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## THE NEW X-RAYS IN PHOTOGRAPHY.

Professor Roentgen's Discovery.

BY THOMAS J. MC CORMACK.

WE HAVE just received from Professor Schubert, mathematician and physicist, of Hamburg, Germany, a remarkably fine photograph of the interior of a living hand, showing the exact outlines and processes of the different parts of the skeleton. This hand was photographed by means of the new actinic or fluorescence-producing rays whose power of penetrating opaque substances was discovered a few weeks ago by Professor Röntgen of Würzburg, or, since we have as yet no precise knowledge of their character, by means of what may be called the new *x*-rays. This term was used by Professor Röntgen himself, to express the unknown character of the new physical agent. With regard to the mechanical execution of the picture, Professor Schubert is justly proud that the members of the Hamburg laboratory have succeeded better than Professor Röntgen himself.

The hand in question, which the readers will find reproduced in the Supplement to this number, was photographed upon a plate enclosed in a small, flat photographer's box—the hand being held in front of the source from which the *x*-rays were emitted. Unlike the ordinary rays of light, the new *x*-rays in passing into new media are not refracted, that is bent aside from their course, but continue their way by rectilinear paths. They are, however, absorbed in varying degrees by different substances, and some opaque bodies are more transparent to them than others. Thus, in the cut in question it will be seen that the rays have passed through the fleshy parts of the hand but have been obstructed by the bony parts, and still more so by the ring which is plainly visible as a dark object encircling the engagement-finger. What are really photographed, therefore, are the *shadows* cast by the objects which the new rays strike. (We say "photographed," but we should say "*x*-ed." Professor Schubert speaks, in his letter to the editor of *The Open Court*, of the new things they are now *x*-ing in Hamburg.) The shadows are allowed to repose for a considerable length of time upon the ordinary dry plates of the photographer, and are then developed and fixed in the usual

manner. The wooden cover of the cassette, which protects the dry plate from the influence of the light, need not be removed in the new photography or *x*-igraphy, for Röntgen's *x*-rays pass unhindered through wood. Furthermore, no covering can protect the dry plates from the effects of the *x*-rays. To be protected they must be placed without the range of influence of the rays.

All substances are penetrable to Röntgen's rays, none are opaque to them; and in this quality rests the essence of the difference between the results of the new photography and those of the old. The photograph of a metal plate taken by Röntgen's rays distinctly shows *all* the bubbles, faults, and deformities which have been produced in its *interior* by casting or rolling. Generally, the surface of the body is not photographed, but only the denser parts in the interior, which are less transparent to Röntgen's rays. A photograph of a case containing a set of weights shows distinctly every brass piece constituting the set. The spirals and twists of a wire enclosed in a wooden box are exactly reproduced. Professor Schubert of Hamburg writes that they are successfully reproducing the contents of valises and travelling boxes. The figures and markings on the face of a compass in a closed metal box have been photographed with beautiful distinctness, although writing and printers' ink generally is very transparent to the rays, that is, *throws no shadows*, and, consequently, by an almost providential interposition in behalf of the peace and domestic security of the world, writing in a closed envelope cannot be photographed by the new physical agent. The range of application of the new method in surgery is evident, yet when we reflect on the stupendous results to which less significant discoveries have led, the impossibility of forecasting its effects in all practical and technical spheres will be obvious. And it may have in its way a no less important bearing on theory.

The facts constituting Röntgen's experiment and discovery, for the details of which we are indebted to an able article by Prof. L. Holtzmann in the *Weser-Zeitung*, are briefly as follows.

A long time ago Geissler and Gassiot had constructed closed tubes filled with rarefied gases, in the

ends of which platinum wires (electrodes) were soldered. In Germany these tubes are called Geissler's tubes. If the two platinum wires be connected to the poles of an induction-coil with sufficiently high differences of potential, the electricity will disrupt the gas and produce the familiar luminous phenomena.

Afterwards, Professor Hittorf attached to the electrode through which the negative electricity enters, a flat, tiny strip of metal. The electrode in question is called the cathode. If the gas be quite rarefied this strip remains almost perfectly dark, but right opposite the cathode, on the tube, a spot is visible which glows, according to the composition of the gas, with a yellow, green, or bluish light. This is the fluorescent spot. The appearance is exactly as if rectilinear rays proceeded from the cathode—themselves invisible but giving rise to the fluorescent phenomena wherever they strike the glass walls of the tube. A body within the tube intercepts these cathode-rays and throws a shadow on the walls of the tube.

In this country these tubes are known as Crookes's tubes. Crookes varied the experiments of Hittorf in a highly elegant manner, and propounded the hypothesis that the cathode-rays consisted of material particles emitted from the metal strip in rectilinear paths. This was the emission-theory of the cathode-rays. On the other hand, some German scholars, among them E. Wiedemann, were of opinion that the action which proceeded from the cathode was undulatory in character and bore some resemblance to the rays of light. What this means we shall see later.

This was the state of our knowledge when Röntgen planned his delicate fluorescent experiment. To be able to see the weak light which was expected, the room was carefully darkened. Even the Crookes tube which he used was enveloped in a casing of dark wood, impenetrable to the rays of the electric light or the sun. Near by was a screen which had been covered with barium platinocyanide, such as is commonly used in fluorescent experiments. This substance possesses the property of emitting a bright white glow, of *fluorescing*, when it is struck by violet light-rays or cathode rays.

This fluorescent screen, now, was immediately illuminated whenever the electricity was made to pass through the Crookes tube, although the latter was enclosed in an absolutely opaque casing, and was totally invisible to the eye. The conclusion was that the rays from the tube actually passed through the black casing, opaque though it was to ordinary light. The rays in question make no impression on the retina of the eye, that is, produce no sensation of light. Röntgen convinced himself that these rays did not proceed from the whole interior of the Crookes tube, but issued only

from that part of it where the interior glass wall was struck by the cathode-rays.

Now, if an object be placed between this spot and the screen, say a book of a thousand pages, a metal plate, or what not, a distinct, but not perfectly dark shadow of the body will be visible upon the screen. The conclusion is that Röntgen's rays pass through all bodies, even such as are impervious to light and cathode rays, but that they are weakened or absorbed in the same, and that in proportion to the thickness of the body penetrated.

Not only barium platinocyanide, but almost all fluorescent bodies, green glass, canary glass, quartz, may be excited to fluorescence by Röntgen's rays. One of their most remarkable properties is that their effects may be recorded upon the plates commonly used in photography. The character of the photographs taken have been explained above.

It is a significant fact that Röntgen's discovery was apparently due to an accident, and we may refer curious readers, who are desirous of tracing the influence of this momentous factor in research, to the article by Professor Mach in the last *Monist*.<sup>1</sup>

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The question now remains, What is the connexion of this new discovery with the rest of the body of physical knowledge? We must first premise a remark on waves, which are of two kinds—*transversal* and *longitudinal*. A stone thrown into water depresses the water, which rises again, and as each particle rises and falls, the wave is propagated along the surface. Because the line of vibration is *transverse* to the line of propagation, such waves are called transversal waves. They would be longitudinal, if the particles vibrated in the *same* direction with the line of propagation, as where an iron rail is struck on end by a hammer.

Now, light-waves, in the supposed ether, are transversal. All the discoveries in undulatory, or periodic, phenomena requiring the ether as their vehicle, can be explained on this hypothesis. The ordinary visible rays, the invisible ultra-violet and ultra-red rays, even the electric waves of Hertz, can be satisfactorily represented to the eye in this manner. They differ only in their wave-lengths, which vary from a few thousandths of a millimetre to several metres.

But longitudinal waves are also possible in this hypothetical ether, and their presence has long been suspected. They are not as easily generated, as will be apparent from the simplest observation of a mass of gelatine, to which the ether has been compared; but, given an enormous velocity of propagation, they can, nevertheless, be produced. Hence, the moment

<sup>1</sup> "On the Part Played by Accident in Invention and Discovery." January *Monist*, 1896.

it transpired that neither Röntgen's nor the cathode rays above mentioned presented the usual marks of transversality, the suggestion was immediate that the waves in question were the long-sought-for longitudinal undulations of the ether.

This opinion has been advanced by Röntgen with considerable reserve, but, as Professor Holtzmann shows, it has much in its favor. In both cases, the low period of vibration explains their common power of exciting fluorescence; their main difference being, that Röntgen's rays penetrate nearly all substances, whilst the cathode rays are absorbed in all substances and can be carried only short distances from the tube. The reverse property in Röntgen's rays would be explained by their great wave-length.

Apart from its manifest practical bearings, thus, the cardinal significance of Röntgen's discovery consists in its having made us acquainted with an *entirely new* physical agent, which, unlike the cathode-rays, is *easily* accessible to physical manipulation.

#### MR. GILMAN, ONE OF THE VENEZUELAN COMMISSION, AND THE MONROE DOCTRINE.

BY G. KOERNER.

FOR many years past have appeared in England as well as in the United States a number of short biographies of eminent men, divided into classes, as series of great statesmen, of great captains, of great authors, of great artists. In the series of great statesmen we find a well-written and very acceptable biographical sketch of President Monroe by Daniel G. Gilman, President of the Johns Hopkins University and now one of the members of the Venezuelan Commission.

Some, perhaps the most, of these biographies border upon eulogies and are comparatively worthless. Such is not the case however with that of Mr. Gilman, published in the year 1883. At the same time it is but natural that the author who selects as his subject a certain character, should choose one who appeals to his sympathies.

Mr. Gilman devotes to what is called the *Monroe Doctrine* a whole chapter. Now, it is very obvious that an examination and a consideration of that doctrine falls beyond the circle of duties strictly assigned to the Venezuelan Commission, but still considering how apt we are, often imperceptibly, to be influenced by formerly conceived ideas, that apparently have no direct connexion with the subject in hand, it may not be quite uninteresting to learn in what light Mr. Gilman looked upon the programme of President Monroe in his message of 1823.

Mr. Sumner (in his *Prophetic Voices*, p. 157) had asserted that the Monroe Doctrine proceeded from Canning, and that he was its inventor, promoter, and

champion, at least so far as it bears against European intervention in American affairs. Mr. Gilman takes issue on this point with Mr. Sumner, and, indeed, almost his whole chapter on the Monroe Doctrine is directed against Mr. Sumner's assertion. Mr. Gilman says (p. 156):

"Everything which illustrates the genesis of such an important enunciation is of interest, but very little has come under my eye to illustrate the workings of Monroe's mind, to show how it came to pass that he uttered in such terse sentences the general opinion of his countrymen. As a rule, he was not very skilful with his pen; his remarks on public affairs are not often quoted like those of Madison, Jefferson, and others of his contemporaries; there was nothing racy or severe in his style; nevertheless, he alone of all the presidents had announced, without legislative sanction, a political dictum, which is still regarded as a fundamental law, and bears with it the stamp of authority in foreign courts as well as in domestic councils."

We may remark here by the way that this political dictum has by no means borne the stamp of authority in foreign courts. The four powers, Russia, France, Austria, and Prussia, who had just at that time intervened in favor of legitimacy in the affairs of Piedmont, Naples, and Spain, to overthrow liberal governments, and had, at the instance of Spain, planned an intervention on the American continent, to assist Spain to reconquer her ancient colonies, which had declared their independence and successfully sustained it for more than ten years, those foreign powers certainly did not take the Monroe Doctrine as an authority binding upon them. They had invited England as early as 1822 to join them in this intervention, but Canning had, as Prince Metternich has told us in his *Memoirs*, *brutally* refused to make himself a party. He was anxious, for political and commercial reasons, to sustain those southern republics, and it was he who suggested to Mr. Rush, our then Minister at London, his wish that the United States should co-operate with him in thwarting the policy of the Holy Alliance, and would prefer that the United States should take the initiative. (See Richard Rush, *Memoranda of a Residence at the Court of London*, republished by his son.)

Now, the theory of Mr. Gilman is that the dictum of Mr. Monroe was none of his own, but that the idea of non-intervention by European powers was a purely original one of American birth, entertained as far back as 1780. "Indeed," Mr. Gilman says, "if it had been Monroe's own dictum or ukase, it would have been resented at home quite as vigorously as it would have been opposed abroad." He takes great pains to prove his theory "by a careful examination of the writings of the earlier statesmen of the republic, which," as he says, "will illustrate the growth of the Monroe Doctrine as an idea dimly entertained at first, but steadily developed by the course of public events and the reflexion of those in public life."

Space prevents our showing that nearly all the citations from those statesmen have not the slightest bearing upon the point made by Mr. Gilman. What can be made from the words of a letter directed by General Washington, January 1, 1788, to Thomas Jefferson: "An energetic general government must prevent the several States from involving themselves in the political disputes of the European powers"? As little can be proved by the words of Washington's celebrated farewell address, wherein he warns his fellow-citizens to keep aloof from entangling themselves in foreign alliances.

Similar quotations are presented by Mr. Gilman. Let us remember, however, under what circumstances the statesmen referred to by Mr. Gilman expressed their opinions from 1792 on to 1815. War was raging between England and France. Both belligerents violated our neutrality and almost destroyed our commerce, by their decrees and orders in council. France called upon the United States, in virtue of their treaty of alliance, to assist her against England. The French Minister and consular agents tried their best to arouse a feeling in favor of assisting France in this country. The sympathies of a majority of our people were for France. Parties were formed on this question, which bitterly opposed one another. John Adams, in his first inaugural address (March 4, 1797, see Gilman, *Monroe*, p. 165), in a few words characterised the situation at the time. He says:

"If control of an election can be obtained by foreign nations by flattery or menace, by fraud or violence, by terror, intrigue, or venality, the Government may not be the choice of the American people, but of foreign nations. It may be foreign nations who govern us, and not we, the people, who govern ourselves."

The strongest expression of the idea, so often heard, America for the Americans, is found in a private letter of August 4, 1820, of Jefferson to William Short. He says:

"From many conversations with Mr. Corea, appointed Minister to Brazil by the government of Portugal, I hope he sees and will promote in his new situation the advantages of a cordial fraternisation among all the American nations and the importance of coalescing in an American system of policy, totally independent and unconnected with that of Europe. The day is not distant when we may formally require a meridian of partition through the ocean which separates the two hemispheres, on the hither side of which no European gun shall ever be heard, nor an American on the other; and when during the rage of eternal wars of Europe, the lion and the lamb lie down together in peace. . . . The principles of society here and there are radically different, and I hope no American patriot will ever lose sight of the essential policy of interdicting in the seas and territories of both Americas the ferocious and sanguinary contests of Europe. I wish to see the coalition begun."

The passage is not so very clear. Brazil at the time was an empire nearly absolute, Canada was under strictly English colonial government, England,

Holland, and France had valuable possessions in this hemisphere. In fact these European colonies were three or four times as large as the United States. Mr. Monroe himself in his message has distinctly stated: "With the existing colonies or dependencies of any European power, we have not interfered and shall not interfere." No such coalition even in little Central and South American Republics, although several times attempted, has ever been formed, and the drawing of a meridian line between the two hemispheres was an impossible thing in every aspect, and Mr. Jefferson would never in any public document have indulged in this sort of dream.

It will be recollected that when Mr. Sumner spoke of Mr. Canning being the inventor of the Monroe Doctrine, he confined himself to the non-intervention clause. Nothing is said by him, as far as he is cited by Mr. Gilman, of the colonisation passage. That it must be admitted originated in the brain of Mr. Monroe, or rather, as we shall see, in the brain of Mr. John Quincy Adams. Much is said just now that England hailed the non-intervention declaration of Mr. Monroe with joy, that the English liberal press gave it its hearty approval; but Mr. Gilman does not seem to be aware that Mr. Canning expressed at once his great dissatisfaction with the other declaration, "that the American continents, are henceforth not to be considered as subjects for future colonisation by any European powers." He argued that Mr. Adams's enunciation rested upon false premises, that he had assumed that the whole continent was settled by civilised nations, that so far from that being the fact, the Central and Southern part of the continent was to a great extent a wilderness, traversed by roaming savage Indians without any fixed government, and that by immemorial usage such countries had always been considered fit subjects of colonisation by foreign powers, who took possession of the country either by negotiation with the various wild tribes, or by force. If I am not mistaken in one of his speeches, he openly repudiated the colonisation doctrine.

This reasoning seems to be justified. France took Canada, the Puritans the New England States, the Cavaliers the Virginias.

There is another important fact which seems to have escaped the examination of Mr. Gilman, that is to say, that the House of Representatives, when the message of Mr. Monroe was yet fresh in the minds of Congress, and when it seems that even at that time it had received by some a wrong construction, passed a resolution in 1824 to this effect:

"That the United States ought not to become a party with the Spanish American republics, or either of them, to any joint declaration for the purpose of preventing interference by any of the European powers with their independence or form of govern-

ment, or to any compact for the purpose of preventing colonisation upon the continents of America, but that the people of the United States should be left free to act in any crisis in such manner as their feeling of friendship towards those republics, and as their own honor and policy may at the time dictate."

Mr. Gilman might have referred to what Mr. Calhoun, one of the advisers of Mr. Monroe, and who in the Cabinet took most interest in the declaration, asserted most emphatically in regard to it, on the debate in the Senate on the question of the acquisition of Yucatan; that "the United States were under no pledge to intervene against intervention but were to act in each case as policy and justice required." This was the view of a statesman, which Mr. Calhoun undoubtedly was.

Mr. Calhoun is reported to have declared at a later period that the draft of the message submitted to the Cabinet and approved by it, did not contain the colonisation clause. That Mr. Adams put that in without the knowledge and consent of the Cabinet. The truth of this statement, if it was ever made, derives some force by the singular fact that the two clauses, which logically belong together, are found in widely different parts of the message. A resolution introduced by Mr. Clay, January, 1824, in the House of Representatives, deprecating European combinations to resubjugate the independent American States, and thus giving support and emphasis to the declaration in the message of December 2, 1820, was never acted upon.

Mr. Gilman, it seems to me, entertains the view that the Monroe Doctrine has become a part of international law, though he does not distinctly say so. It may be inferred from what he states at the commencement of his chapter on the Monroe Doctrine. "The one event of his presidency which is indissolubly associated with his name, is an announcement of the policy of the United States in respect to foreign interference on this continent. The declaration bears the name of the 'Monroe Doctrine.' As such it is discussed in works of public law and in general histories. It is commonly regarded as an epitome of the principles of the United States with respect to the development of American States." And again: "Mr. Monroe has announced a political dictum which is still regarded as a fundamental law and bears with it the stamp of authority in foreign courts as well as in domestic councils."

If thereby it is meant to interpolate the Monroe Doctrine into the International Law, I modestly but strongly dissent from this theory. What part the Monroe Doctrine played or rather did not play in the Mexican invasion by the French and the withdrawal of the French troops at our instance is quite an interesting theme, which, however, does not fall within the scope of the present article.

#### THE RESPONSIBILITY OF GOD.

ONE of the latest issues of the *Chicago Sunday Tribune* contains a sermon by the Rev. George T. Smith of Chicago, entitled "God's Responsibility to Man." The sermon is remarkable in more than one respect. It shows progressiveness in one way and a reactionary tendency in another. The author of this sermon recognises to some extent the identity of nature's God and nature's laws. He says:

"The laws of nature are true; they never lie. Nature is God's thought materialised. Reason and conscience are God's thoughts incased and individualised in man."

But at the same time the Rev. Mr. Smith regards God as a person, and certainly if God be a person there can be no question about it that he is responsible for his creation and the government of the world. St. Paul may be right that the potter is not responsible to the vessels he makes, because vessels are not sentient creatures; but if the vessels were sentient beings like men, the potter would be responsible for their fate. The Rev. Mr. Smith says:

"God is responsible by his nature not to outrage the highest, purest instincts of man. We may safely say He cannot do so, He cannot deny himself. . . .

"Then the judge of all the earth is responsible to man to do right. Abraham stood pleading for Sodom. 'Wilt thou slay the righteous with the wicked?' God consented to save the entire city if there were fifty, forty, or thirty, or twenty, or even ten, righteous men there, and he never stopped lessening the number till Abraham stopped asking.<sup>1</sup> He saved Lot; He tried to save his sons-in-law, but they would not hear. The Judge of all is responsible to man for just dealing. . . .

"God is our maker. He is responsible that we are made ignorant; that we have no burden laid on us beyond our strength; no duty imposed which we cannot discharge. . . .

"There are those who, by superior cunning, are able to prey on their fellow-men, who trample upon or evade the laws of men. For these judgment waits. The Judge will do right. Eternity will show that there is no gain in wrongdoing, no profit in stealing or gambling, though it be under forms of law. . . .

"God, our Father, is to provide for and to train his children into manhood. . . . The King of Kings is responsible for victory over foes too strong for unaided man."

The *Tribune* preacher winds up his sermon in the last paragraph as follows:

"There is no more responsible being in the universe than God, and full well does He discharge that responsibility. . . . He will deliver the righteous from every evil, and reserve the unjust to the day of judgment to be punished."

This is a strange sermon, a sermon that probably has never been preached before in any one of the Christian pulpits, yet it is a straw in the wind, it proves at least a partial progress: it proves that the clergy in America dare to walk in untrodden paths. If God were an individual being, a huge world-maker, He would indeed be (as the Rev. Mr. Smith says) the most responsible being in the universe.

<sup>1</sup> Gen. xviii.

The truth is that God is not an individual being at all. For God is identical with the irresistible majesty of the laws of nature, and especially with the moral law which is the condition of man's existence as a rational and moral being. God is not a law-giver, who, like a king, enforces justice. God may be compared to a law-giver, to a king, to a father, but He is no law-giver, no king, no father. He is God, and God is that which is irresistible; He is omnipotence itself. God is the eternal law of justice itself. He who breaks the law will smart under its curse; he who obeys it will enjoy its blessing. To attribute to God responsibility is an anthropomorphic conception of God, it humanises God.

A peculiar lesson is involved in the fact that Buddhism, the greatest non-Christian religion, which is distinguished for inculcating the noblest moral maxims, such as love of enemies, chastity, sincerity of heart, and charity toward all suffering creatures, knows nothing about God. Unfriendly critics have on that account branded Buddhists as atheists, and yet they face the same facts of life and have derived therefrom the same rules of ethical conduct. The main difference between Christians and Buddhists consists in the employment of different systems of comprehending and symbolising the facts of experience. Both religions, Christianity as well as Buddhism, recognise an authority for moral conduct. The former call it Christ, the latter Buddha. Christ reveals to Christians the will of God; Buddha teaches men enlightenment. There is this difference: that Christ appears as the son of God, and therefore his teachings must be accepted as revealed truth, while Buddha is a man, who after a diligent search at last obtained the highest wisdom, that will deliver mankind from evil. In Christianity the sonship of Christ vouches for the truth of Christ's message, while in Buddhism Buddha's enlightenment constitutes his Buddhahood. Now Buddha teaches that enlightenment is the same, and that all Buddhas teach the same religion, which consists in the abandonment of the vanity of selfhood, of all hatred and envy, and of lust, implying at the same time a far-reaching and unbounded love, which refuses none, not even those who hate and despise us, compassion with all those that suffer, and holiness. Enlightenment is a living recognition of the truth seen in its moral application to practical life, and truth is a summarised statement of facts, or rather the laws pervading the facts and constituting a comprehensive aspect of their eternity. And this essence of Buddhahood, the eternal laws, the recognition of which constitute enlightenment, has been formulated by the later Buddhists under the name of Amitâbha, which means illimitable light, and is conceived as eternal, immutable, and omnipresent. It is the *Sambhōga-*

*Kaya* (the body of bliss) among the three personalities of Buddha, the other two being the *Nirmāna-Kaya*, the apparitional body of Buddha the teacher, and the *Dharma-Kaya*, the body of the law, which is Buddha's religion in its historical development.<sup>1</sup>

The facts are the same in Buddhism and in Christianity; the modes only of formulating them in symbolical expressions varies. Both religions recognise an authority of conduct which, in a word, we may call "the ethical law of the universe, as manifested in the evolution of life."

According to Buddhist notions, every man is responsible for his fate, for every living creature is the incarnation of his karma. We are our own makers. We reap what we have sown. In this conception, every single creature is no longer regarded as an individual being whose fate begins with its birth and ends with its death. Every creature is regarded in its connexion with the whole world of life as the continuation of preceding life. Every creature is the result of the karma done in its former existences.

The aim of the Buddhist is to understand the law of life, and to act in agreement with it. Enlightenment concerning the problems of man's soul, implying the right attitude of mind with regard to our duties, constitutes Buddhahood. Thus, to the Buddhist there is no problem of a conflict between the existence of evil in the world and the goodness of Amitâbha, the external conditions of Buddhahood. The existence of evil in this world is the result of our own doing. We are the builders of our own fate, and we must be our own saviours.

If a bridge breaks down under the weight of railroad cars too heavy for its construction, is the law of gravitation responsible for the lives that are lost in the wreck? According to the Buddhist conception the engineer is responsible. There is no Brahma responsible for our mistakes, or even our ignorance, but we ourselves are guilty of both. The constitution of life, and of the laws of life, are no secrets. They are open to all and can be investigated and obeyed, and if the bridge be constructed by an intelligent engineer, it will carry the passengers over the river to the other bank. He who understands his own being and the laws underlying the development of life will no longer throw the responsibility of his misfortunes on others, be they gods or men, but will, like Faust in Goethe's grand drama, seek salvation in helpful deeds that will live after him and preserve the bliss of his life in all generations to come.

P. C.

#### EVENTS OF TO-DAY.

It is possible that Mr. Gladstone's policy was weak because he allowed himself to be swayed by sentimental considerations and lacked the principle of energetic action. But Lord Salisbury's

<sup>1</sup>Compare *The Gospel of Buddha*, pp. 225 et seq.

policy is worse; his policy leaves no room for sympathies with the wronged ones or the suffering, nor with noble ideals. He declares that England can do nothing to stop the massacres in Armenia because it might cost her some sacrifice. No word is lost about the moral aspect of the question; that is dismissed simply by referring to the Cyprus Convention, which "contains no trace of an undertaking to interfere in behalf of the subjects of the Sultan." This is Shylock's answer when the commonest regard for human life is expected of him; he says: "It is not in the bond!" Lord Salisbury may be right enough in his declarations that the Sultan has the best intentions, that he has recently accepted reforms and that the powers should have patience with him, because his "government is weak, wretched, impotent, and powerless." A hostile demonstration against Turkey might be the signal for worse atrocities. But if the Sultan is weak, why not offer the Sultan assistance. If the offer were made with sufficient seriousness and with honest guarantees of preserving the integrity of the Turkish empire, he would have no reason to refuse and could do so only if he did not care for the dispensation of justice and the restoration of order in Armenia. Salisbury fears a European war; he says: "If you do not act *with* the great powers, you must act against them." Why *against* them? Where is the logic of the great Premier? Why did he not say "without them"? Russia did not interfere, although it would have been her interest, and no European war would have resulted from Russia's interference. Since Russia did not interfere, the duty of interference devolved upon England, and if England had been isolated on account of her willingness to rescue their Christian brethren from the sword of assassins, if they had combined against her, she might have been proud of fighting for a righteous cause—which we are sorry to add could not be said of the opium war against China, of the Ashantee invasion, of Dr. Jameson's expedition, nor of the humiliation of Khama the Bamangwato chief.

Lord Salisbury declared that in his dispatch to Mr. Olney he had "supported the Monroe Doctrine as a rule of policy in strong and most distinct terms; but," he adds in his banquet speech, "what I stated in that dispatch I reiterate now, we mean the Doctrine as President Monroe understood it." That is all, the United States can expect. President Monroe said, that "with the [American] governments which have declared their independence and maintained it, and whose independence we have, on great consideration and principles, acknowledged, we could not view an interposition for oppressing them, or controlling in any other manner their destiny by any European power, in any other light than as a manifestation of an unfriendly disposition towards the United States." Lord Salisbury's actions did not agree with his words; but if he will act in the future in agreement with his words, his policy will encounter no trouble in the United States.

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There is an Illinois State ordinance of 1818, prohibiting the opening of any business on Sunday, which has not been enforced for twenty-five years, and now on a sudden the State's attorney of La Salle County, Ill., secures a jury which swoops down upon the saloon-keepers of Peru and La Salle, indicting them for not closing their doors on the Sabbath. But the jury did not stop here, they indicted the Mayors of La Salle and Peru for "unlawfully, wilfully, knowingly, and contemptuously permitting the owners of certain dramshops to keep their places of business open on Sunday."

Mayor Matthiessen, who is now serving his fourth term, was elected by a large majority of the citizens of La Salle, and he has done more for the town by his good administration than any previous Mayor. When an electric-light company demanded exorbitant prices for street lighting, the Mayor donated a whole electric-light plant to the city. Through another generous gift, he made it possible that the town should own its own water-works, which

otherwise might have become the source of an unusually profitable revenue of a few private individuals at the expense of the community.

There are a few fanatic temperance men only who approve of the indictment, and even they do not dare to attack the Mayor's character, but only claim that the letter of the law must be obeyed. They expect that the Mayor shall prevent the citizens from drinking beer on Sunday, while the Mayor regards it beneath the dignity of his office to turn the policemen into informers and use them as spies.

There is no need of discussing the malignity of the indictment and its probable result; we mention the occurrence only on account of the principle involved of obeying or not-obeying the law. The Mayor promised to support the laws of the State; but he did not promise to enforce them, nor is that required of him, for the Mayor's office is not and cannot be a State institution. Further, these Sunday regulations are not laws, but ordinances; and lastly, the Mayor can be tried only for palpable malfeasance in office, but not for a mere neglect of trifles. We care little for the facts implied in the present case, especially whether or not it is an offence to sell a pint of beer on Sunday. The practical question at issue is, whether citizens elected to administrative offices must not only obey, but must also enforce the very letter of laws and ordinances, even of those which in their judgment are either impracticable or unjust. Is there not a higher norm than the letter of the law?

The question how to deal with laws that are impracticable or unjust in themselves has been repeatedly discussed by the late Professor Ihering of Göttingen, one of the highest juridical authorities. He says that the spirit of a law is its purpose.<sup>1</sup> The wording of the law is of secondary consideration, if but the purpose be rightly understood, and if the purpose of a law be irrational or unjust, a judge must interpret the law in the sense which it would have acquired, if the powers who formulated the law had seen its fallacy or unfairness. The problem of observing the laws is not so easy as it may at first sight appear to the unsophisticated mind of the inexperienced layman, for the trouble is that there are laws that contradict one another, and then magistrates have only the choice as to which law should be disobeyed, but it is sure that somewhere they must give offence.

What shall we do under these circumstances? Christ said: "The letter killeth, but the spirit quickeneth." The ethics of a blind obedience with their many shortcomings are good enough for an immature people; but we need a higher conception of duty. We have the right to expect of our magistrates that they shall be men who think and weigh and judge; and not mere legal machines. There is an old superstition that bad laws must be enforced so that they may be abolished. As if the people existed or the sake of the laws, and not the laws for the sake of the people! Shall we begin witch-prosecution and the burning of witches again simply that the old laws against witchcraft be abrogated?

Besides the shades of difference in the conception of a law are sometimes very slight, and the changes in the public sentiment of right and wrong are with few exceptions gradual.

He who understands the nature of evolution, not only in the domain of law, but also of religion, and in all other fields, knows that the world of thought is transformed by imperceptible changes which are effected, not by tearing down the letter of old formulas, but by giving them a new interpretation. Thus laws are abrogated only if they come suddenly into conflict with new and better, with broader and juster conceptions. As a rule, the judges themselves begin to interpret them more broadly and change their original meaning in agreement with the needs of the time.

We Americans have come to the conclusion that kings can

<sup>1</sup> See Rudolf Ihering, *Der Zweck im Recht*.

make no laws ; but there is a superstition still prevalent among us that majorities can do so. Majorities can pass ordinances, they can for the preservation of peace temporarily enforce a certain way of administering the law, but they cannot make wrong right, or right wrong; and a true law—law in the highest sense of the word—can never be in contradiction to the principle of that which is right. There are many so-called laws in our country which are simply majority-decisions in the way of experimenting in legal affairs and trying for a while a certain policy, which is erroneously thought to be right. Laws that are morally wrong will not and should not find many supporters among the officers of a genuine republic. It might have been foreseen that it would be difficult to enforce a law such as the Fugitive Slave Law. Have not even judges, magistrates, and ministers of monarchies laid their heads on the block rather than obey a bad law? Did not Sophocles in his great tragedy "Antigone" proclaim to the Athenians that the unwritten law is above the law of kings and States?

Those who speak of the sanctity of the letter of the law demanding blind obedience to ordinances simply because they have nominally become law, are responsible for the prevalence of anarchism; for if a man be requested to suppress the voice of conscience, if he must cease to investigate and judge for himself as to what be right or wrong, he will soon come to the conclusion that all law is a heinous tyranny and the embodiment of oppression which robs man of the most essential dignity of his manhood.

We must take the risk of an occasional wrong decision or mistake of judgment in a man in office. Liberty carries its own corrective in the evils that follow its abuses. Liberty of conscience and liberty in the interpretation of the law for both the citizens and magistrates are an indispensable condition of the public welfare. Instead of giving way to licence, as some claim, the result will be that the significance of the law will be better understood and revered than ever.

This should be the order of authority of the ideas that sway an American citizen, if, as an officer of town, or state, or government, he has to decide for the people the legality of a certain ordinance or law; above all laws stands what Sophocles calls "the unwritten laws," what Christians call the will of God, what the philosopher finds to be the eternal moral relations of society. Upon these the founders of our republic meant to take their stand, and thus we are secondly bound by the formulation in which they laid down their views of right and justice, viz., the Constitution of the United States as interpreted by the principles contained in the Declaration of Independence. After the Constitution of the United States we are bound to consider the Constitution of our particular State, and after that come the ordinances of cities and townships—always provided that they do not collide with any higher authority, but are proposed solely for carrying out by detail regulations the great principles of law and justice which are the foundation of the whole structure of laws and ordinances.

CORRESPONDENCE.

"OUR CLEVELAND CHRISTMAS."

To the Editor of *The Open Court*:

Allow me to thank you in your columns, not only for publishing "Our Cleveland Christmas," in spite of personal disagreement, but for maintaining that "it is always best to let everybody speak out plainly what he believes." I think more highly than Mr. Conway does of our national Constitution; but I cannot admit that it is too sacred to be criticised. John Stuart Mill has proved the right of holders of unpopular views to be heard dispassionately. *The Open Court* could not, consistently with its title, exclude an article on account of its opinions, if it were de-

sirable otherwise. The Religion of Science is not going to revive the Inquisition in defence of any doctrine, even Monroe's. Has not that doctrine truth enough to hold its own in public discussion?

Permit me also to say that if Mr. Conway is mistaken in thinking that our country is losing ground in Europe on account of "repudiations," silver bills, and similar errors, he ought to be refuted, and not merely denounced. If there is any truth in this statement, we ought to treat him as we would a friend who helps us find out that we need a doctor badly. F. M. HOLLAND.

AMRITA.

BY CHARLES ALVA LANE.

Nay, Soul, thy span is not from womb to tomb:

Thine every when and where of space and years;  
Thou art the past incarnate, and thine ears  
Know not a prophecy of death. The doom  
Of all deeds done thou art, and thou the womb  
Wherein a dream of full omniscience bears  
Forever toward the birth; for lo, Life rears  
So vast a hope amid its mystery-gloom!

Yea, Soul, in thee the living past fares hence,  
And fronts the future with a nascent god,  
In sleepless toil amid the elements  
Enkindling thought, and waking sense in sod;  
The Infinite woos the outward: Life grows broad,  
Subliming Nature to Intelligence.

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A living hand taken by Röntgen's X-rays in the Physical Laboratory of Hamburg. Reproduced through the courtesy of Prof. H. Schubert.

The plates on which the photograph was received were locked in a closed photographer's box, so that the rays had to pass both through the hand and the wooden cover.

