings of the texture of the lungs, with pectoral affections, even acute, particularly in pulmonic and catarrhal affections.

XXXI. To draw from the preceding reflections principles more certain and more useful in practice, we will now develop the series of indications for which kermes mineral may be used.

1. To evacuate the primæ viæ, remove obstructions in the lungs, facilitate expectoration, cleanse and deterge ulcers, or any focus of suppuration.

2. To re-establish the functions of the alimentary channel, by dissolving and evacuating all the morbid matter with which it is clogged.

3. To encrease the force and energy of circulation, by

penetrating all the textures infiltrated or stiffened by spasm.

4. To restore the fluids to their circulation, and to their proper reservoirs by the incision and dissolution of all viscous and obstructive matter.

5. To diminish the stimulation of any viciated, acrimonious or offensive humours in any of the viscera they may have obstructed.

6. To restore secretion and transpiration by diluting the pores, and expelling the humours, which a want of strength has left stagnant.

7. To stimulate the urinary passages, where it arrives decomposed, and to solicit and provoke the evacuation of urine.

XXXII. Besides the great recommendation that all these indications give to kermes, in all febrile diseases, there is a number of others that must render it still more valuable to modern physiologists and observers. It is obvious that it must be very efficacious in pectoral complaints, in bilious fluxions, in suffocating catarrhs, in the internal effusions of serum, in the beginning of vomics, in the dropsy of the breast, and all maladies of eruption.

It must be efficacious in the small pox, to drive out and assist the concoction or separation of the virus from the mass of humours.

Success may be expected from it in that difficulty of breathing which the cachetic suffer, in the whooping cough of children, provided it be not attended with irritation.

It must be an efficacious application in the phthisis *pulmonalis*, when the thick and consistent matter requires rather active means to facilitate expectoration, in the humid and slimy asthma, in slow rheumatic affections, in all cutaneous affections, in which it is necessary to bring on slowly the secretions on the skin.

XXXIII. To advert to the cases in which kermes mineral must be hurtful, is to render its application more secure and advantageous. As its virtue is active by its principles, stimulating by its decomposition, and penetrating by its divisibility, it must be rather contrary to cases where there

is a considerable plethora, where there is a local inflammation, where a solution of continuity produces hæmorrhage. It must by no means be used in fevers merely inflammatory. It must be remembered that in ardent and putrid fevers it requires previous bleeding, and copious diluents; that it cannot be proper in any case where the breast is in a dry and heated state, in those of pleurisy, unless it be wholly bilious, nor in abundant spitting of blood, nor whenever hæmoptoe is feared.

MODE OF USING KERMES MINERAL.

The use of kermes mineral is to be regulated according to the indications to be answered. We will follow for that purpose the same division as we have adopted in developing the different properties of this specific.

1st. As an emetic.

Take for an adult, kermes mineral eight grains, divide them into four doses, to be taken one every ten minutes, diluted in warm water. Continue the same doses until the patient has vomited three or four times. The same method is applicable to children in proportioning each dose from one-fourth of a grain to two.

A very safe and efficacious puke for sucking children is made up with half a grain of kermes mineral, and one scruple of magnesia calcinate, both dissolved in two ounces of luke-warm water.

Observe, that as the kermes does not easily dissolve with water, part of it going to the bottom, it is to be mixed by degrees, adding some mucilaginous substance, or a little molasses.

To compose an active and incisive puke,

R. Emetic tartar, - - - - one grain and a half.

Kermes mineral, - - - three grains.

F. *A mixt. and dissol. in a pound of water: to be taken in two or three times.*

2d. As a purgative.

In this indication, the kermes should be seldom united to any kind of salts, which, by causing a new combination of its principles, would denudate entirely its reguline particles, and make of it a very strong puke ; but it will answer very well, if dissolved in an infusion of manna, or if made up with it into a kind of confection as follows :

R. Manna Cal. - - - - - two ounces.
infused in water, - - - four ounces.
poured on
 Kermes mineral, - - - four grains.
 F. Purg. Dr.

R. Flaek manna, - - - - - two ounces.
on a heated recip.
mix. with
 Kermes mineral, - - - four grains.
 F. Purg. boluses.

N. B. Pills may be made with equal parts of kermes mineral, ipecacuanha, and opium, and these will be almost specific in all kinds of diarrheas, and in many sorts of dysenteries.

3d. As an anti-acid and incisive.

In this indication, the kermes may be taken by itself in repeated doses of one grain, but at length it would provoke vomiting, unless it be united to half of its weight of opium, if taken in a dry way ; and of laudanum, if in a liquid form. Thus it will equally answer the purpose of diuretic and diaphoretic medicine, and be of great service in bilious and putrid fevers.

4th. As a tonic.

Some French medical writers ascribe this virtual power to the kermes. We would rather wish for a better de-

monstration of it; unless a kind of irritation from this specific should arise, which, in fact, in all catarrhs, and debilitated state of the præcordia, settles again the energy of circulation, renders easy any expectoration, and chiefly renews a salutary sweat all over the body. This last effect is most to be depended on, when the kermes is administered in a pectoral lohoc, of which we will here give the description, recommending its use in an exhausted state of the breast, and all those pulmonary affections, which remain symptomatic after acute diseases.

R. Glisseriza root, - - - - - two scruples.

infused in

Water, - - - - - four ounces.

Sweet almonds, - - - - - twenty.

To be blanched and pounded, and made into an emulsion with this water.

Gum. traganthi powder, }
Kermes mineral, - - - } sixteen grains each.

together and gradually made up in mucilage, and with the remains of the emulsion, add

Syrup of althea, - - - }
Oil of sweet almonds, - } one ounce each.

Aurantii flowers water, - - two drams.

To be taken by table spoonfulls every two hours.

THE END.

At the adjourned convention of the Medical Society of the
state of Connecticut, holden at Hartford, on the 14th
day of October, 1795,

RESOLVED, *That the thanks of this society be given,
through the secretary, to Doctor FELIX PASCALIS OU-
VIERE, D. D. and M. D. of Philadelphia, for his very in-
genious and entertaining dissertation in answer to their prize-
question "on the best preparation of antimony," &c. and that
the piece be filed for publication.*

JAMES CLARKE, Sec'ry.

Stratford, Nov. 1, 1795.

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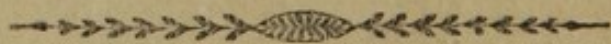
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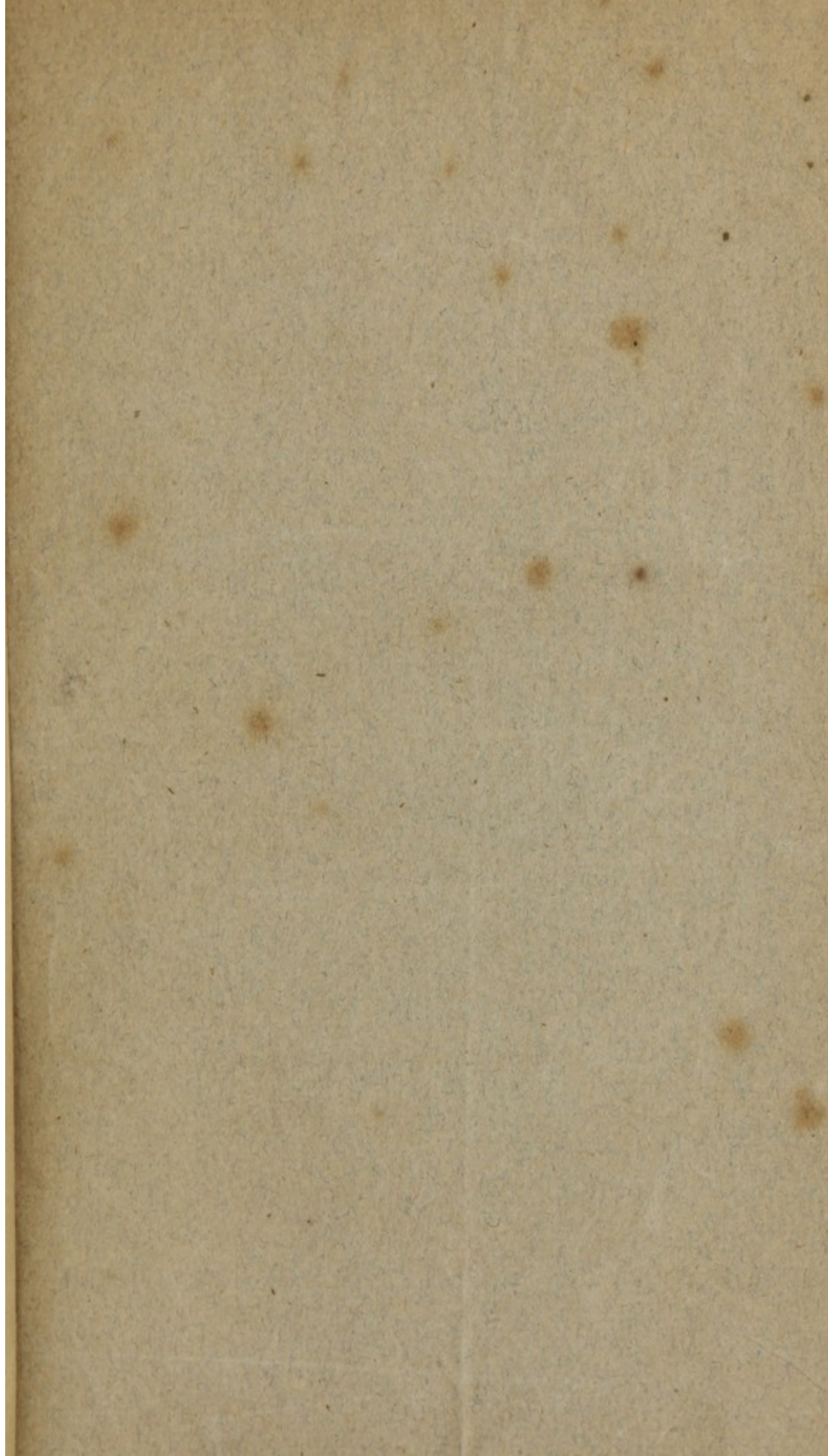
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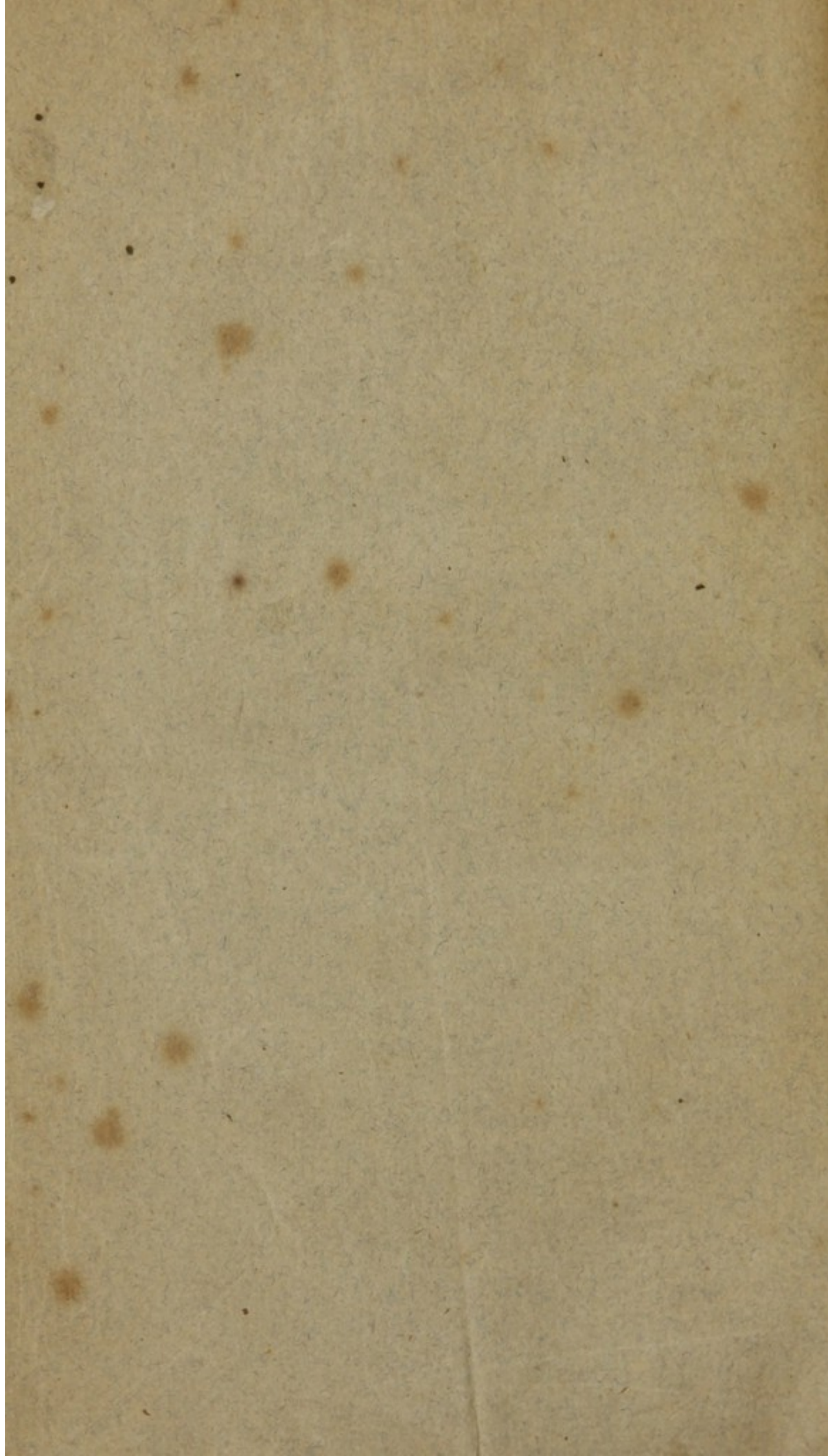
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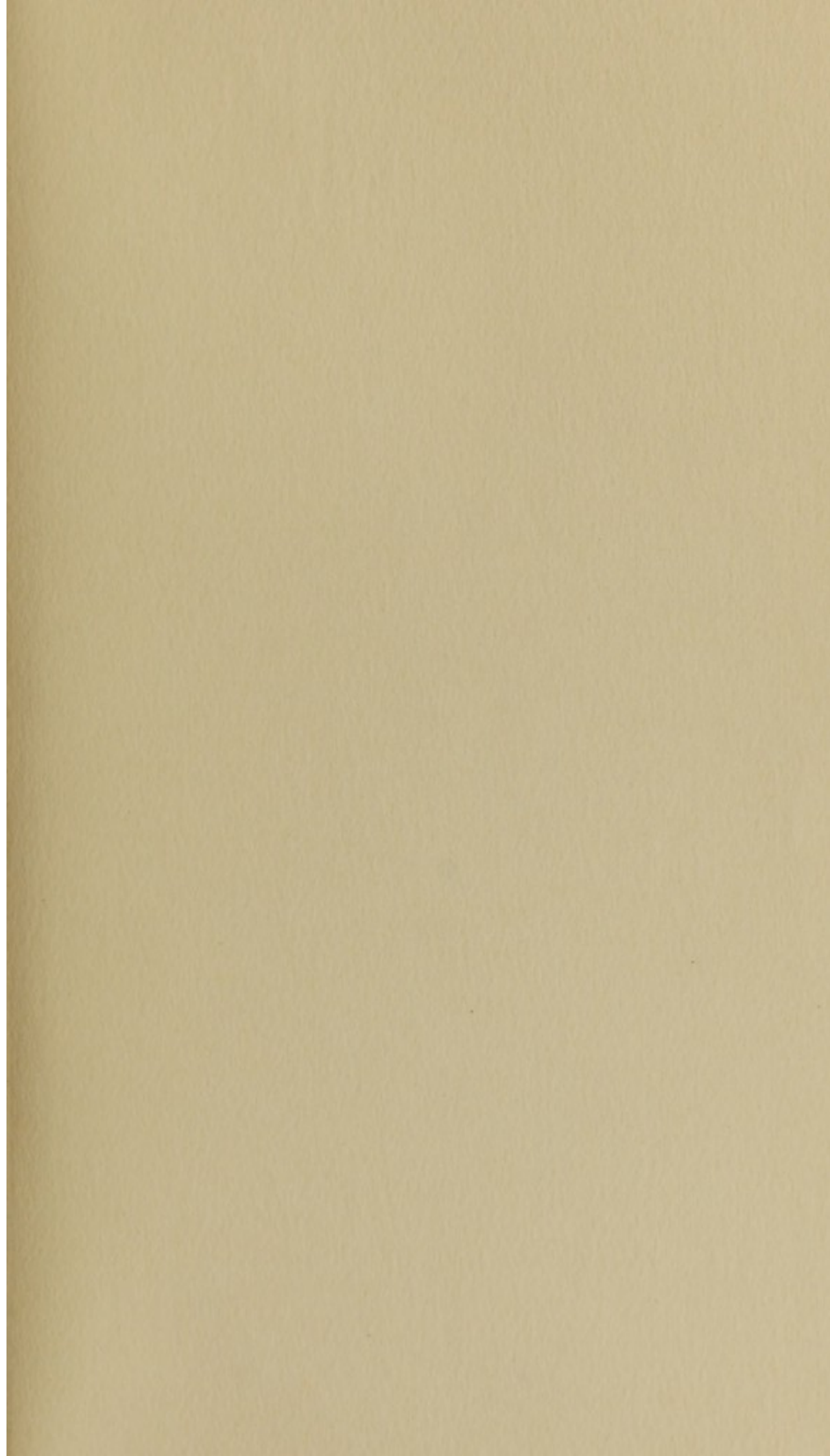
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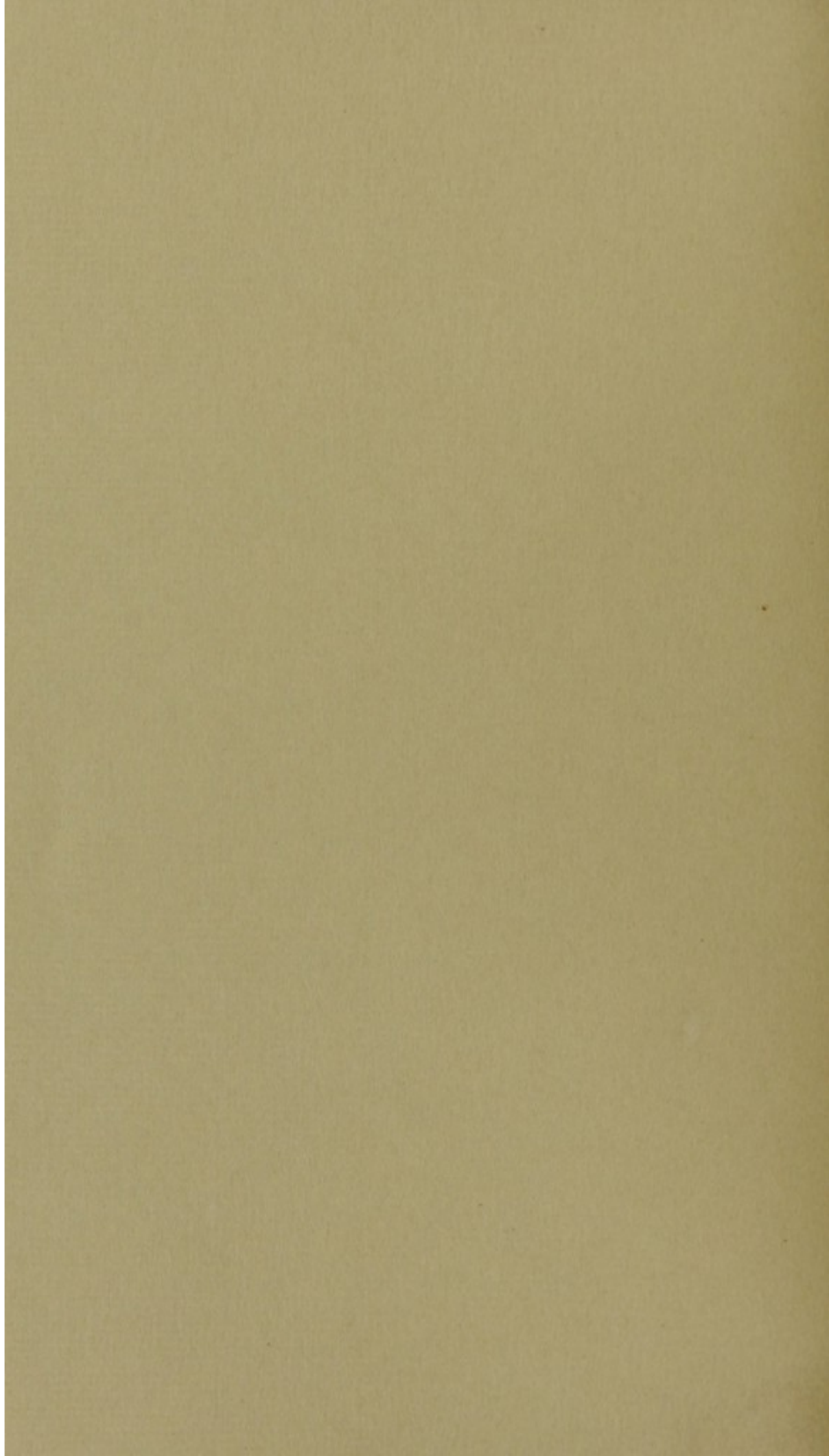
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