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A. M. D. G.

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FR. ERICH WASMANN ON EVOLUTION.

In Germany, too, the theory of evolution is under discussion. Last year, a Munich daily, the "Münchener Neueste Nachrichten", invited a number of Germany's foremost scientists to express their views on evolution in its columns. Among those invited was Fr. Erich Wasmann, S.J., a well-known authority on ants, whose habits were the subject of his life-study. A friend forwarded to us the articles which Fr. Wasmann contributed to the symposium. No doubt, many in this country would be glad to have a translation of the whole, but space forbids that; the articles cover some 30 columns in rather small print. It was therefore thought more advisable to make a synopsis and to present merely the gist of Fr. Wasmann's ideas on the theory of evolution.

Fr. Wasmann did not begin his lifework with a bias in favor of evolution. Far from it. He even wrote against it at the outset of his scientific career. This was but natural. He made his Scholastic studies at a time when Darwinism, as the Germans called the theory of evolution, meant Haeckelism and appeared to be inextricably interwoven with atheism and materialism. Small wonder that his teachers imbued him with a lively sense of horror against evolution and all its pomps. Only Fr. Tilmann Pesch, so he tells us, was clear-visioned enough to distinguish between the various strands woven into Darwinism, but offered to a gullible public as one and indivisible. It took Fr. Wasmann 15 years to overcome this initial bias. "Many years passed, he says, before I realized that we shall never understand the present-day species and their instincts, unless we adopt the genetic viewpoint for the organic world".

In the synopsis I shall first of all present Fr. Wasmann's answer to two fundamental questions concerning evolution; then I shall give a brief summary of some of the postulates which 19th century Haeckelism put forward as the groundwork of evolution; lastly I shall indicate briefly how Fr. Wasmann accounts for evolution of species which he has observed himself among ants. Unfortunately lack of space as well as of special knowledge forbids me to enumerate the 8 proofs of evolution among ants which he details in some of the articles.

1. TWO FUNDAMENTAL QUESTIONS

1. The first question which Fr. Wasmann puts to himself and in the right answer to which he sees the solution of most of the difficulties urged by the foes of evolution, is this: What is meant by the theory of evolution? (Fr. Wasmann calls it "Abstammungslehre", theory of decent, the term now commonly used in Germany).

According to Fr. Wasmann, the theory of evolution comprises two essential elements: a genetic conception of the organic world, and the application of this conception. The first element is the view of genetical relationship between present-day and prehistoric organisms; the second element is the endeavor to apply this conception to the facts as we know them, that is, to explain the known facts by means of genetical relationship.

Fr. Wasmann is convinced that the advocates of evolution have done great harm to their cause by neglecting this fundamental distinction. Evolution either everywhere or nowhere, they cried enthusiastically. Fr. Wasmann calls this the "dogmatic" theory of evolution and will have nothing to do with it. No, keep the conception of genetical relationship in the back of your head, but be cautious, very cautious in applying it to concrete cases. This is the "critical" theory of evolution If the theory of evolution is ever to emerge victorious, it is the cool heads who will win the battle.

2. The second question concerns the relation of evolution as a scientific hypothesis to religion, specifically, to the account of creation as told in the first chapters of Genesis. There seems to be an opposition, or at least, many profess to see an oposition there.

Fr. Wasmann scouts such fears. If the above distinction is made between the two essential elements of the theory of evolution and if the extra-scientific purpose of the Bible is kept in mind, the opposition is seen to be merely apparent. Evolution is a heuristic principle, to be kept in mind by the scientist and to be applied only if and as far as the facts warrent. Can divine revelation contradict this? On the other side, the Bible was never meant to teach us science. No doubt, whatever is contained in the Bible, is historically true; nor can an exception be made with regard to the first three chapters of Genesis; they are not myths. But the facts narrated are clothed in language intelligible to men of all times and independent of the kaleidoscopic variations of future scientific theories.

Fr. Wasmann here inserts the famous a priori argument in favor of evolution Would not God's wisdom and power, he asks, be made more manifest if He created the world in such wise that it would evolve itself by means its own proper activity, than if He Himself directly created all things? If this argument be taken as a starting-point, then there are only two limitations imposed on the theory of evolution: the origin of matter and the human soul. Matter must be created, to begin with, and no spiritual being could ever arise from matter by the process of evolution. But with in these limits, evolution is possible in the abstract; even evolution from non-living to living is not intrinsically absurd. However, such abstract considerations prove nothing with regard to any real probability. As a matter of fact, science itself vigorously protests against spontaneous generation.

2. MONISTIC POSTULATES

Fr. Wasmann also discusses 8 postulates which 19th century monism laid down as the logical premises of the theory of evolution. His principal objection aqainst them is that the second element of the theory of evolution, viz. the facts and the applicability of the theory to the facts, is altogether neglected. Leaving out those assumptions which are totally unwarranted and which would be the death knell of all genuine philosophy of life, I pick out 4 of them, in the discussion of which Fr. Wasmann's stand on "critical" evolution becomes particularly apparent.

1. Evolutionists first of all claim that everything must have sprung from simple beginnings. Accordingly, organic life on this globe must have begun with simple cells or still simpler monera or some other hypothetical units.

Two arguments are generally advanced for this principle: a) The general law of simplicity or parsimony. According to this law, all phenomena of nature must find as simple an explanation as possible; therefore the complex also must be derived from the simple.

b) Unicellular organisms change into multicellular; v.g. the volvox; in fact, every multicellular individual, in its first stage of evolution, is unicellular What holds good for the individual, also holds good for the species, nay for the whole organic world.

Fr. Wasmann grants a slight a priori probability to the first of those two arguments. But he very much doubts the validity of the second. The germ cell with which the evolution of the individual chicken begins, is as essentially different from the germ cell with which the evolution of the individual frog begins, as the chicken is from the frog. The germ cell out of which the individual develops, is nothing less than simple as understood by monists. For the chief factors of every evolution and development are the internal dispositions present in the germ cell. Applied to a whole phylum of organisms, this argument would therefore lead us to an initial cell exceedingly complex.

2. Another postulate of evolutionists is that we must assume only one or at least very few primitive forms. Evolution is monophyletic, or, if that is not granted, polyphyletic in the sense that the number of primitive forms must be reduced to a minimum.

Fr. Wasmann distinguishes.

Considered a priori and without regard to facts, the postulate is to be granted. If one species can evolve from another, why could not all species evolve from one? The law of parsimony also holds for evolution: Entia non sunt multiplicanda sine ratione. However, the last court of appeals is experience. And from that standpoint, we can say nothing as to the number of primitive forms. "The probability is far greater that evolution was polyphyletic than that it was monophyletic, first of all because of the difference between the vegetable and the animal kingdom, secondly for paleontological reasons".

3. I wish to call the readers attention especially to the discussion of the third postulate. The postulate is this: Evolution proceeded along ascending lines, that is, the organization of succeeding gererations became ever more perfect.

The gist of Fr. Wasmann's reply is contained in the following sentences: "This conception does not pertain to the essence of the theory of evolution. The theory of evolution. The theory of evolution implies only relationship, a genetical connection between different organisms. Nor do the successive forms of the genetic series which paleontology has established as certain (ammonites, elephants, horses) show any such ascending progress of organization". Relying on the authority of E. Daque, a paleontologist by profession, he even claims that the findings of paleotology, far from bearing out the assumption of progressive evolution, actually contradict it.

4. The last postulate which appeared to be of interest, concerns the orgin of man. Monists, of course, claim that man, being merely the "highest animal", must also be included in the theory of evolution.

Fr. Wasmann again distinguishes between soul and body. Man is endowed with a spiritual soul, and a spiritual being can never evolve from matter. Now what differentiates man from every other animal, is precisely his soul. Therefore man as such could not possibly have originated by an evolutionary process.

But might not man's body be merely the highest and last stage of animal evolution? Fr. Wasmann grants the abstract possibility. God might have taken one of the higher forms of animals and replaced its soul by a human soul when the material composition of the germ cell was properly prepared for it. Or the necessary dispositions for the human soul might have been brought about suddenly by "mutations". Since the spiritual soul is also the form of the human body, the development of the formerly animal body would then proceed along specifically human lines. Such a process involves no absurdity, especially if one accepts the Scholastic theory of matter and form. But "aposse non valet illatio ad esse". How man actually originated, we are told by the Bible, and the account of the Bible can never be contradicted by the certain conclusions of the natural sciences.

Let therefore the scientists try all modes of approach, all methods at their disposal; but let them ever beware of substituting their hypotheses for revealed truth.

3. CAUSES OF EVOLUTION

After Fr. Wasmann discussed the postulates of evolutionists, most of them totally unwarranted, he presents to the reader in a series of "pictures" the cases in his own special field of research, which make it highly probable that since the tertiary period new species of insects have actually arisen. This being granted, the next question is how new species arise. It is the answer to this question that I shall summarise in this last part.

1. According to Fr. Wasmann, all evolution (or rather descent) of the individual as well as of the species, supposes active adatability. That is to say, the organisms must be so constituted as to be capable of reacting purposively to the influences of the environment by immanent processes. The purpose of these reactions is the preservation and propagation of life; without such purposive reactions, the facts cannot be accounted for.

2. Nevertheless we must not imagine that new species are entirely due to these internal factors. External environment or natural selection also exerts its influence. Moreover, the relation between the external and internal factors is by no means left to chance, but subject to definite laws. Neither orthogenesis nor extreme Darwinism can be accepted as the sole cause of evolution.

3. Sometimes new instincts are developed which are harmful to possessors and may eventually lead to the extinction not only of individuals, but also of the whole species. In such cases, the internal factors are chiefly accountable for the change, though they are stimulated by external factors.

4. The importance of natural selection varies. At any rate, while its efficacy must neither be denied nor overrated, it is never more than a negative factor helping to weed out the unfit.

5. The chief cause of every evolution are the internal factors, which are dispositions or capabilities (Anlagen) of the organism. But they are not endowed with that indefinite and unlimited variability of which the earlier Darwinists spoke Mendel's researches corrected this fundamental error by showing that the internal dispositions are subject to definite laws.

6. Since both internal and external factors are operative in every change of species, we must not deny the presence of either solely because we have not been able, in some specific case, to observe its efficacy. The influence of the two factors is not everywhere the same.

There are also facts which oblige us to assume inheritance of acquired. Neither the theoretical difficulties connected with it nor the fact that it does not occur everywhere, must deter us from making the assumption. If acquired characters can never be inherited, then it is impossible to explain changes of instinct.

Let me close this brief synopsis with two remarks. The first is the Fr. Wasmann is not an evolutionist at all, viz. in the sence in which this term is understood here in America. With us, if evolution means anything at all, it means progress from the lower to the higher, from the less perfect to the more perfect, from the simple to the complex. Fr. Wasmann flatly denies that this is or ever was a law of nature. And he denies it relying on his own research as well as on the authority of a noted paleontologist.

Could evolution be a law of nature? That is another question. Fr. Wasmann admits the abstract possibility, assigning, too, its lower and upper limits. But he is too much of a philosopher not to realize that such possibility is purely negative inasmuch as we do not see any intrinsic absurdity. But from this to positive possibility and probability is a far cry.

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The second remark is this. Fr. Wasmann's studies and experiments seem to prove conclusively that one species can be transformed into another, no essentially higher perfection being claimed for the new species. Yet Fr. Wasmann nowhere conducts a rigorous proof that the species he speaks of, are natural as opposed to systematic. I am inclined to think that Fr. Wasmann refers only to systematic species.

Fr. C. Cotter,
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RECENT ADVANCES IN MOTION PICTURES

"Talking Movies" has been a news paper and magazine head-line for some time. Aside from the theatrical and spectacular side of the development, there is considerable scientific interest manifested in the application of well known principles of physics, particularly of the principles of radio communication. Some years ago De Forrest brought out his "Phonofilm", which was exhibited in many theaters throughout the country, but which did not win any striking success with the general public. De Forrest used a photo-electric cell to photograph the variations in light intensity along a thin strip at one side of the standard 35 millimeter film, the variations of light intensity being the effect of sound vibrations recorded through the meduim of a special audion tube. The synchronization of sound and movement was excellent. About a year ago the so-called "Vitophone" was intruduced jointly by the Vitaphone Corporation, Warner Brothers and the Western Electric Company. The Vitaphone is a synchronization of phonograph and film, the sound being carried to the audience by a loud-speaker system similar to the familiar radio variety. The musical and speech effects of the Vitaphone are excellent. The apparatus is elaborate and costly, a single installation in a theatre costing at least $12,000.00. In spite of its cost over three hundred installations had been made or contracted for in the United States by January first of this year, and new installations are rapidly increasing. Early in March commercial production of motion pictures with voice or music photographed on the same film with the corresponding motion picture was started in the Fox Film Corporation's studio in New York City, the system used being known as The Fox-Case Movietone, an invention of the Case Laboratories at Auburn, N.Y. The Movietone will use the same Westron Electric sound reproducer as the Vitaphone, and the same film projector, the only additional equipment necessary to add to the projector being a small light-box, which addition can be made at a nominal cost. By a financial arrangement between the controlling interests Vitaphone and Movietone films will be shown in the same theatres. A fourth type of "talking movie" has been developed by experts of the General Electric Company at Schenectady. In this type the sound impulses cause a minute mirror to vibrate proportionately to the sound intensity, the mirror reflecting a tiny beam of light to the edge of the moving film, which is thus affected in varying degree according to the variations in voice or musical instruments.

Not to be outdone by the professional purveyors, two producers of motion picture devices for the home have announced the early distribution of two home talking movie devices. One is the "Filmophone" of the Bell and Howell Company of Chicago, makers of the well-known "Filmo" camera and projector; the other is the invention of W.H.Bristol of Waterbury, Connecticut. These two devices will use the popular 16 millimeter film.

Already many inventors are coming forward to claim priority of invention for the various "talking" devices used in motion pictures; and it seems probable that some of the exploitation companies will find themselves involved in litigation.

It will be of interest to record that the "world's biggest motion picture theatre", the Roxy in New York which opened on March 11 and which has a seating capacity of 6,400, will have in addition to Simplex projectors and the Vitaphone, the Spoor Natural Vision Projector.

The latter will throw on the screen three - dimensional, or stereoscopic, moving pictures. This theatre will also contain a new device by which the projectionist can change at will the size and shape of the image on the screen. There will be a transparent screen also, through which pictures will be projected from the rear of the stage, which has a depth of 60 feet.

EDUCATIONAL MOTION PICTURES

Realizing that motion - pictures as aids to teaching have not developed as rapidly as pictures for entertainment, The Eastman Kodak Company has made a series of motion pictures to illustrate various subjects of the elementary school curriculum,which they are trying out in the elementary schools of six cities or towns with the view of compiling useful data for the study of the "problem" of educational movies. The experiments are being carried out during this school year. As yet no reports are available. It might be well for some of our science professors to keep in touch with this work; we might have a wholesome influence on the movement particularly as it affects Catholic schools.

AMATEUR CINEMA LEAGUE

Attention is called to a new magazine "Amateur Movie Makers", the official publication of the Amateur Cinema League. It contains instructive articles on all phases of the motion picture as it interests the amateur. The League is an outgrowth of the great interest taken in motion picture making by amateurs, due to the introduction of the non-inflammable narrow width film (16 millimeters or less) as used in the Kodascope, Filmo, Pathex and other amateur cameras and projectors. The headquarters of the Amateur Movie League is at 105 West 40th Street, N.Y. City.

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FATHER HAGEN HONORED BY THE HOLY FATHER

"AUS DER PROVINZ", the NEWS LETTER of the two German Provinces, in its January number states that Father John Hagen, the Director of the Vatican Observatory, has received a medal from the Holy Father in recognition of his work in Astronomy. In this connection Father Ahern recently called our attention to an article in "VARIABLE COMMENTS" for April 1926 describing a visit of Mr. D.B.Pickering to Father Hagen. This little Bulletin is the organ of the American Association of Variable Star Observers. The article is in the form of a letter and is entitled "From Our Traveler's Note Book". Mr. Pickering at the time was visiting foreign observatories as the official represontive of the Association. We take the liberty of quoting a few sentences. "We were admitted by a uniformed attendant and ushered up the wide stone stairway to a most airy and delightful library...Now down the stone steps from his study came a tall straight figure in long black gown and skull cap, the man whose work means so much to all students of variable stars. His fine slender face with its twinkling eyes smiled a welcome as he approached to greet us in a voice low and musical, but having the slightlest German accent. He declared almost at once that the A.A.V.S.O. was the greatest of all variable star associations in the world. His greeting was warm and sincere and he immediately inquired about his friends in the organization. He evinced great admiration for the late professor Pickering whose portrait inscribed Edwardo Carlos Pickering he showed us hanging among the few in the library. Pickering and Newcomb he declared were America's greatest astronomers.

As he showed us about he told of the work he had had twenty years ago converting the bare rooms of what had been a sort of summer house for the Pope into the observatory it now is. Arduous labor with but little help it had been.

His only assistants at present are a secretary and a care-taker who had been taugh to use one of the smaller glasses and does all the photographic work. Fr. Hagen himself is in attendance at the 16-inch glass on every clear night. He is always busy, so busy in fact that he virtually never leaves the grounds, stating with that humorous twinkle always in his eye that unlike the Pope he could leave if he cared to-which was a considerable satisfaction.

We entered the rodunda below the large dome, whose telescope has no pier but rests on the walls of this massive foundation, which, with the great wall extending from it was built 1000 years ago to protect the Vatican from the incursions of the Saracens. So firm is it that even after an earthquake that almost threw Father Hagen from his bed, the glass was found to be in true position requiring no readjustment. All about the round chamber are illuminated pictures of celestial objects, many from Harvard College Observatory, with some from Yerkes and Flagstaff beautifully arranged, cased and labeled. The arched ceiling is frescoed colorfully with stars and symbols of constellations. Stairs of heavy masonry wind up to the dome which is operated by power and equipped most thoroughly. Still further up an outer platform surrounds the base of the dome, connecting with the long path atop the wall on which, and far away, the smaller instruments are housed. From here a splendid panorama of Rome is unfolded, on a level well above the neighboring walls of St. Peter's.

Later we discussed his present work and he told of his plan to issue two new series of the Atlas: Series VII, to contain more of the faint variables, a continuation of Series VI; and Series VIII to be a continuation of Series IV.. Regarding the peculiar juxtaposition of science and religion that makes his environment, he said, "They go perfectly together- I practice both". He told me that he was never at a loss for funds, although his resources depended solely upon the Pope... He was pleased to hear of the extensive service to which we were putting his charts and allayed our fears that we might be using some of his work without specific permission. "No permission need ever be asked he said". All my work is free to all who are working for the same end. There are no publishers interested in their sale; I have sole control. Most of my money, you know, comes inderectly from America. After leaving the Observatory Mr. Pickering says, the thought of the tolerance and grace of the kind old gentleman we had left, lessened the austerity of the place, and made it all seem more human and inviting. Also we had a rather clearer idea of the significance of the sacred phrase "Faith without works is dead".

TWO NOTED PRIEST SEISMOLOGISTS

Under this caption the SCIENTIFIC AMERICAN for February 1927 gives a pictu of Fathers Tondorf and Macelwane standing besides the new Gallitzin Seismograph at Georgetown University. Our readers will remember the interesting article contributed by Father Tondorf to the SCIENTIFIC AMERICAN during the summer on Earthquakes. He is to give a Radio Talk on March 8th at 8.45 P.M. at Washington under the auspices of Science Service on "Some Fallacies regarding Earthquakes". Those interested in our work in Seismology should read Father Macelwane's article in the Bulletin of the Seismological Society of America for September 1926 entitled "The Jesuit Seismographic Stations in the United States and Canada A Retrospect", It gives an account of the establishment of the various stations in our American Colleges and gives due credit to Father F.L.Odenbach of John Carroll University Cleveland in starting the first Jesuit Seismological Service with a central station at cleveland. Father Macelwane has received various letters from men of standing commending the work of the Seismological Association and wishing it success. One of the highest authority which must have been very gratifying to is that of Very Father General who among other things says in his letter of Oct. 29th, 1926, "Valde mihi placet verus progressus quem Reverentia Vestra post annum novae hujus operis vitae reffere potest. Laudanda quoque est diligentia qua Reverentia Vestra curat ut omnia juxta consilia a me datd, modo vere scientific procedant."

His Paternity admits the need in our day especially of men well trained in the various sciences. Still we cannot do everything. "Viros enim neque socii sufficiunt ad omnia quae a nobis postulantur. Interim major adhuc sentitur necessitas ut plures habeamus in scientiis sacris insignes viros... Reverentiae Vestrae omnibusque Nostris huic operi associatis libenter ex Corde benedico".

We also quote from the letters of Dr. R.Meldrum Stewart Director of the Ottawa Observatory and of Professor H.H.Turner of the British Association Seismological Committee, well known as Professor of Astronomer at Oxford. The former says, "You must permit me to congratulate you on the very efficient organization which you have built up among the Jesuit stations. I have a very great respect for the way in which the Jesuit Order engages in scientific investigation throughout the world. With your thirteen seismological stations you should be able to practically dominate seismological research on this continent". The letter says. "I am glad to hear of the progress made by the Jesuit Seismological Assoiation which represents a fine and fruitful idea. I cannot help hoping that you will gather in the distant stations, such as Riverview and La Pqz and Zo-Se. and if you can get cables from them at times, I feel sure that they will help you considerably in identifying distant earthquakes".

JESUIT CARRIES ON EXPLORATIONS BY AEROPLANE

The Boston Pilot for January 29th, 1927 has an article on some recent explorations of Father Poidebard of the Province of Lyons who is a missionary in Asia Minor. As a scholastic and priest he has spent many years in missionary work in Armenia and Syria. The article states that wishing to explore a high section of Mesopotamia he conceived the idea of doing so from the air in a plane piloted by Lieutenant de la Forte. He thus discovered several routes formerly used by travellers. The Academy of Inscriptions of France was so much impressed by the possibilities of this method that it has entrusted a new mission to Father Poidebard in which he will be assisted by M. Maurice Dunand.

PUBLICATIONS

FATHER RIGGE'S NEW BOOK ON HARMONIC CURVES

Father W.F.Rigge, the veteran astronomer of Creighton University, Omaha, who, though a Jubilarian, still keeps up his scientific activities has recently published a unique book on Harmonic Motion Machine designed and built by himself after many years of thought and labor. He tells us in his preface that he hesitated to write a book on a subject which in its general outlines was not at all new, thinking doubtless that it had already been written up in detail. Father Hagen when consulted wrote. "By all means write that book". There is no literature on that subject. Father Gerst of St. Louis University, who did post-graduate work at the University of Michigan and at Johns Hopkins where he took his doctor's degree, made a search of the literature in the libraries of both of these institutions and could find only casual references to the subject. Students of mathematics and in particular those interested in these curves in all their variety and beauty will be grateful to Father Rigge for giving them this treatise. It contains some 200 pages and is well printed by the Loyola University Press. It begins with an extended geometric and algebraic definition of harmonic motion and then devotes a chapter to the mathematical treatment of the curves. For the most part a knowledge of plane trigonometry alone is required. Another chapter shows how some of the simpler curves may be plotted. The fourth chapter is devoted to a discussion of the various types of machines which have been designed to draw the curves. This is one of the most interesting parts of the book. In reading it one is impressed by the important part played by Jesuits in the development of these machines. They are divided into two classes according as they employ pendulums or wheels.

It appears that Blackwood of Glasgow was the first to make a compound pendulum swinging in two planes at right angles to each other. This type was much improved by Father Dobson of Stonyhurst and was used by Father Hagen who published an article on it with a number of specimen curves drawn by it in 1879. The Dobson pendulum is a duplex one. A more elaborate quadruplex pendulum was constructed by M. Hoferer S.J., and described in the Scientific American in 1899. The late Father Dechrevens of Jersey who belonged to the Paris Province constructed an excellent type of wheel machine shortly after which he called a campylograph. Fr. Potron of the same province published a treatise on the mathematics of the curves drawn by it in 1902. Father Rigge gives some of the beautiful curves drawn by the campylograph.

The Creighton Harmonic Motion Machine, designed and built by Father Rigge himself, was completed in 1924. It seems no exaggeration to say that it is the most complete and most perfect yet constructed. As the book gives a detailed description with several illustrations no attempt will be made to describe it here. It makes use of cog wheels and is operated by a motor. Father Rigge has computed the number of possible curves it is capable of drawing and finds a grand total of over seven billion. This gives some idea of the capabilities of the machine which are not likely to be soon exhausted. A number of specimens of some of the beautiful and complicated curves drawn by it are given in the book. Their accuracy gives one an idea of how carefully the machine was built. Of special interest are the stereoscopic curves. They are made by making a change in the initial phase of one or more of the components of the curve. Two curves are thus successively drawn which appear like wire designs viewed from slightly different angles. When viewed in a stereoscope they give the appearance of relief.

A NEW JESUIT TEXTBOOK OF PHYSICS

Father Theodore Wulf, Professor of Physics at Valkenburg for many years has recently brought out a new "Lehrbuch der Physik" a copy of which was kindly sent to us by Father Lynch. It is published by Herder of Freiburg. The St. Louis branch of this firm is selling it in this country for $5.00. We hope to give an account of its contents in our next issue.

NOTE

Our professors of Physics have always appreciated the 20% discount granted by the Weston Electrical Instrument Corporation of Newark N.J. on all of their excellent electrical instruments sold to educational institutions. It may interest them therefore to learn that their Boston agent, Mr. James C. Murray in a letter to the editor dated February 23d, 1927 states, "I find it necessary to advise you that on the first of this year a change of policy required that we withdraw discounts from all educational institutions except the large technical colleges". No reason is given for this change of policy. Some light may perhaps be afforded by an announcement in Science for March 4th, 1927 which states that an arrangement has recently been concluded between this company and the Central Scientific Company of Chicago whereby the latter becomes exclusive distributor and depositary to educational institutions for the Weston Electrical Instrument Corporation. The Central Scientific Company as far as we know does not give discounts on any ordinary orders for its apparatus.