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THE BULLETIN

This issue forms the last number of the Bulletin for the current year. Our little publication has made a good beginning and is now established on a sound basis. It has aroused interest, and we hope that it has atleast begun to accomplish its purpose in developing a spirit of cooperation among the science and mathematics teachers of the province and in becoming a source of slight inspiration and help to them in their work. It has been especially gratifying to be assured of the approval and encouragement of Superiors. We trust that with increasing cooperation the Bulletin may continue to grow during the coming year. Our cordial thanks are due to all who sent in contributions and to the Woodstock theologians who have taken care of the printing.

EINSTEIN'S THIRD PREDICTION AGAIN.

The truth of Einstein's third prediction regarding the shift of the lines of the solar spectrum towards the red which seemed according to Dr. St. John of Mount Wilson to have been satisfactorily established (cf. Bulletin, Vol I, #2) is now again called into question. In SCIENCE ABSTRACTS for April 25th, there is an account of a paper read by Jo Hopmann at the Deutscher Physiker Tag in Bonn last September on the interpretation of the Lick Einstein expedition. The author considers that Einstein's general theory of relativity has not yet been definitely proven by any of the three tests. In particular, he argues that the stellar displacements on the eclipse plates can equally well be explained by the Curvoisier effect of yearly or cosmical refraction, so that further investigation is still necessary. It is important to note that Einstein himself who was present at the meeting agreed that it was impossible to decide between the Curvoisier cosmic refraction and the relativity effect by means of the Lick measurements. SCIENCE for May 9th also reports that experimental evidence presented to the National Academy of Science by Dr. D. H. Curtis, Director of the Alleghany Observatory, Pittsburgh, does not bear out the prediction. Curtis declares that according to the Einstein theory, all the solar lines should be shifted by an equal amount towards the red, whereas according to his measurements, the shift is very slight for the faint lines and increases as wider and stronger lines are used. The magnitude is not that predicted by Einstein. Dr. St. John still holds that the agreement between theory and measurement, is on the whole, satisfactory, the deviations from the theoretical displacements being due to the motion of currents of hot gas in the solar atmosphere. Evidently it is still necessary to suspend judgment on the question. It is only another example of the extreme caution required in verifying theoretical deductions especially where these are few in number and the acceptance of the theory as an established fact must depend upon them.

(Reprint)

IS EINSTEIN A JEW?

Not long ago AMERICA referred to the results of a popular vote among the readers of the NEW YORK JEWISH TRIBUNE on the twelve outstanding Jews of the world. The list of names selected which may be found in the 1924 WORLD ALMANAC is headed by Albert Einstein. It is well known that the German physicist is a Jew by race. Less perhaps is known about his religious views. On this point there is an interesting reference in the letter of Fr. Dahlmann of the German Province in AUS DER PROVINZ for Feb. 1923 which some of our readers may not have seen. At a very enthusiastic reception tendered to Einstein at the imperial university at Tokio during his world tour, Father Dahlmann in his capacity as lecturer on German Literature was called upon to express the greeting of the Imperial Academy of Science in "classical form." During the banquet he was assigned a place beside Frau Einstein. Naturally much of the conversation centered about the distinguished Herr Professor. She told Fr. Dahlmann that a certain Catholic priest was one of her husband's best friends and that he had visited the Benedictines at Beuron. As to his religious views, he no longer belonged to any Jewish religious congregation, but he had often assured her that if he should choose any religion it would be that of the Catholic Church. The good lady was evidently not speaking for publication but we may be permitted to quote this incident from AUS DER PROVINZ.

PROFESSOR FAIRCHILD AND THE AMERICAN ASSOCIATION.

At the last public session of the Cincinnati Meeting of the American Association for the Advancement of Science, one of the oldest living former presidents, Prof. Herman L. Fairchild, emeritus professor of Geology at the University of Rochester gave a long and interesting address on the history of the association. There were a couple of bitter sentences in his conclusion to the effect that millions of Americans were still kept in mental thralldom by ignorance and superstition, that old Hebrew folklore and ancient Chaldean cosmogony were regarded as divine revelation, and that bigotry and intolerance were still trying to dominate instruction and legislation. Only a handful of people attended the session, but some of the papers gave publicity to the remarks as though they formed the subject of the address. The editor had the good fortune to travel from Cincinnati to Washington in company with Dr. Charles D. Walcott, the president of the Association. He is an eminent paleontologist and secretary of the Smithsonian Institution. Fairchild's remarks came up in the course of the conversation. Dr. Walcott agreed that they were quite out of place, and he expressed himself strongly about the old gentleman's lack of discretion. I pointed out that the latter's position as former president might give him the impression that he was speaking in the name of the Association. He told me that a reporter had interviewed a number of officials the following day, - a Sunday -, asking them if they had been to church that morning. He showed me a clipping giving some of the replies which, while they did not always answer the question directly, did not show any anti-religious bias. He assured me that the matter would come up again. Having made the acquaintance of Prof. Fairchild a number of years ago during a geological expedition, I wrote him a letter referring to his remarks. I told him that they seemed to be not only out of place but a reflection on the intelligence of millions of Americans who still regard the Bible as a divine revelation however much they may differ about its interpretation. Furthermore, from their tenor they might impede the campaign of the Association for increased membership. His reply was not to the point. However the address was printed in full in SCIENCE for April 25, May 2

and May 9, and the obnoxious sentences were omitted. Either wise counsels prevailed with Prof. Fairchild or, as is more likely, the editorial blue pencil, acting perhaps on instructions from above, expurgated the passage. The incident is a small one but it may perhaps be an indication that the American Association does not care to afford opportunity for the exercise of the "odium theologium."

THE STORAGE OF BIOLOGICAL SPECIMENS.

We are glad to give a place to our first contribution from one of our members teaching in the Philippines. It describes how effectively a problem has been solved which must be more pressing in the tropics than in temperate climes.

"Within a few months after starting operations here I realized that perhaps my greatest problem would be the preservation of material in this climate, and the acquisition of it without a supply laboratory like that of Woodstock. Whenever specimens were offered I had to seize on them, even though it meant holding them for indefinite periods. How store them? These circumstances led to the developing of storage facilities that would perhaps be useful even in American laboratories. For instance instead of buying a large number of cats at a rather high rate during the week before beginning that study (as other Manila schools do) we get stray cats all year long. After embalming the hair is cut off, and the cat is immersed in formalin. This method ought to be applicable in the States.

"For preserving purposes we have four storage tanks of galvanized iron, 36" high and 30" in diameter. The opening is 20" across and is closed with a tightly fitting lid having a 2" collar. One lid which had only a 1" collar proved to fit not tight enough. Of course each tank has a tap. The tanks are set on a platform 20" high. They are filled with commercial formalin to a depth of 6", and then with water until the mixture rises to 48". (No doubt this means 8" from the top of the tank. -Ed.) Undoubtedly a weaker solution would suffice in the States. At present I cannot say how often the solution would require renewing, but I shall give some data about this later on.

"The tank specimens are handled as follows: Heavy twine is secured with a slip knot under the arms of a mammal, or anterior to the caudal fin of a shark, then the other end is looped, a number tag fastened to the loop, and the loop placed over a hook. The hook is one of six or twelve screwed into a piece of light wood which will float on the surface of the formalin. From the float a light string passes under the lid of the tank, ending in a light weight and a number. When a specimen is wanted, look up the number and location in your record book, open the tank, step back to the floor to avoid the escaping gas, pull out the proper float and find your number. It is well to go away now for about five minutes until the gas has dissipated. Then unhook the specimen, step up on the platform and gently draw it to the surface. The cords do not become entangled if care is taken when putting the specimens away.

"Over each tank is a pulley and a rope. The rope ends in a block and hook. Pass this hook under the cord around the cat's chest. Raise the cat out of the bath and let it drip for a few minutes. Along the wall only four feet from the tanks we have a large sink. By means of another pulley, giving us a double boom arrangement, we drop the cat into the sink without ever having touched it. After the formalin is washed off, the animal is pleasant enough to handle and is none the worse for his long immersion, and dissection may go on as if it had been embalmed only a few days before, in fact better, for after a few weeks the blood becomes hard and no ligatures are needed. In this climate we

find it best to return the cats to the tank over the week end after they have undergone dissection for about three weeks. We generally handle six or eight sharks on one cord. Small specimens such as frogs, crayfish, etc., are kept in covered baskets, the basket having a cord and number as described above.

"Now what about the acid reaction on the iron? The solution when first made should be neutral, but it will become acid in a very short time, certainly within a month. The acidity is much more marked at the top of the tank than at the bottom. Our first solution was left untouched from June 1922 until March 1924, through two school years, having served for cats, sharks, and odds and ends during the first year, and for cats only during the second year. Of course this tank was being opened constantly. The formalin had become strongly acid, and contained much rust and grease. All the different levels of the liquid were clearly recorded on the sides of the tank.

"When we were cleaning, repainting, and refilling two of the tanks in March, I ran across a note in Lee - Microt. Vade Mecum, p. 60 suggesting magnesium carbonate or sodium carbonate as a neutralizing agent. We are now experimenting on this, and I shall give the results at another time. If successful, we shall avoid the rust which will soil specimens when it becomes too pronounced. Also our aluminum numbers tags should be made safe. In the past those at the surface, which meant practically all, for they are attached to the hook on the float, were badly oxidized.

"Why did we choose galvanized iron for the tanks? These particular tanks had been part of the plumbing system of the College when the water pressure was not good, and were now being discarded. Hence they were ours for the asking.

I have often wondered how cement tanks would do, and might experiment along this line if more tanks should be needed. This description is rather long, but may give some one an idea that can be developed into something useful for his own conditions and climate. A University of Chicago man, exchange professor at the local Government University, was delighted with our system when he saw it working, and is now trying to get an appropriation to install one in his storeroom.

John A. Pollack S. J.
Ateneo de Manila.

SOME CHEMICAL DIFFICULTIES.

We have received the following questions from the Ateneo for the consideration of our Chemists. We shall be glad to give a place in the BULLETIN to the answers.

1. What takes place and why in the experiment in Newell's Manual, No. 278, p. 181, in which we start with silver sulfide i.e. with a silver coin coated with the sulfide, placed in contact with aluminum metal in a solution of sodium bicarbonate and sodium chloride? When the solution is boiled the coin becomes bright again.
2. What is the equation representing the liberation of NH_3 when powdered NaOH , powdered KNO_3 and powdered Fe are mixed? (Cf. Newell, Exper. No. 90, E, p. 85.)
3. Can you express by an equation the production of ammonia by mixing soda lime and a feather and heating?
4. Why are silver, lead and mercurous chlorides soluble in excess dilute HCl ?
5. Does NH_4NO_3 form complex ions with AgCl ?
6. Does copper sulfate with excess NH_4OH form $\text{Cu}(\text{NH}_3)_4 \text{SO}_4$ or $\text{Cu}(\text{NH}_3)_4 (\text{OH})_2$?

7. What is the meaning of the words meta and ortho, and what are the formulae of the meta and ortho borates of cobalt?
8. In testing for the ferric ion with NH_4SCN , why does the red color disappear on standing two days?
9. What is the suspended matter that forms in the NH_4OH reagent bottles?
10. Can any of the readers of the Bulletin refer me to literature on the means used to prepare fires and explosions, etc., for theatrical displays?

H. B. McCullough, S. J.
Ateneo de Manila.

The following contribution illustrates the diversity of opinion existing among experts concerning the possible human origin of certain fossil fragments. Where the evidence is so slight and interpretations so different it seems the part of wisdom to suspend judgment, at least until more data are available.

HESPERIPITHECUS.

The two fossil teeth found in Nebraska in 1922, have again been made the subject of discussion. Casts have been made and distributed among 26 different institutions in various parts of the world, to afford leading scientists an opportunity to "examine for themselves and to form their own opinions as to the possible relationship or lack of relationship of the find to human ancestry."

Previous study of the teeth has resulted in widely divergent opinions regarding their identity. The American Museum staff are agreed that the teeth are the upper molars of an anthropoid ape. Palaeontologists both in this country and in Great Britain question this conclusion. Some of them believe that the teeth belong to the fossil type of ear known as *Hyraenarctos*; others think that they are related to the Carnivora, especially the Panda of Asia, or the raccoon-like *Potos* of South America; several anthropologists have intimated that the teeth are not those of an anthropoid at all, but that they belong to one of the ancestral horses. Prof. Osborn has "decided" that the type tooth, which is in good state of preservation, is probably a second upper molar, and the second tooth, which is badly worn, is probably a third or back upper molar of an anthropoid ape of the Western World.

In the old days, a whole army of men was laid low by the mighty Samson with the jaw bone of an ass. The modern creative genius that evoked from a few scattered bones whole races of non-existing ape-men will, no doubt, find little difficulty in reconstruction from a tooth and a fragment another "brain creature" to which it has already given the name *Hesperopithecus*.

Father Joseph S. Didusch S.J.
St. Joseph's College.

Father F. A. Tondorf of Georgetown sends us the following account of an important meeting of the Geophysical Union which he attended.

The annual meeting of the Geophysical Union was held on May 1, 2, and 3 at the New Building of the National Academy of Science and National Research Council, Washington, D.C. As the writer attended the section on Seismology and as many of our Colleges are interested in this branch of geodesy, it may be interesting to indicate the topics discussed. These were items for the agenda of the Madrid Meeting of the International Geodetic and Geophysical Union to be held October 1 to 10 this year.

Items:

1. A consideration of the number and locations of teleseismic stations needed.
2. The proper instrumental equipment for a first class teleseismic station.
3. The desirability of adopting standard types seismographs.
4. The desirability of developing a type of instrument for teleseismic work less expensive and less complicated than those of the highest grade now available, but yielding results of equal accuracy.
5. The publication of seismological data: what to publish, where to publish, when to publish and what form of publication.
6. Means for stimulating searching mathematical studies in seismology, including the transmission of earthquake waves through the earth and also the effect upon structures of motion of the ground caused by an earthquake.
7. Study of the slow creeping motions of the ground between major earthquakes, in regions known to be seismically active, by means of systematic leveling and triangulation repeated at intervals of years, possibly five, ten or some other number (similar to the work now being done by the U.S. Coast and Geodetic Survey in California.)
8. Study of ground movements (tilting) by means of the seismograph.
9. Preparation of fault maps of seismically active regions, similar to the one recently issued by the Coast Survey of California.
10. Study of the relations between earthquakes and volcanoes including the movements of the ground in the vicinity of active volcanoes.
11. Study of microseisms, their cause, how far they are propagated, etc.

Discussing the first item it may be interesting to note that Prof. Harry Fielding Reid, head of the Department of Geology of the Johns Hopkins University, maintained that the number and location of the stations in the United States were quite sufficient provided that the work were carried on systematically at these stations. As most of these stations are under the direction of Ours, it is clear what is expected of us. But two or three of these observatories issue Bulletins giving data regarding quakes registered.

The writer discussed the feasibility of establishing a central bureau, preferably in Washington, where all grams obtained in the United States might be sent for an ultimate analysis. He pointed out that a one-man interpretation left the gram a useless something. This he showed by referring to several interpretations made at several stations in the States of recent grams. He also insisted on a standardizing committee for installations.

Father F. A. Tondorf, S. J.
Georgetown University.

We have received the following proof of the Law of Reflection from Mr. J. J. Lynch, S. J., of Valkenburg. While, as he states, it is not new it is worth putting in the BULLETIN as it is not found in the ordinary texts, and not a few may be glad to have it on hand for reference either in teaching Physics or Calculus. The proof in the case of Refraction may be found in Woods' Physical Optics, p. 73, or in Moller's excellent Higher Mathematics for Students of Physics and Chemistry, p. 147. Both proofs are based on Fermat's so-called principle or law of least time, to which a reference may be found in Preston's Theory of Light, p. 101. Cf. also Houston, Treatise on Light, p. 16.

OPTICAL REFLECTION.

The following application of the differential calculus to elementary physics appealed to the writer as a particularly "neat" one. It is taken from Galitzen's Vorlesungen über Seismometrie, p. 95, - a copy of which exists in the Woodstock Library.

According to the principle of the Brachystochrone, a light ray, in common with other natural phenomena, always follows the quickest route. A ray of light from a point A, is after reflection from the mirror MN, to pass through a given point B. Our problem, using the above principle, is to find the path of the ray, or simply to find the point C on the mirror, from which the ray will be reflected.

From the figure:

$$AC = \sqrt{x^2 + y_1^2}$$

$$CB = \sqrt{(a-x)^2 + y_2^2}$$

$$\text{Total path of ray} = AC + CB = \sqrt{x^2 + y_1^2} + \sqrt{(a-x)^2 + y_2^2}$$

$$\text{Hence, time taken} = \frac{1}{v} \left[\sqrt{x^2 + y_1^2} + \sqrt{(a-x)^2 + y_2^2} \right]$$

(v = velocity of light in medium)

This is taken to be a minimum (since ray is to follow quickest route.)

Hence, first derivative = 0

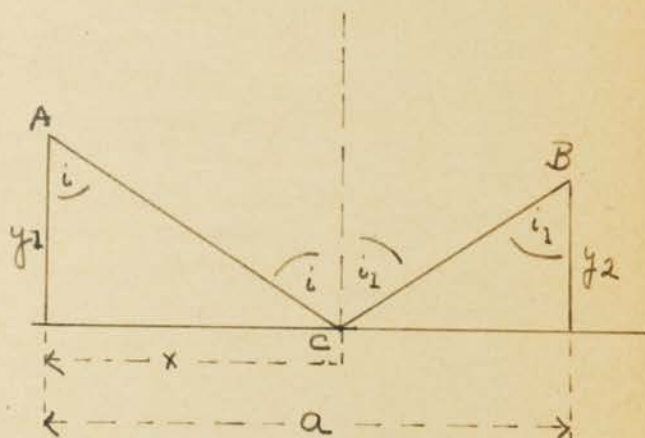
$$\text{i.e. } \frac{x}{\sqrt{x^2 + y_1^2}} - \frac{a-x}{\sqrt{(a-x)^2 + y_2^2}} = 0$$

$$\text{i.e. } \frac{x}{AC} - \frac{a-x}{CB}$$

$$\text{i.e. } \sin i = \sin i_1$$

Following out the same method in the case of refraction, we get

$$\sin i = \frac{v}{v_1} \sin i_1$$



J. J. Lynch, S.J.
Valkenburg

THE COMING OPPOSITION OF MARS.

At 7 P.M. Eastern Standard Time, on Aug. 22, 1924, Mars will be nearer to us than at any other time during the centuries 1800-2000. It will be in opposition on August 23, and William F. Pickering, in the June-July number of Popular Astronomy gives "General Information and Instructions" for observations of the planet on this occasion. Dr. Pickering is an authority on Mars and on planetary observations, and all those interested in such matters would do well to read this article.

Father E. C. Phillips, S.J.

(Reprint)

BOOKS OF INTEREST.

All of Ours, interested in the Science of Geophysics, must realize how jejune the literature in seismology is. From letters received by the writer from students and professors in Geology at the different Universities throughout the Country asking for information on certain data regarding seismic phenomena and questions asked of him when he lectured before not a few of the scientific bodies of Washington and elsewhere, he has been led to the conviction that what literature there is is not generally known. This was emphasized to him upon reading an article in a recent issue of Science Monthly and copied in Tycos-Rochester in which data were given the public regarding the annual frequency of earthquakes which were certainly not based on the most recent researches. Lest the readers of these journals should labor under a false impression, a letter was written to the Editors and their attention called to a recent publication where reliable data on the above were available and it was understood that the writers had not heard of the publication. The above has prompted the writer to indicate this publication to Ours interested in this line of work.

Erdbebenkunde
by A. Sieberg.

Publ. Gustav Fischer, Jena.

This work and that of Galitzin, entitled Vorlesungen über Seismometrie, are the two best works now available. That of Sieberg is just published.

Father F. A. Tendorf, S.J.

The Macmillan Co. lately published the fifth and last volume of a Dictionary of Applied Physics, edited by Sir Richard Glazebrook. Physics with its many applications has now become such an extensive field that a work of this kind must prove very useful as a book of reference for both teachers and students. It is something more than a dictionary as most of the articles are of fair length. Not having a copy at hand we cannot go into details. One feature however will doubtless diminish its usefulness. This is the advertised price which really seems a bit exorbitant. It is sold only in sets at \$15.00 per volume.

During the year the report of its educational committee entitled Physics in its Relation to Medicine was published by the American Physical Society. It is based on the experience of a number of prominent educators and should prove suggestive to those of Ours giving courses in Physics to pre-medical students.

The College Book Co., of Columbus, Ohio, advertises several thousand copies of Elementary Mathematical Analysis by Young and Morgan at \$0.75 per copy. (Publisher's price \$2.90). They are a surplus War Department stock. They state that they will lay aside any number that can be reasonably used and ship them any time within the next six months.

PUBLICATIONS.

Father William F. Riggee, S.J., of Creighton University, Omaha, has two articles in Popular Astronomy for May 1924, one on the Occultation of Aldebaran, June 29, and the other on the Occultation of Mercury, Aug. 2. Both are illustrated by maps. He also has an article on the Occultation of Venus, Aug. 26, in the June-July number of the same publication. This latter number also contains Father Phillips' note on the observation of the occultation of Aldebaran at Woodstock which appeared in the last number of our BULLETIN.

(Reprint)

In the May number of the American Mathematical Monthly there is an interesting article on a Chinese book of the sixth century, "The Arithmetic Classic of Hsia-Hou Yang", by Father Louis Vanhee of the Belgian Province. It is perhaps not too late to refer to an article by J.J. Nolan and H.V. Gill which appeared in the Philosophical Magazine for August 1923, entitled Electrification Produced by the Pulverization of Aqueous Solutions. An account of it is given in Science Abstracts for Jan. 1924. The second author is evidently Father H.V. Gill of the Irish Province, who worked with Sir J.J. Thomson at the Cavendish Laboratory, Cambridge University, some fifteen years ago.

An article entitled Vatican Evinces Interest in Latest Effort to Solve Problem of New Calendar, by Father Tondorf of Georgetown University, appeared in the N.C.W.C. Editorial Sheet for May 1924.

A scholarly work of scientific as well as of philosophical interest is the Lehrbuch der Experimentellen Psychologie, of Father J. Froebes, of Valkenburg. A reviewer of the latest edition writing of it in the American Journal of Psychology for Jan. 1924, says, "On the whole the book is considerably improved. As it stands it is probably the best compendium of the results of experimental psychology that we now possess....."

We lately received a copy of the Proceedings of the Second Annual Convention of the Jesuit Educational Association (Mid-West Division). It is an interesting and scholarly production, and we congratulate our brethren of the middle West on their activities. We also received a copy of a Georgetown University publication entitled The Registration of Earthquakes and Press Dispatches of Earthquakes from Jan. 1, 1923 to Jan. 1, 1924. It shows the fine work being done at the Georgetown Seismographic Station.

We received the following communication from Mr. J.J. Lynch of Valkenburg:-

"Apropos of the Wulf Electrometer which you mentioned in the last issue the following literature may be of interest.

L'Electrometre bifilaire et ses Applications, by Theodore Wulf, S.J., an address delivered to the Scientific Society of Brussels, published by F. and R. Centerick, Louvain, 1910.

Allgemeine Theorie elektrostatischer Messinstrumente mit besonderer Berucksichtigung des Quadrantelektrometers, by T. del Pulgar and Theod. Wulf, Annalen der Physik, vol. 30, 1909.

Reception Photographique des Radiotelegrammes, by J.D. Lucas, S.J., in Revue Des Questions Scientifiques, Jan. 1913.

Varia.

A paper on Gothic Window Tracery Curves was read by Father Phillips of Woodstock at the Washington Meeting of the Maryland-Virginia-District of Columbia Section of the American Mathematical Association, on May 17.

Science for April 18, quoting Nature, states that Father Licent, who has been exploring the fossiliferous deposits of Northern China and has sent valuable collections of Pliocene mammal remains to Paris, was joined by Father Teilhard de Chardin of the Catholic University of Paris. According to a dispatch from Peking to the Manchester Guardian, they have now made an important discovery of human remains at a depth of sixty meters in a river deposit in Northern Kansu. Father Licent belongs to the Province of Champagne. Father Teilhard de Chardin belongs to the Province of Lyons. He is an enthusiastic geologist. During his stay at Hastings he spent many of his holiday mornings searching for fossils at the foot of the cliffs bordering on the English Channel and made some interesting discoveries. After passing safely through all the dangers and hardships of the War, he took his Doctorate at the Sorbonne and became Professor of Geology at the Catholic Institute of Paris.

It may interest the mathematicians and perhaps the philosophers too, to note that A.N. Whitehead, until recently Professor of Applied Mathematics in the

Imperial College of Science and Technology, London, has been appointed Professor of Philosophy at Harvard University.

Mr. Gookin writes from Georgetown:

"I have no news items since the Convention with this exception that President Baekland of the American Chemical Society told Father Nieuland of Notre Dame, that he was very much pleased to see Catholic Priests among the members at the Convention, and felt that it gave something in the way of character to the meeting. He knew that we came from Catholic Colleges and were supporting the organization and advancing our work. Father Nieuland had surprised Mr. Baekland by approaching him and beginning a conversation in their native tongue, Flemish.

EDUCATIONAL MOTION PICTURES.

Recalling the contribution of Father Ahern in the previous issue regarding educational motion pictures prepared by the Bureau of Mines, Pittsburgh, Pa., the following excerpt may not be out of place. It is from the Washington Letter appearing in the Jour. of Indust. and Eng. Chem., March 1924, p. 323. "Nearly one hundred.....films have been prepared in the last few years (by the Bureau of Mines).... The films relate to coal, petroleum, sulfur, iron, asbestos, zinc, marble, copper, natural gas, and other minerals. A series of films depicts most vividly such industrial processes as the manufacture of automobiles, the making of fire clay refractories, the manufacture of oxygen, etc. Other films illustrate dangerous and safe practices in mining, efficiency in the combustion of coal, the utilization of water power, and operation of a gasoline motor."

J.J.Sullivan, S.J.

QUADRANT PROBLEMS IN ANALYTIC GEOMETRY.

In Wentworth's Analytic Geometry, the first equation developed is that for the distance between two points in the first quadrant in terms of their coordinates. Immediately the question arises will this and like equations hold for any quadrant or combination of quadrants? In a note on page 7 the author states, "Equation (1) is merely an illustration of the general truth that theorems and formulas deduced by reasoning with points and lines in the first quadrant (where the coordinates are always positive) must, from the very nature of the analytic method, hold true when the points or lines are situated in the other quadrants". To the student on whom one must plaster an education, this is a delicious periodic sentence and perfectly acceptable as a true proposition. To the thinking student, it is not clear and final unless some proof is given. In the texts searched for an inkling of a proof of this general statement, the writer finds as a reward such statements as, "The reader will satisfy himself that the equation is perfectly general, by constructing other special cases in which the points are in different quadrants"; "By drawing the figure in various positions, the student may convince himself that the formula holds no matter where the points are situated"; "By drawing the figures and making the proofs when the points are in various other positions, the student should assure himself of the generality of the formulas". Plainly the student will do no such thing. Was Wentworth nodding when the above statement was penned?

It can be seen in various cases where the property of a curve or its definition will determine an equation, the location of the figure is non essential. However a proof of Wentworth's statement derived by pure analysis, will be a remarkable time saver for the teacher in the very beginning of a study in which the student finds sufficient labor and difficulty.

John J. Murphy, S.J.
Georgetown University.

SCIENCE SUMMER SCHOOL.

The Science Summer School as already announced will be held this year at Holy Cross College, Worcester. The sessions will begin Monday, July 21, and end on Tuesday, Aug. 12. As at Fordham last year there will be class every day except on Sunday. There will be work in chemistry, biology, mathematics and physics. Owing to unavoidable delays the program cannot yet be definitely announced. Those who are to attend will be able to learn details early during the villa.

THE ASSOCIATION MEETING.

The Annual Meeting of the Association will take place immediately after the Summer School at the New Loyola College at Evergreen, Baltimore, on Aug. 13 and 14. An opportunity will thus be afforded to see the New College and in particular to inspect the splendid New Jenkins Science Building. The proximity of Woodstock will doubtless make it possible for some of the former Science and Mathematics teachers among the theologians to attend one or two of the sessions. Our Secretary is working hard to arrange the program. We have seen the preliminary list of papers in Biology and Chemistry. It is not too late to send in a title. We are looking forward to a very successful meeting.

We have received the following note of appreciation, for which we are truly grateful:

Dear Father Brock:

I want to congratulate you and your generous assistants in the publication of the *Bulletin*, on the clear-cut and accurate diagrams in the last number. This is only one of the points of excellence which readers of the *Bulletin* surely appreciate.

Father E.C. Phillips, S.J.

WE WISH ALL OUR CONTRIBUTORS AND READERS A VERY PLEASANT AND
PROFITABLE VACATION.

L. D. S.

