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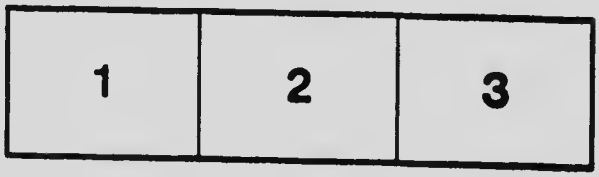

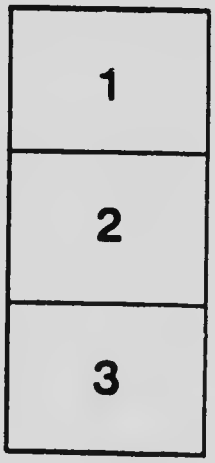

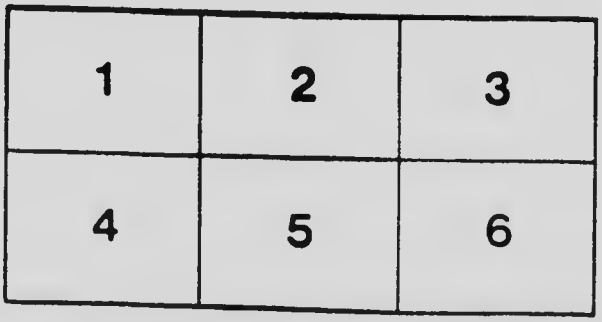

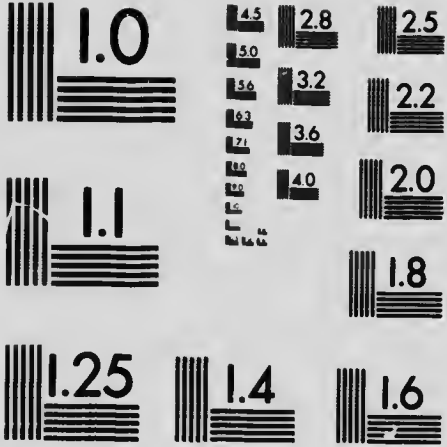

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Some Noted Catholic Men of Science

Sir Bertram Windle,

M.D., Sc.D., LL.D., F.R.S., F.S.A., K.S.G.

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Some Noted Catholic Men of Science

By Sir Bertram Windle, M.D., Sc.D., LL.D., F.R.S., F.S.A., K.S.G.

Your Grace, Ladies and Gentlemen:

The subject on which I am to speak to you tonight, is that of Some Noted Men of Science who belonged to our Religion, and I will begin by reading you a short extract, which may serve as a kind of text, from the review of a book of mine, which appeared a few weeks ago, in that very important Scotch newspaper, the "Scotsman," which has the reputation of being the leading paper in Scotland. I make no complaint at all about this review; it is exceedingly kind and flattering. I am going to leave out the flattering parts and read a little bit of it at the end, which I am going to make my text this evening,—"As the pronouncements of a distinguished Roman Catholic man of science, the papers will be read with interest by his co-religionists, and also by a larger public as a reflection of modern opinion within a Church commonly supposed to be hostile to science."

I ask; Why commonly supposed to be hostile to science? There is not a shred of evidence or proof nor is there any real reason for that hostility, or imputed hostility, as I think I shall be able to show you before I sit down. But before starting on our side of the case, I think, as there is always some fire where there is smoke, it might not be amiss to devote a few minutes to considering how this false

opinion has arisen; because it is there, and anyone, who, like myself, moves pretty freely amongst men of science will be aware that they do far too often regard our Church as inimical to science. And if you ask them: why do you think that? the answer one often gets is "Look at Galileo!" Well I imagine everybody is getting a little sick of Galileo by this time yet a word or two must be said about him here. Of course every Catholic historian admits that the Roman Congregation did make a mistake in regard to Galileo. But there are a lot of extenuating circumstances. Even the late Prof. Huxley admitted that, having gone thoroughly into the matter at Rome, he had come to the conclusion that the pope and cardinals had a good deal the better of it. There is no doubt that the spirit of the age was one which led to harsh dealings with anyone who was thought to be unorthodox. Kepler was another great astronomer at the same time as Galileo. He advanced similar opinions and was so severely treated by the Faculty of Tubingen (altogether Protestant) that he fled that place and took refuge at Ingoldstadt with, above all other persons, the Jesuit priests who welcomed him to their house. You must remember that it was just about this time that Calvin, the arch heretic, had Servetus put to death by slow roasting. You must not leave these things out of consideration when considering the question, though when Galileo is brought up you are not usually told of these other circumstances.

Further if one studies the history of this case one will find that Galileo was an exceedingly unpleasant type of person. He was one of those men who arouse everybody's antagonism. Just a few years after advancing the geocentric theory he advanced the opposite theory. Further his proofs were inadequate; indeed it was not until one hundred years after his death that complete proof of his theory came into the possession of scientific men.

Another point raised in this connection is that of the "imprimatur" too long to deal with now and fully discussed by me in one of my books. On this I will only say that a layman is not in any way obliged to ask for an imprimatur for his books. I do not know what rules apply to the clergy, but only once have I applied for one though I have written several books on Catholic matters.

Then there is the Index, and the Index is supposed to be devised in order to prevent men from studying books or getting in any way at the scientific truth. Now that is not so. Any person who is a serious student can get permission to read any books he wishes to. The index is intended to warn persons who may not, perhaps cannot know, the character of certain books. After all, when you consider it, every decent father of a family has a household index, and forbids certain books to come into his home, and the index is a warning to those within the House of Faith as to books which had better not come into their homes, unless for the use of persons who need them for purposes of study.

Now I will pass from that part of my subject. I am now going to show you that the Church is not inimical to science. And the first argument which I should bring forward, if I were dealing with a hostile audience, would be to ask them how they supposed all, or nearly all, of the older Universities came into existence. Very nearly all of them—one might almost say all of them—work under and hold their position by virtue of bulls from some pope or another. If you go to the great Scotch University of Glasgow—highly Presbyterian now—and walk into the Senate Room, the thing that most surprises you is that in the centre of the fireplace is the carved head of a pope wearing the tiara. That is the pope that founded Glasgow University and in virtue of whose bull that largely Presbyterian University exists to this day. I may tell you that, Presbyterians as they are, when they had a Centenary celebra-

tion a few years ago, they sent a very polite invitation to the Holy Father at Rome to be present. Of course he could not accept. They then invited the Archbishop of Glasgow, and conferred upon him an Honorary Degree, stating that they did so because he was the representative of the successor to the founder of their University. Universities, as a rule, are supposed to be places in which science and scientific studies are pursued, and it would seem to be a little curious that a Church which was hostile to science should be the mother of all the oldest and most famous institutions of this kind in all parts of Europe, including the British Isles. That alone is sufficient proof, sufficient argument against such a theory, if any were required.

But I pass now from that. And I go on to ask you to consider some of the noted men of science, who have also been members of our Church. Please note:—that is what I limit myself to. I do not for an instant wish it to be understood that I am not fully aware of the fact that there is a very large and glorious list of men of science who are not members of our Church; some of them not members of any Church. I am not concerned with them. What I am concerned with is great scientific discoverers who were Catholic. And I will begin with those who are attached to the subject which I myself taught for over twenty years in England, namely Human Anatomy. There is hardly any subject in connection with which greater mis-statements have been made with regard to the attitude of the Church. You see it stated in some of the books, on the so-called Conflict between Religion and Science, that Boniface VIII. issued a bull forbidding all practice of human anatomy. Well of course if he had done that, it would have been a very serious thing. It would, as far as Boniface could manage, have put a final stop to all surgical and most medical investigations. One can see that bull gravely quoted in a certain number of books and held up as an ex-

ample of the hostile attitude taken toward scientific studies by mediaeval popes. There surely must be something to account for this theory that Boniface, the Eighth, issued a bull forbidding human anatomy* Boniface, the Eighth, did issue a bull, which had something to say to dead bodies but it was an altogether different thing from what it is sometimes said to be. During his time the Crusades were in operation. Now Crusaders came to the Holy Land from all parts of Europe, and practically all crusading noblemen, at any rate, left it on the consciences of their friends that should they be killed—as of course many of them were—their bodies should be brought back to England or France, or whatever country they came from, for burial. Now if you come to consider it, that was a very difficult thing to do in those days, (it is a curious subject to have to talk about, but I must explain this matter of the supposed bull). The ships were small and the crusaders were large—they had no methods of embalming in those days, and consequently they adopted the horrid plan of removing and cleansing the bones of the crusaders and taking only these back. *That* was what Boniface forbade and nothing else. If you will read the bull, which is accessible to-day, you will see that *that* is what Boniface forbade under pain of excommunication. I think he was right; it was a horrible practice, and most unsanitary. That had nothing to say to human anatomy. "Yes," people say, "that is all very well, but it was understood to include ordinary human anatomy." Well was it? Look at the list of papal physicians, persons selected by the Pontiff for the time being, and at a time when these Pontiffs had every temporal power, and you will find that quite a number of them were distinguished anatomists and noted in the history of anatomy at this day. There were three of them, that came one after the other, who were all papal physicians, and all authors of books on anatomy. First of all Columbus—not the gentleman after whom this hall is call-

*Dr. J. J. Walsh's book, "The Popes and Science," to which I am much indebted, deals fully with this subject.

ed—but Realdus Columbus. Then Eustachius, after whom the tube from the ear to the throat is called, he having discovered it. And Varolius, whose name is associated with an important part of the brain.

Following them came Malpighi. These four men were all papal physicians, as well as anatomists. They were all under the very eye of the pope, and yet we are asked to believe that all the time the pope was forbidding human anatomy under pain of excommunication. The Popes seem, one after another, to have actually selected the leading anatomists of the day in Rome to act as their physicians, and I think they did very wisely, because these men, who were constantly engaged in research on the human body, were the men most capable of dealing with human diseases of the day.

Now let me conclude this part of the argument and this absurd story of Boniface's bull by telling you that the most prominent German history of medicine, not written by a Catholic and certainly with no Catholic bias, says that papal hostility to anatomy did not exist; that the Papal Court placed scarcely any obstacles in its way, and that, on the contrary, the Popes encouraged anatomy in every way. That ought to dispose of this tale of Boniface and his bull.

In addition to those I have been speaking about, let me name one or two distinguished Catholic anatomists. First of all there is the greatest name of all amongst anatomists, namely that of Vesalius, the father of Anatomy, who was born in 1514 and died in 1564. He was born in Louvain, and there he was educated and I wonder if any University in the world could now turn out a young man of twenty-two who was capable of going to Italy,—his native language being French of course—and lecturing on anatomy in Latin. That is what Vesalius did, and it certainly shows that the type and intensity of education at that time in Louvain was of a very high order. Well, Vesalius found the science of anatomy dependent almost entirely

upon tradition, and in his great book, which is still worth reading, he revolutionized the whole science and earned for himself the title of its "father." He was a devout Catholic and died as such. He went on a pilback on the Island of Zante and as a result of exposure, died at the early age of fifty. He was an ornament of the Church to which we all belong.

Another well-known anatomist was Fallopius. He lived from 1523-1562, and I ask you particularly to note the date—the early part of the latter half of the 16th century. Fallopius was an anatomist. He also was in Holy Orders, and was a Canon of Modena. He discovered two things that every doctor has to learn about in his professional studies—one is the Fallopian tube, and the other is called the aqueduct of Fallopius. You will sometimes find Fallopius brought up in controversy by non-Catholics in the following way. During Fallopius' lime-time fossis first became an object of interest to the scientific world, and these fossil forms, which are found in rocks, were brought under the notice of Fallopius, as a scientific man. Fallopius of course did not know anything about them, and he hazarded a wild and foolish suggestion that they were engendered by ferments in the earth. Well, now, you will be surprised to hear that I have seen it in print that Fallopius said this because he was afraid of what would happen to him if he told the truth about these fossils. As a mere matter of common, ordinary, every-day fact, *nobody* knew what these things were until Fallopius had been for a hundred years in his grave. And who found out what they were? A Catholic Bishop. That is a thing that is not mentioned when one is told that Fallopius deliberately hid what he knew because he was afraid of the Church.

I will devote a little time to the man who did find out about fossils. His name was Nicholas Stenson. He was born in Scandinavia, as a Protestant and brought up as a

Protestant. He studied medicine, became a doctor, went to Italy, and whilst still a Protestant was appointed physician to an Italian hospital. There he was subjected to the prayers and arguments, chiefly prayers, of a holy and tenacious nun, who compounded the medicines, and was quite determined that Stenson should abandon his Protestant views. In the course of time he did, and became a Catholic. Now Stenson shines in several sciences, but in two directions particularly is he an outstanding man. First of all, he was a geologist. He was the first person who established the real meaning of fossils, as it is held today, and so great is his reputation in the geological world—although perhaps nobody in this room ever heard of him before—that at a Congress of the Geologists of the world in Italy some fifty years ago, a tablet was erected to the memory of Stenson, in which he is described as the Father of Geology. Now Fallopius made a stupid mistake. Of course he knew no better, nor did anyone else at that time. Stenson cleared this matter up, and you will find a very curious statement about him in the Encyclopedia Britannica. "Cautiously at first, for fear of the Church, he advanced his theories, then he became bolder and made them all public." Now if Stenson had not been a Catholic, my suggestion as to what would have been said is: "Cautiously at first, until he felt quite sure of his facts, but more boldly afterwards when he had got those facts in hand, he made them public."

Apart from that, Stenson was a very great anatomist. He discovered the duct that crosses one's face below the cheek-bone, and he made another very remarkable discovery, which is so interesting, that I might delay over it for a few minutes, and that is in connection with the circulation of the blood. Everybody of course knows that the blood passes from the heart into the arteries, and so on through the veins, and then back again. That view was first of all published by William Harvey, one of the great ornaments of Britain and

British science, who was a tutor to Charles First's children, Charles II and James II. When he brought out his book, he said that he knew he would be very much attacked, because he really had not got all the facts to prove his theory. There were two difficulties in the way of it. First of all, there was the question of what forced the blood on its course through the body, and secondly, there was the even more difficult problem, how does the blood get from the arteries into the veins. Arteries you can recognize when you you feel your pulse. Veins you can see on the back of your hand. They don't, as a matter of fact, directly communicate with one another. There was the difficulty which Harvey was unable to get over—how does the blood get from the arteries to the veins? Stenson proved that the heart was a huge mass of muscle, and, therefore assisted Harvey's theory, by explaining what the motive force was which drove the blood into circulation.

And then Malphighi discovered the capillaries. He was not only a Catholic, but was physician to the Pope. By means of the microscope he demonstrated the fine tubes, called capillaries, by which the blood passes from the arteries to the veins. The motive power for the circulation of the blood and the capillaries through which it runs—both of these facts demonstrated by Catholics, one of whom was afterwards a bishop. So much for anatomy.

Now I pass on to another biological subject, and that is the very interesting controversy, Biogenesis or Abiogenesis, now I think concluded, but which lasted for some 200 or 300 years. It is commonly dealt with in the papers as "spontaneous generation." The point at issue is whether living things can ever directly come from non-living things. Now you sometimes see, or at least I have seen in papers when some theory was put forward favoring the idea that living things *could* come from non living things, a sort of vague idea that religion is in jeopardy, should that be proven. Of course that is absurd; an absolutely un-historical

idea. At the time of St. Thomas Aquinas everybody believed—Catholic and Infidel and Arab and every other person—that living things did come from non-living things. Was it wonderful? Of course it was not. People had no microscopes. They saw meat that was left exposed too long, with living things arising from it. Eels were thought to come from vinegar; indeed their life-history—marvellous enough—was only cleared up a few years ago. The discussion which was held between St. Thomas Aquinas and the celebrated Arab philosopher, Avicenna, was not as to Biogenesis or Abiogenesis—whether living things came from dead things—for both of them believed that living things did come from non-living things—but the Arab believed that they arose by the mere operations of Nature, while St. Thomas' theory was that they came from it by the direct mandate of the Creator. That was the point at issue between them.

The first person to challenge the theory that living things arose from dead matter was an Italian named Redi, who wrote his book in 1672. He was a physician and a poet, and he proved in a little book that if you put a screen over a joint of meat, so as to keep the flies off, it would not develop maggots. That was the beginning of discoveries which have had quite extraordinary effects. I don't know whether Redi was a Catholic or not, but considering the time at which and the country in which he lived, it is reasonable to suppose that he was.

Things went to sleep, so to speak, until the 18th century, when the matter became a live issue between two men occupying opposite sides in this controversy, both of them Catholic priests. One of them was Turberville Needham. He was the first Catholic priest to be made a Fellow of the Royal Society—a very high distinction. As things have turned out he was on the wrong side. The person who opposed him was another priest by the name of Spallanzani. He carried Redi's experiment a little further. He

got little glass flasks with narrow necks, and put beef tea into them. Everybody knew it would "go bad" if exposed to the air. Having filled the flask with this and boiled it, he sealed up its neck. And nothing happened. This was an extension of Redi's experiment, which only dealt with such things as flies.

Nothing further was done until 1858, when a Frenchman of the name of Pouchet once more declared that living things could come from non-living. The French Academy of Science offered a prize on this subject, and the prize was won by Pasteur. What Pasteur did was to repeat the experiment of putting organic fluids like beef tea into glass vessels and sealing them up. Then it was said, if you exclude the air, you prevent the possibility of life. "Very well," said Pasteur, "I will cork the flasks with cotton wool and that will filter the air." The experiment thus conducted, was as successful as the other. Furthermore, he made some of these bottles with corkscrew-like necks. This experiment was also successful because the air slowly passing in, deposited the bacteria on the little twists in the glass tubes so that they never reached the fluid within. Some imagine that Pasteur by these experiments proved that living things never come from non-living, but a negative of that kind cannot be proven. What he did prove was that if you exclude air from organic substances, or if you only allow pure air to come in contact with them you can preserve them. Now the whole canning trade of the world depends upon this. Every time you open a can of salmon or soup and find it good, you are experiencing the truth of Redi's, Spallanzani's and Pasteur's theories.

What is also important is that two attempts have been made to refute this theory—one by the late Dr. Bastian, and the other by Mr. Burke, who is still alive. Mr. Burke is a Catholic. Now there are seven names which are important milestones in this important controversy—one which, from the surgical point of view—for modern sur-

gery depends upon it—and also from the economical point of view—for so does the canning trade—was perhaps one of the most important that was ever waged. Of those seven, four at least were or are Catholics, and two of the others, Redi and Pouchet probably were. And yet we are told that the Catholic Church is hostile to science.

I will run very rapidly over one or two other points which I have noted down. There is the Cell Theory. Now the cell theory from the point of view of morphology and pathology is one of the most important discoveries that has ever been made, and the author of the Cell theory was Theodore Schwann, who was a pious Catholic professor in Liège. There is no biological subject on which, in recent years, greater work has been expended than that of the Cell—Cytology as it is called—and a very large part of this work was done at Louvain—the University wrecked in sheer wantonness by the Germans in the war. La Cellule —in abeyance during the conflict, let us hope to be reissued —was edited and published there and the names of the Abbe Carnoy and of Van Gehuchten are well known all over the world for their investigations.

As a last instance from the biological point of view—who was this Mendel, about whom one hears so much, whose name is such a prominent one in modern Biological controversy? Mendel was an abbot at Brunn. I am sorry he ever was made an abbot, as his scientific work came to an end when he was made a Prelate. The name of Mendel has been claimed to be as great in Biology as those of Dalton and Newton are on the chemical and physical side.

There are other points which I have not yet mentioned. I ought to turn for a minute or two to the physical science with which I am not so familiar. Let us look at chemistry for a moment. There is an absurd story in connection with chemistry—that Pope John XXII issued a bull against chemical studies. Of course he did not. What is the explanation? It is a similar explanation to

that which I gave you about anatomy. In his time there were any number of so-called alchemists "faking" precious metals; deceiving the unfortunate public and doing them out of their money. What John XXII issued a bull against—it would be a remarkably good thing if the Pope today could issue a bull against some of the swindling advertisers—was these swindling alchemists. But it had no more to do with the study of chemistry than a prosecution for an improper description of an article would have to do with a prosecution of chemists today. I mention that because this story is sometimes brought to the front. I need only say that among the early chemists on whom so much of our knowledge depends, were Roger Bacon, Albertus Magnus and Raymond Lully, clerics as well as chemists.

Let us turn for a moment to physics. There is a striking example that, though I have used it before, I think may be quoted again. In connection with the electricity with which this room is lighted, it became necessary to establish names for the various units. If you are going to buy and sell electricity in the same way as you buy and sell wheat or coal, you must have units by which it can be measured in the same way as we measure coal by the hundred weight or ton, and wheat by the bushel. Scientific men connected with electricity set themselves to the task. They decided that they would give to these units the names or part of the names of some men who stood out above all their fellows as discoverers in connection with electrical science. Now what were the names they selected?

The first unit is that of electro motive force—it is the volt. Everybody has heard of voltage. The current comes in by the wires from Niagara at such and such a voltage—

I expect a pretty high one. The volt is the first unit and its name is taken from the name of Alessandro Volta, who was an exceedingly pious Catholic and who, lest it be thought he was anything else, left on record one of the most beautiful professions of faith that one can possibly read.

The second unit is called the ampere, and it is called after a Frenchman, also a Catholic.

The third is the Coulomb, and that is called after a man of the same name. It is the unit of quantity. Coulomb also was a very excellent Catholic.

Ohm,—the unit of Resistance—is called after George Ohm, and he was also a Catholic, though comparatively little is known of him.

The last unit is the Farad, and it is the first part of the name of Michael Faraday, and the only one of the lot who was not a Catholic. He was an exceedingly pious Protestant of a small body called Sandemanians—I do not know if it is in existence today.

Galvani, who gave the name to Galvanism, another term for electricity, was also an exceedingly pious Catholic.

As we have on the biological side, so we have also on the physical, excellent evidence that some of its brightest stars have also been sons of the Church.

I have not touched on people like the Abbe Breuil, perhaps the leading archaeologist of the day; or Hauy the crystllographer; of de Lapperent, the geologist, or of many others all of them eminent men of science and devout members of the Church to which we belong, but I think I have said enough to prove the falseness of the text with which I began, that our Church is one which is hostile to science.