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## The Croon o' the Sea.

WIND of the sea,  
Whisper a soft, sweet melody  
And low, for the trembling leaves shall be  
Thy lute-strings. With thy song,—  
Up from the deep sea-caverns brought,  
With the prayers of the moaning sea-souls fraught,—  
The waves shall creep,  
And lap with gentle murmuring along  
The broad and sandy barriers of the deep.

Wind of the night,  
Lull thou the restless, ever-toiling land to sleep;  
And from the deep  
The ghost-wrapped souls will come,  
Longing for the sea's low monotone;  
And thy long vigil silently will keep.  
And dark and still,  
The land shall be the servant of thy will.

E. J. M.

## Science and the Catholic Church.

EDWARD E. BRENNAN, '97.

"Through knowledge we beheld the world's creation,  
How in his cradle first he fostered was;  
And judge of nature's cunning operation,  
How things she formed of a formless mass:  
By knowledge we do learn ourselves to know,  
And what to man, and what to God we owe."

**I**N the old Grecian schools, as well as in those of today, that knowledge most serviceable to us in the great drama of our existence, is cast aside for the development of some frivolous accomplishment which tends to satisfy only our vanity.

"Men dress their children's minds," says Herbert Spencer, "as they do their bodies, in the prevailing fashion." In this, if not in other things, he stands on a platform of philosophy, and writes with the pen of truth. There are

those who hang their heads in utter humiliation at being found unable to converse intelligently on the latest productions of our literature, and would scorn another who knew nothing of Lacedæmonian wars, while they are themselves guilty of far grosser ignorance. They would not, despite their pretended culture, blush at being found uninformed in regard to the normal rate of their hearts' pulsations, or the elements of the earth beneath their feet.

What is the reason of such superficial scholarship? Why do so many in an age of progress seek the tinsel of mediocre knowledge, and leave the golden wealth of true wisdom unsought and undesired? There is but one answer that satisfactorily solves these queries. Wherever the beaming rays of civilization have invigorated the minds of men with their grateful warmth, they have always left thorns among the roses, they have always left the ignorant among the learned. Modern views of life have instilled in many men an abhorrence of all that seems scientific. Yet, if we pause and look around us at the great panorama of international civilization, we will find that it was brought about through no other medium than science. We find science the foundation of peace and happiness, upholding every useful energy, and substantiating the principles of Christianity.

If we cast a glance over the annals of the past, we behold everywhere science and religion working together as the two wheels of a great chariot, each useless without its sister. There is not one of the Christian teachings in regard to the genesis of earth and man, which cannot be explained on strictly scientific principles. There is no discovery of science which could not be aided and made more clear by the divine light of Revelation. Still in the face of all this, in the face of our very existence depending on scientific phenomena, it has been said that

science is antagonistic to our Christian principles. Herbert Spencer says, that "to our slowly growing acquaintance with the uniform co-existence and sequence of phenomena to the establishment of invariable laws, we owe our emancipation from the grossest superstitions. But for science, we would still be worshipping fetishes, or with hetacombs of victims propitiating diabolical deities. And yet this science, which, in place of the most degrading conception of things, has given us some insight into the grandeurs of creation, is written against in our theologies and frowned upon from our pulpits."

So far Spencer. For a man of culture, these words need no refutation. They are erroneous, culpably fallacious from beginning to end. I challenge any man, who regards truth and honor as sacred things, to say that he ever heard from any pulpit, or ever read in any theology, the slightest comment that would tend to incite in us a disregard for scientific research. Nay more, the writer is inconsistent with himself when he speaks of our theology as being adverse to science. For what is theology? Is it not a science itself? Yea, it is a science; it is the highest and the noblest, the truest and the deepest science. It is the science of God! If science is repugnant to Christianity, why did Christian scholars bring it into the world, nurse it in its infancy, and cherish it in its progress? History proves that scientific research has not only been aided more by Christians than any other sect, but that it owes to Christianity its very origin. The deeper we descend into the fathomless abyss of science, the more we wonder at the grandeur, the beauty and the unity of nature; and the more we wonder, the firmer is our conviction that there must be an intelligent Being above all. Thus do science and Christianity go hand in hand, overspreading the rocks of ages, just as the two tracks of the great railroad, the one connected firmly with the other and yet parallel, so that the one can never infringe on the other, or oppose it.

The distinguished French chemist, Berthelet, tells us "that positive science pursues neither first causes nor the end of things, but it proceeds by establishing facts; and connecting these with each other by intimate relations, the human mind ascertains facts by observation and experience; it compares them and thence infers relations, that is to say facts which are most general; these in turn—and this is the sole guaranty of their reality—are verified by

observation and experience. It is the chain of these relations extended further each day by the efforts of human intelligence that constitutes positive science." Claude Bernard, the eminent physiologist, declares that first causes are not within the domain of science. "They always escape us in the science of living bodies as in the science of brute matter." Pasteur says that "experimental science is essentially positive in this sense: that in its conception it never introduces the consideration of the essence of things, of the origin of the world and of its destinies."

From other great scientists we invariably receive the same answer. And it has been men of this school who have given to the world the hoard of science which it now possesses. Such men have worked for the love and progress of science, not for the notoriety and popularity which the novelty and fascination of Darwin, Huxley, Tyndall, Spencer, and others of their school have won for them. Such men as these have been unanimous in declaring that science can never account for primary causes and essences.

It is only the latter school which has attempted to venture beyond science's true domain. I do not deny that Huxley was a profound scientist, nor do I refuse a tribute of greatness to his disciples. They were all great as long as they remained within the limits of scientific research; when they left these they ventured into the unknown bounds of religion; they bade farewell to former glory and became poor metaphysicians and theologians. It is the mission of religion, and of religion alone, to point out clearly the causes of all, or rather to explain the one great cause from which all things have emanated. It is religion—for she starts with causes—which treats of them alone, and leaves science the task of explaining the effects. And never yet has science, working backward from these effects, established any other cause than that which the Church has already assigned. Here lies the great distinction between the two classes of scientists.

Those who are influenced by Christian principles are in every action practical men; men who will scrutinize theory as far as investigation will go, and will accept nothing as scientific which is not proven. Those, on the contrary, who boast of their so-called religious liberty, those free-thinkers who are intellectually the offspring of the clever but shallow atheists of the eighteenth century—those agnostics and materialists do not understand the domain of

metaphysics and religion, and presume to judge subjects which they have not studied deeply and without prejudice. They would exist without a soul; they would look around and behold those grand world gifts of supernatural favor; they would contemplate the mystery of their own existence, and they would still deny a God!

A corollary of our thought is this: Some writers maintain that the Reformation was the one great event in history which gave to science that great impetus and scope of liberty which it now possesses. Now is this true? Did science receive that impetus and that great scope of liberty, which is so eloquently dwelt on by men who have proven themselves fluent of speech, but shallow in philosophy? Did the Reformation advance or check science? This is a question of history, and to history we must appeal for an answer. J. W. Draper says,—and you cannot accuse me of bigotry in quoting him—"So far as science is concerned, nothing is owed to the Reformation." Now let us consult the testimony of the universities of Europe. Long before the Reformation was thought of, who founded the great schools and universities which are, and always have been, the promoters of science? Who founded Oxford, Cambridge, Aberdeen, St. Andrews and Paris? Who founded Toulouse and Montpellier, Leipsic and Heidelberg? Who founded Vienna, Bologna, Naples, Pisa, Rome and Salamanca? Yea, who, but Catholic kings and princes? And when did the cloud of retrogression touch them;—at the zenith point of their beaming eminence? To answer this is to prove conclusively that the Reformation was far more pernicious than beneficial to scientific research.

Under the Emperor Maximilian I., the University of Vienna became one of the most renowned institutions of learning in all Europe. Its professors were counted by the hundreds, and its students numbered about 7000 annually. But this was soon to change. Under the destructive blight of the Reformation the attendance dwindled down until scarcely a dozen occupied the spacious halls at whose doors thousands had formerly waited and clamored for admittance. This is only one of the many instances that can be quoted to show the degenerating spirit that prevailed throughout the domain of educational influences at this time. But in mentioning this, as a representative institution of Europe of that day, I mention all. And I regard it, as you

must feel it, sufficient evidence to prove that the Reformation was anything but advantageous to science.

One of the greatest discoveries in modern science is attributed to Leverrier, a profound thinker, a distinguished scientist and an eminent Catholic. After spending many weeks in mathematical calculations, this friend, alike to science and religion, pointed to a place in the heavens, and said "in that spot on such and such a night you will find an unknown planet." His theory became a truth. On the night predicted and in the position indicated, the said planet appeared, and Neptune was for the first time set forth to the gaze of mortal man. I make mention of this merely as an instance of the diligence with which a Catholic will probe into the boundless mysteries of infinite space.

We have shown the vanity of science without religious guidance; we have proven that the Reformation can lay claim to none of the glory which crowned modern research and investigation. Where then must we seek for this motive power? Where shall we find this divine effulgence which has dissipated the darkness of ignorance and vice? Is it not in that glorious age of learning which preceded the Reformation? Is it not in the light of those ages which extended over the valley of gloom created by Luther and his contemporaries; that has united the knowledge of the past with that of the present with intimate and indispensable union? Yes, everything that we have of learning, all of science and all of art; all that we call modern civilization and enlightenment, must be traced to that universal mother who has guided her children safely in every field. All must be attributed to our one, holy, catholic and apostolic faith.

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#### Nature as Seen by the Ancients.

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WILLIAM J. MARR.

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No poetic mind could remain unmoved at the sight of the beauty and grandeur of God's creation. Nearly all great writers have dwelt with pleasure upon this vast theme; and if they have not written any special books on the subject, they have sung the praises of these beauties in their writings whenever an occasion presented itself. It is true that the Greeks are very exact in their description of the beautiful in

nature; they seem to be guided by the intellect rather than by the heart; for whenever there is a tender expression of impressions received from nature, the personality of a genius or of a god occupies the principal part,—the description of nature itself is only secondary. Hesiod gives a beautiful passage on winter which bears the mark of great antiquity, although of doubtful origin. In Homer, the liveliest scenes of nature are only subsidiary. "The herdsman, rejoicing in the quiet sublimity of the night, the pure air, the soft glimmering of the stars, suddenly hears in the distance the roaring of a raging torrent carrying with its muddy waters ruin and destruction into the beautiful valley below." Even the tragic writers throw, here and there, charming scenes from nature upon a stage filled with excited passion. Thus, when Œdipus approaches the sacred forest of the Euminides, the chorus in sweet melodies sings of the "noble resting-place where the nightingale loves to dwell, of the vines and the narcissuses watered by the heavenly dew, of the golden crocus and the never-dying olive-tree." Theocritus describes the man of nature rather than the landscape. A soft, elegiac element is peculiar to his poems, as if it had grown out of a longing after a lost ideal; as if a sorrowful thought was always mingled with the instincts in the heart of man. Later on, when this free life of the people disappeared, poetry also changed its nature. Astronomy, geography, hunting and fishing became the object of the poet's art; but this kind of poetry lacks inner life, and that enchanting view which unconsciously fills the mind of the inspired poet.

The Latins have furnished no more than the Greeks with regard to the description of natural beauties. The genius of Lucretius has left us an enthusiastic poem on nature. It encompasses the whole world. Poetry and philosophy go hand in hand without any stiffness in the composition. Even Cicero finds consolation in his villas. He writes that there is nothing more pleasant than the solitude, nothing more attractive than the view from the shore of the ocean. "No man troubles me; when on an early morn I penetrate into the thick woods, I have no desire to leave them until the approach of night." It is needless to mention Virgil's writings, for everybody knows that landscape description has only a secondary place in them; but nowhere else do we find a nicer description of the playful waves of the ocean, of the quiet nights; nowhere else a more

striking contrast between such gentle scenes and the approach of a thunder-storm, or of the volcanic eruptions of Mt. Ætna. That Ovid and Tibullus could have given us the liveliest descriptions of natural scenes is evident from their writings. But what they neglected to do, their successors were unable to fulfil.

At the end of the fourth century poetry was rudely deprived of its magically creative powers, and mere phraseology could not satisfy the mind looking for natural sentiments and ideal inspirations. It is true that no other work of antiquity equals the gigantic production of Pliny the Elder. "It is manifold, like nature itself." Sometimes unequal in style, simple and didactic; again, lively, rich in thought and rhetorical ornamentation; everywhere the view is directed to a grand co-operation of powers in the well-ordered "majesty of nature," and we must admit a true inspiration flowing from a soul full of music and poetry. Except a few words by Livy describing the horrors of a passage over the Alps by Hannibal's soldiers, no attempt is made to describe the beauties of Switzerland's greatest attraction. Cæsar, when returning to his legions in Gaul, wrote a treatise on "Analogy" when crossing the Alps, but the beauties of the scenery left him quite unconcerned.

But a new era dawns upon the world. Christianity has been spreading; and with it, personal rights and personal freedom gradually find their way to the lower classes of society, and act on them in a beneficent manner. The Olympic gods are discarded; the Creator of the universe shows Himself great in animate as well as in inanimate nature; in the wild struggle of the elements as well as in the quiet action of the organic development. To direct the mind toward the grandeur and goodness of the Creator in the order of the world and in the "beauties of nature," was the object of the first Christian writers. A letter from St. Basil to St. Gregory of Nazianza shows great poetical talent in this respect. "I think I have found the terminus of my travels. The hope to meet you—I should say my dream; for hopes are rightly called the dreams of a man in a waking condition,—has remained unfulfilled. I have found such a place as we have frequently pictured in our imagination. High mountains covered with dense forests, from which descend many brooks with crystal waters, surround a large plain. My cottage is so situated that the eye

may wander in the far distance, and follow the course of the Iris, which breaks its foaming waters against the rocks as it flows down from the mountains. Shall I speak of the lovely singing of the birds, of the manifold herbs and flowers, and gigantic trees, or of the quiet stillness of the place? What place is there with which I could exchange to any advantage?" Such and similar passages are frequently met with in the writings of St. Basil. He described, for instance, the ever clear and beautiful nights of Asia Minor, where the stars—"the eternal blossoms of heaven"—elevate man's mind from the visible to the invisible. When he praises the "beauty of the ocean," he describes the view of the endless surface in its manifold and ever-varying conditions,—“how it is moved by the gentle breath of the zephyrs,—now vary-colored, now white, now blue, and again reddish, and it seems to caress the shores in its peaceful playfulness.” St. Gregory of Nyssa expresses the same sentiments: “When I consider the rocks, the high mountains covered with dense forests, the valleys in their festive garb adorned with lilies, the mighty ocean, my soul is filled with pleasure.”

It is not without purpose that so far I have not mentioned the Book of books. This discourse would be entirely too long if I should attempt, not to quote, but simply to mention, the passages in which it describes the wonders of nature. Many well-deserving authors must also be passed over in silence, and I mention only Dante, Petrarch, and Cardinal Bembo, the friend and counsellor of Raphael, who was the first to write in prose the most charming descriptions of nature.

But this kind of literary work received a new impetus at the discovery of America. The first example of it is in the journal of the Great Discoverer himself. He describes life on the new earth and the new heaven with a beauty and simplicity characteristic of the beauty of his own soul. Sentiment ennobles language; and the simple prose of the Admiral has more charm than the allegorical romance of Boccaccio. Inimitable are the descriptions which Camoens writes of the relations which exist between air and ocean; but Camoens is the greatest painter of the sea! Calderon and Shakspeare also find occasion to paint scenes from nature as if living nature were acting before the eyes of the spectator. I have tried not to say anything of my own, but to let the great minds of all times speak, knowing well that

one mind cannot take in all the wonders and beauties of creation. All parts of the world show wonders of the progressive formations that disappear and return. All parts of nature, from the superabundance of tropical products to the sterile ice-fields of the poles, offer beauties peculiar to each, and above and superior to all, there is one Supreme Power that has made them all for the instruction and enjoyment of man.

J. B. S.

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### Railway Location.

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WILLIAM W. MARR, JR.

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After it has been decided to build a railroad the engineer is called in. Economy must be his guide. The railway company will decide whether the road shall make intermediate connections, or pass through points between the principal ones of the road. The engineer is instructed as to the points to be touched, and then left to locate the road in the most economical way possible. His work is divided into six distinct parts or branches: (1) the reconnaissance, or the examination and study of the country by eye; (2) the preliminary surveys, or those made in a general way with an object of getting a choice of several possible locations; (3) the estimate of the cost, which is made in a rough way in order to give the company an idea of the expense; (4) the survey of location made after a choice from the preliminary survey, and in which the line is located upon the surface of the ground regardless of cuts and fills; (5) leveling the line, making a profile and estimating the earthwork; (6) the survey of construction, in which the work of building the road is laid out for the workmen. From the maps of location the engineer marks out on the ground the axis of the road, and sets the slope stakes for excavations and embankments. After the road-bed has been prepared another survey for the track men must be made. In this the axis of the track is marked upon the ground by means of stone pegs driven in at equal intervals and marked in correspondence with those on the plat.

### RECONNAISSANCE.

If any maps of the country exist they will be of great service to the engineer in his present work. They will lessen the work of reconnaissance by showing many features of the country which would be favorable or otherwise to the

road in their vicinity. Roads along the bank of large streams will have to cross a number of tributaries, and the road will therefore require a number of bridges. Roads running across two streams, or connecting points on two large rivers, must cross high ground or dividing ridges between the streams. The position of streams, mountains, hills, etc., is shown by the map, and from these the engineer readily determines the lowest and highest points, and obtains the lines of greatest and least slopes.

With the information thus obtained the engineer may approximately locate the road, or, at least, throw out many portions of country as impracticable, and greatly lessen the work of reconnaissance. It is often evident from a map that a line which is to connect points on opposite sides of a ridge or hill may be made much more cheaply by making it longer and running it around the hill or ridge. The difference of level to be passed over will be far less, and the earth-work of the one would more than pay for the extra length of line of the other. Then, supposing he did cut through the hill in order to avoid an enormous expenditure in earth-work, a grade is established, and the cost of pulling trains over this grade would in the end be greater than the cost of laying the longer track. Of course, this will not apply in every case. Sometimes miles of tunneling are made, and the results are more satisfactory and economical and in every way better than in a longer road.

Long lines of road generally follow the banks of streams and in this way obtain easy grades and cross the ridges by the lowest passes. After having made a thorough study of the map of the country the engineer will make a personal study of the ground to identify these features and to verify the conclusions drawn from the map.

By going both forward and backward the engineer sees the ground from both directions, which will correct or verify the impressions he has received as to its nature. He locates all the principal features of the ground or country in his mind and decides upon a number of trial lines for examination. These trial lines are as many in number as there are possibilities of location. They are marked by "blazing," if in a wooded country, and by stout stakes driven in the ground if in a cleared country.

The work of reconnaissance is of the greatest benefit both as regards the cost of the work and the most advantageous location. If an engineer started in to make an exact survey of

the territory between two points, and embody in his survey the country around the intermediate points with which the road is to make connection, the survey would consume a great deal of time and cost a great deal of money, which would be a useless expense, and fall short of one of the principal requisites of his work, viz., to get the most desirable location. By making the reconnaissance survey he can do this quickly, throw out at once a great portion of territory as impracticable, and lay out in his mind several possible lines, one of which will surely be the most desirable, economical, and satisfactory to all concerned. He makes note of all the towns and points of interest on the line. With reference to towns and cities, their population and business, both present and prospective, are of great consequence. The road may be called upon to carry on a greater or less amount of traffic a greater or less number of passengers may be calculated upon, and if the point is of interest travelers will be expected. It may be a good place for a resort, and excursions will prove a consideration in the returns from the road. The property which must be condemned for the road ought to be the cheapest which may be selected in consideration of other matters. It would not do, for instance, to enter a town straight through the centre, and put the company to the expense of buying very valuable property, when it would serve the purposes of the company and community as well if the road simply touched the town on one side. Frequently long tunnels are built in order to get into a town in this way, and not to run directly through the principal portion of the city. So much for the reconnaissance. The engineer's object is to get a general idea of the country, so that he may throw out all that is impracticable and establish in his mind several trial lines for a

#### PRELIMINARY SURVEY.

The object of the preliminary survey is to put actually upon the ground as many of these trial lines as may be deemed expedient. The engineer must be very careful never to pass over what might prove to be the best line; and in case of any doubt as to which is the most available, he should survey each one, and by comparison exact relations of their results are obvious. All data on each side of the lines are taken into consideration for the purpose of making a map. It often happens that a road must be shifted a trifle one way or

another from the proposed line, and in such case the map will show the most desirable way and distance to shift it. A line which has in one part to pass over several hills may be so shifted as to make it necessary to pass over but one and still have the same length of road. Or, as is often the case, it is found, upon making a profile, that a cut or fill which was not seen on the ground appears on the profile; and by comparison with contours on the map another course is plainly seen which would avoid a grade and the enormous amount of earth-work that would be necessary if the line were allowed to remain as first laid out. So it is that a map containing an accurate representation of the ground on both sides of the line is of the greatest value and should always be made. This map should show all the topographical features with contour-lines, the rivers, streams and waters, and everything that could be of service, or in any way affect the location of the road. The starting-point is marked by a stake well driven in the ground. It should be *tied in*, that is, it should be located with respect to other points, so that if it be disturbed it can be accurately replaced by anyone having the notes.

The transit is set over this mark, and the engineer goes ahead with a rod which he sticks into the ground in the direction in which he desires to run the line. The chain-men take the distance, and at intervals of a hundred feet pegs are driven. The transit man takes the magnetic bearing of the line, and the chain-men, having reached the point at which the engineer has placed his rod, set a peg, note the distance, and signal the transit man to follow.

Setting up the instrument and leveling over the new point, a back sight is taken. If this proves satisfactory the new line is run, and so on until the end. Enough data must be taken on these surveys to enable the engineer to make accurate plans and maps from them. When this work has been done for several trial lines, the leveling party comes in and levels the lines and takes side shots on the surrounding country. Contour-lines are then made on the map. The starting-point on every line is always referred to by some bench-mark (B. M.). Then all the points are referred to some datum plane which is taken so many feet below the first bench-mark. Any permanent point is called a bench-mark when used in connection with a survey. In taking a bench-mark especial care must be exercised in

choosing some point such as may not, or cannot, be moved. These bench-marks are always recorded on the map and in the notes. The datum plane is taken below the lowest point of the survey in order to simplify the profile map. After the lines have all been leveled, the maps are made, and then comes the selection of the best one of these locations.

Of course, the preliminary lines are all broken ones, made up as they are of straight lines of greater or less length. The angles at their points of intersection are of different sizes. On the final line an angle cannot be, and so these are all rounded off by means of curves. The curves themselves are of different kinds, the circular arc being most prevalent in the United States and throughout America generally. Parabolic curves are used in Europe; and in both countries transition curves, or those placed at the ends of sharp curves for the purpose of easing the passage from the tangent to the curve, are used. The circular curve is divided into simple, compound and reversed curves. The simple curve is a circular arc joining two tangent points. It is the one most generally used. The compound curve consists of two circular arcs which join two fixed tangent points and have a common tangent between. The reversed curve also consists of two circular arcs which join two fixed tangent points and have a common tangent between; but in the reversed curve one of the arcs lies on either side of the common tangent, while in the compound both lie on the same side, having the same direction of curvature.

To lay out a curve upon the ground the P. C., or starting-point, and the length of the radius or degree of the curve must be known. When the tangent points are fixed, the length, of course, must be calculated. Having the starting-point, the length and the degree of curve, which means the angle at the centre subtended by a chord of one hundred feet, set up the transit over the P. C., bring the vernier zeroes together, take a back sight on the tangent, reverse the telescope and turn off an angle equal to one-half D, the degree of curve. The chain-men are then "lined in," and the forward man sets a peg at the end of the chain, or one hundred feet from the starting-point. All chords are one hundred feet in length. This method is continued until the end of the curve in P. T. is reached. In the case of long curves, the instrument must be changed, as the transit man cannot see to "line

out" the head chain-man. Say the fourth station has been set, and it is desired to change the instrument. The verniers read four times the deflection angle. The instrument is clamped and moved to station four in the curve, where it is set up and a back sight taken on the first station by the lower movement; reverse the telescope and turn by the upper movement an angle equal to the total deflection. Being now in tangent the work proceeds as before.

#### GRADES.

The success of a railroad depends largely upon a judicious selection of grades. The grades are determined, to a great extent, by the country through which the road passes. Cuts and fills cannot be avoided, and in many cases large excavations and embankments are more advantageous than steep grades. Wheeler says:

"The question of grade is more one of economy than of practicability. Locomotives can be made to ascend steep grades by increasing their power and adhesion; but as the grades increase in steepness, the effective tractive force of the engine decreases. Thus with an ascent of twenty feet to the mile, an engine can draw about one-half the load it can draw on a level; with forty feet to the mile, about one-third, etc."

The cost of drawing a load over a railroad varies very nearly with the power employed. This consideration will, therefore, justify a large expenditure in the construction of the road, if made with a view of reducing grades.

The ruling or maximum grade adopted for the line depends upon the motive power used to ascend grades and upon the avoidance of a waste of power in descent. The steepest grade upon a given line is not necessarily the maximum inclination adopted upon the road. It may be much greater than the ruling grade, and special arrangement will then be required to overcome it.

When the loads to be carried in one direction over the road are much heavier than those carried in the other, the ascents on which the heavy loads are to be carried should be made by easy grades, while the descents should be made by steeper ones. If the traffic is equal in both directions, the ruling grade should be equal for both slopes.

The length of the grades must be considered, as it is found more advantageous to have steep grades upon short portions of the line than to overcome the same difference of level by grades not so steep on longer developments.

From various experiments it appears that the angle of repose for a railroad is about

$\frac{1}{80}$ , but in descending grades much steeper than this. The velocity due to the accelerating force of gravity soon attains its greatest limit and remains constant, from the resistance caused by the air. The limit of the velocity thus attained, whether the train descends by the action of gravity alone, or by the combined action of the motive power of the engine and gravity, can be determined for any given load. It appears from calculation and experiment that heavy trains, allowed to run freely without applying brakes, may descend  $\frac{1}{100}$  without attaining a greater velocity than forty miles an hour. Hence, the question to be considered in comparing the advantages of different grades is one between the loss of power and speed for ascending trains on steep grades, and the extra cost for heavy excavations, tunnels and embankments required for lighter grades.

Since locomotives are not taxed to their full extent, grades of sixty feet to the mile may be used without any practical loss of power either in the ascents or descents. With these considerations in view, the final location of the road is decided upon, the curves and grades established and the whole line is mapped. After this has been done a final estimate of the cost can be made, and if the company be satisfied the road is built.

#### SURVEY OF CONSTRUCTION.

With the maps, notes and all data embodied in the memoir, the engineer proceeds to mark out upon the ground the final location of the road, and indicate the work to be done by the laborers. Stone pegs are set at every hundred feet (oftener in rough ground), and to the side are set "markers" which are longer and project a foot or more above the surface of the ground. On these markers are written the amount of cut or fill and the number of the station. Slope stakes are then set for the excavations and embankments. The setting of these stakes and the slope to be used will depend upon the nature of the soil. Sand will not permit of so great a slope as gravelly earth, and gravel will take a less slope than solid rock which might be made vertical, but is usually given a slope for the purpose of admitting as much sunlight as possible to the road-bed.

After the road-bed has been built and leveled or graded, as the case may require, the engineer goes over the line once more, testing the accuracy of the work and setting pegs for the track men. When this has been accomplished the engineer's work is done.

Sadness.

"Be still, sad heart! and cease repining;  
Behind the clouds is the sun still shining;  
Thy fate is the common fate of all;  
Into each life some rain must fall;  
Some days must be dark and dreary."

The real poet is true to nature. None of our bards has ever pictured life as one long, sunny day. What a dry desert this vast world would be, if the heavens withheld those fruitful rains! How unfruitful are the spots that are not kissed by kindly showers! So it is with man: the life that has known no sorrow has been blessed by no real joy. Sadness makes a man noble; it makes him god-like. Thus spoke the Master to His beloved Jerusalem: "If thou also hadst known, and that in this thy day, the things that are to thy peace; but now they are hidden from thy eyes." Then He wept. Listen to St. Bernard. When he realized that death's dark curtain had forever veiled from him a much-loved brother, he allowed his soul to sing his heart's saddest, but sweetest lay: "Flow, my tears, so eager to flow! he who has prevented your flowing is here no more. . . . It is not he who is dead; it is I who live only to die. Why, oh why! have we loved and why have we lost each other?" Through sadness we learn that

"Life is real, life is earnest,"  
and that  
—"things are not what they seem."

Dejection and melancholy are not allied to sadness. It is commendable to be serious; for seriousness comes from deep thinking, but dejection, never. Man's dignity is above dejection. Sadness is a passion. When mastered it is serviceable; when left to its own sway, it becomes a ruinous vice. Inordinate sadness is melancholy; it is sensuality reflecting its own hideousness. The melancholic person is an artificial man; he is inactive, a mere toy. Then there is the moody man. He differs from the melancholic as the sick queen-bee differs from the drone. Dante puts those who were melancholy in the slimy stream of Styx in hell. They cry out:

"We sullen were  
In the sweet air, which by the sun is gladdened,  
Bearing within ourselves the sluggish reek;  
Now we are sullen in this sable fire."

This moody state of mind is sometimes occasioned by an unsound body. As machinery, when encased in poor framework, cannot produce the wonted equilibrium, neither can the mind preserve its equanimity when annoyed

by an unsound body. The man who is above moods and dejections lives a life of harmony. He keeps in mind this message of one of the harbingers of consolation:

"Joys as winged dreams fly fast,  
Why should sorrow longer last?"

When life's journey is ended, wearied and exhausted we fall beneath the shade of death. The last struggle is one of sadness and pain. So was it when we came into the world; yet the span of life between our first awakening and last sleep is what we make it. Be not unwilling to drink from the cup of sadness; though mineral waters be bitter they are strengthening. From the fountain of sadness comes that "manly fortitude which hardens a soul to stand chill and heat without flinching and without querulousness." This stanza, then, is more than the expression of a poet's fancy:

"We look before and after  
And sigh for what is not;  
Our sincerest laughter  
With some pain is fraught;  
Our sweetest songs are those  
That tell of saddest thought."

W. J. M.

An Affectionate Warning.

Keep off the grass, darling, keep off the grass!  
Stray not from orthodox paths as you pass;  
Let the bright verdure untrampled remain,  
Clothing the dry arenaceous plain.  
Manifold checks its exuberance grieve,  
Sunburn and frostbite it needs must receive;  
Add not your mite to its woe, then, alas!  
Keep off the grass, darling, keep off the grass!

Blacksmiths have aprons to keep off the sparks,  
Swimmers torpedoes to keep off the sharks;  
Parasols keep off the hot solar beams,  
Stouter umbrellas the pluvial streams:  
People who dwell 'mid malarial ills  
Always have something to keep off the chills,  
Why not belong to a numerous class?  
Keep off the grass, darling, keep off the grass!

—Jutsin Thyme.

"MOTION and rest, darkness and light, the seasons, the progress of the stars, which vary the decorations of the world, are not, however, successive, except in appearance. They are in reality permanent. The scene which fades from us is painted for another people; it is not the spectacle but the spectator which changes."

# NOTRE DAME SCHOLASTIC.

Notre Dame, September 19, 1896.

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The attention of the Alumni of the University of Notre Dame, and others, is called to the fact that the NOTRE DAME SCHOLASTIC has entered upon the THIRTIETH year of its existence, and presents itself anew as a candidate for the favor and support of the many old friends who have heretofore lent it a helping hand.

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Editorials on questions of the day, as well as on subjects connected with the University of Notre Dame;

Personal gossip concerning the whereabouts and the success of former students;

All the weekly local news of the University, including the names of those who have distinguished themselves during the week by their excellence in Class, and by their good conduct.

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FRANCIS J. F. CONFER,	} <i>Reporters.</i>
FRANCIS O'MALLEY,	
JOHN F. FENNESSEY,	

—Now that officers of the Athletic Association have been elected, it is natural to hope that the team which is to meet our opponents on the gridiron this fall will soon be organized. The very practical interest which the faculty have taken in athletic affairs augurs well for our future success; and with the enthusiasm that now exists throughout the entire student body we are confident that there will be no reluctance to practise on the part of those who are best capable of winning fame under the banner of Gold and Blue.

—Notre Dame has seldom been honored by the presence of such prominent Americans as visited the University on the 3d of the present month. Mr. William J. Bryan, the presidential nominee of the Chicago convention, while on his way from New York to Chicago, accompanied by Mrs. Bryan, Senator Blackburn, the Honorable Benjamin F. Shively, democratic candidate for Governor of Indiana, the Honorable Judge and Mrs. Howard, the Honorable John B. Stoll and Mrs. Stoll and several others, deemed Notre Dame worthy of a passing visit. Their stay was necessarily short, but during their brief sojourn they had ample opportunity of seeing Notre Dame at its best and at a season when it is the most beautiful spot of all the surrounding country.

We have ever been fortunate in our visitors. Men who are in the public eye and leaders of every political party, as well as men prominent in other pursuits, have come here attracted by the beauty and calmness of the place, and gone away charmed with the pleasing contrast presented by this retreat to the scurrying, scrambling world without. We are not, then, surprised but flattered that Mr. Bryan and his friends expressed great pleasure at visiting Notre Dame.

—With the formal opening of the scholastic year, which is to take place to-morrow, it is expected that resolutions will be formed to watch opportunities both for the attainment of knowledge and the formation of character. That these—the latter as well as the former—are the two great objects of coming to college, every student should, at the very beginning, clearly understand. Good-will, no less than perseverance—that word “ever ancient and always new”—is one of the stepping-stones to success. Coolness and the very niceties of caution are good things to be admired, but better to be practised. College life, like the larger life of the world, is a struggle in which strength prevails. But strength is attained only by painful exercise, and to him who trains himself the most carefully, falls the prize. Opportunity, which Aramis describes for his brother-guardian as the martingale of man, should be looked for, and if not found should, in the words of Bacon, be made by those that are wise. To the returned students these remarks are time-honored, but, we hope, not useless; and for the new arrivals they will prepare the way for a thorough conception of the importance of a college course.

## Municipal Life and Social Reform.

Reform has always been a fad of never-failing resources. I doubt not that Adam, had he remained in Paradise, would have meditated a reform of animal creation. Indeed, the apple was eaten that man's nature might become more like God's. The whole of ancient history is one long series of reformation. Each king reforms another by deposing him. The Jews drove the Canaanites out and took their land. A band of poor exiles founded Carthage, which the great reformers at Rome, with visions of universal sway, destroyed. Rome was then without a rival. Cæsar reformed the Gauls and Germans, whom his own incursions had instigated to revolt.

Modern history presents a spectacle not far different. Abuses in monasteries are reformed by the confiscation of property; heretics are reformed by death, and thus all hope of the very thing desired is destroyed. Then, as if not satisfied with the already farcical character given to reform, modern history tells us of that stupendous comedy-tragedy, the Reformation—a reformation content not only with not reforming, but with striving to debase.

Our day is not wanting in change. Reforms in theatre hats, the liquor trade, dress, education, police, are very recent. But on the whole, one may safely conclude that reform is another name for self-interest; or, when this is not the case, it seems to be only a diversion for the instigators. It means nothing, and it frequently creates evil.

Social reform was, a few years ago, a fad. Journalists found the topic a profitable space-filler, and lecturers thrived greatly upon it. Dainty hands opened the doors of vice, and pretty heads invented "slumming" as a new form of pastime. But all this has passed away. The second-hand book shops teem with volumes treating of social subjects; and the pessimist, who began to hope that mankind had at last risen to a sense of justice, has drawn back into his gloom more morose than before.

That social reform is a fad is indicative of either of two things: (1) men realize that society needs reformation; or (2) they are indifferent as to the outcome of any reformation which may be projected. Now, this paper is an earnest effort of an earnest heart to point out that what it thinks wrong in the present social system is prompted neither by passion, self-interest nor fashion.

It seems to me that society, in emerging from barbarism, has retained traces of the conflict, which neglect has prevented from being effaced, and which traces or wounds now vitiate the whole system, just as a woodman after a conflict with some wild beast neglects his wounds and dies from the effects. Society is as a beautifully constructed instrument which is easily put out of tune. That it is out of tune is quite evident. It behooves, therefore, to investigate the nature of barbarism, its beginning and development; and then to inquire whether its defects have been incorporated in the new order of things.

Take, for example, the origin of cities. Men always lived near some fortified position, and gave up hope only when the citadel was taken. Barbarism generated cities; barbarism pursued them. Effeminate Rome trusted in her walls. Constantinople built security around her towers. So thoroughly did men become enamored of city life that the history of man is but the history of cities.

Does all that is evil come from over-population, or rather from the very existence of cities? Revolts, treasons, pests, vices, heresies, effeminacy, tyranny—all find in the city their proper home. Again, the inhabitants of cities do not perform their part of labor, and, since they live, it must be at the expense of others. It is the city which supplies middlemen, those buzzards of commerce who are forever fattening on the estate of the laborer. Hence panics and hard times.

Monopolies can secure cheap labor by reason of the close proximity of so many workingmen. City merchants sell their commodities as high as possible, and heavy rent is extorted from the laborer with unfailing regularity. Now, it is evident that were there no cities, were the population scattered over a larger extent of territory, the whole economic system would be bettered; expenses would decline and wages rise.

But there are other results far more deplorable, which are brought about by city life. Enclosed within the narrow limits of a city, man is admirably situated to express the worst phases of animal life. On every side the health-giving rays of the sun and the purifying breezes of air are shut off. Decaying matter, here and there in heaps, breeds disease. Deadly gases load the air; and men grope in the smoke of the city to clothe in rags their wives, who toil in the gloom of the tenements, and their children who grovel in the dust and mud of stony pavements.

But cities are objectionable for other reasons than their origin and effects upon life. They affect also the spirit of the inhabitants. It seems to me that an appropriate motto for the entrance to cities would be: "Abandon self, all ye who enter here!" Who is citizen of Chicago, for example? Of all that hurrying mass of humanity, which passes down State Street, few are acquaintances. The individual is lost, and each man becomes an automaton.

There is here no real life. Only the low instincts are cultivated. Rascality is held in honor. Truly, Hermes, not Zeus, is the god of our cities. The youth who grows under this influence, is, indeed, a curious production—unlovable, often unknown. At best, utility alone appeals to him. His sense of beauty is dead, and beauty itself is desirable only inasmuch as it is useful.

Now, I ask what social system is not found in the city as its source? I believe I have touched upon all the points usually argued by socialists and other opponents of the present system. I suggest, then, that the city be abolished as the solution of the problem. I doubt whether any recourse need be had to socialism, communism, or any other extreme plan. The chief opponents of this proposition are of two classes. The first holds that the scheme is impracticable. But such men beg the question. If our system is deranged it must be repaired. The injury such a course would work is not to be compared with the insignificant cost of the reform. We should remember the Civil War. The second class asserts that man is a social being and must live with his kind. The abolition of cities would not prevent men from living together. Nature does not require that we all live in one immense house, or sleep in one immense bed. On the contrary, if the population of our cities were scattered over the country, many who are now outcasts would be once more members of society.

But in conclusion, how is the change to benefit us? Chiefly through self-interest. A few years since almost all the factories were situated in the East; but with the construction of railroads, manufacturers seek other, cheaper and more advantageous sites. The working-man, brought into contact with the farmer does away with the middle-man, and bonds of trust become a necessity. A greater, more glorious result would be achieved—all would get a chance to cultivate a love of nature.

The Church, being the institution most injured by cities, should be the most potent to

effect the change. Vice runs riot in the cities; therefore, no Churchman worthy of the name should be indifferent to the suggestion. In the distant future there is looming up a happier life, a better existence for all men at all times and in all places.

J. G. S.

#### Books and Magazines.

"DEMON POSSESSION AND ALLIED THEMES."  
By J. L. Nevius, D. D.

The current of Christian theology, outside the Catholic Church, has been setting so long and so strong towards an evolutionary, materialistic naturalism that it is not without surprise one comes upon a book such as the above. It is a significant coincidence that, with the conclusion of Mr. Andrew D. White's long and tedious papers in the *Popular Science Monthly*, setting forth the emancipation of the human mind through science from the superstition of demon worship and demon possession, miracles, etc., there should appear a book full of fact and philosophy touching those very subjects and sufficient of itself to overturn his finest theories.

The author, the late Dr. Nevius, was a Protestant and for forty years a missionary in China. He seems to have been a man of exceptionable ability, a ripe scholar, both in the ancient classics and the modern sciences, and an unprejudiced, truth-loving Christian gentleman.

Starting out by stating his own opinions on the subject at the time he first entered China, he relates, with the simplicity and directness of truth, the events that led him completely to change his views, and to become a firm believer in the reality of demon possession. His anxiety for the truth led him to push the enquiry further, and to ascertain by correspondence the views and experiences of his fellow-missionaries throughout China and the East. The results were such as to confirm his own conclusions. In this, which may be called the first part of the work, the discussion is entirely of fact. The evidence is positive and direct. Many of the instances narrated may seem startling to most Americans, though to Catholics, acquainted with the missionary history of our own country, they will be not at all surprising.

The second part of the book consists of a discussion of the philosophy of demon possession. The subject is learnedly and acutely handled in all its phases,—pathological, psychological, historical, and biblical, and the

similarity between the circumstances of cases of possession narrated in the New Testament and those investigated in the Orient pointed out. The style is simple and forcible, and the author's conclusions, though directly counter to the whole current of modern thought, seem logical and irresistible.

Too much praise cannot be bestowed upon Mr. Henry Rankin for the learned, conscientious, and painstaking care exhibited in editing the author's MS. The Biographical, Biblical, and General Indices greatly enhance the value of the work. The book may do much towards inducing a reaction against the materialistic trend of modern thought. It certainly merits the careful perusal of every serious student.

—In the September *Harper's*, Woodrow Wilson brings us very near to Washington in an article entitled "First in Peace." The special charm that the Father of his Country exercised when he removed himself from the hurly-burly of public life, is beautifully told, and we find the man as interestingly painted as the hero and the statesman. The article headed "Old Silver" will attract lovers of heirlooms. The number is specially rich in fiction. Mark Twain concludes his serial, "Tom Sawyer, Detective," and though he is said to be on the trail of anyone who attempts to discover a plot in any of his works, we must confess that the plot in his latest production is well sustained. Those who enjoyed the opening numbers of "Two Mormons of Muddlety" will find the conclusion in the September issue satisfactory. Besides these two serials there are five short stories. Other articles are "The Art of Driving," "Among the Trees," and "The Musical Celebrities of Vienna." Of the poems, "Hesperia" will attract the most attention because of its historical connection. The Editor's Drawer is well filled with humorous sketches. The illustrations throughout the number are, as usual, good.

—In the September *Cosmopolitan*, Chatfield Taylor continues his charming papers on Spain. This time his theme is Granada and the Alhambra, and a very interesting theme he finds it. The present number is especially noteworthy for the publication of a hitherto unpublished essay on "Honor," by Aaron Burr. There are other very readable essays, "De Juventute" being among the best. The features for this month are the remarkably clever stories. "Belle's Beaux" is decidedly pleasant reading. The poems and illustrations are pretty and artistic.

### Personals.

—Aloysius J. Erhart (student '96) is in his father's business in Erie, Pa.

—Andrew J. Hanhauser (student '96) is in the general office of the Shawmut Mining Co., at St. Mary's, Pa.

—John M. Stanton, Jr. (student '96), is a junior member of the firm of John Stanton & Sons in Berlin X Roads, Ohio.

—The Right Reverend Thomas McGovern Bishop of Harrisburg, visited the College during the early part of the week. Bishop McGovern's many friends at Notre Dame hope to see him repeat his visit in the near future.

—A letter was received from John M. Flannery, '94, acknowledging the receipt of an invitation to attend the Commencement and sending best wishes to the Faculty. We shall be glad to see John at any time, be the weather charming or Indiana-like.

—Mr. Robert Brown (student '96) will be missed from the gridiron and the diamond this year. He and his brother have opened a general store in Blencoe, Iowa. Notre Dame wishes him success in his new venture. If he be as successful in business as he was in baseball and football, Rob will hold a mortgage on a large share of Iowa before many moons.

—The Reverend M. J. Clifford, of Rome, Georgia, spent a few days at the University during the past week. Father Clifford brings with him much of the sunniness of his Southern home. He seemed very favorably impressed with Notre Dame, and despite the brevity of his visit has won the lasting friendship of those who were fortunate enough to meet him.

—The marriage of Miss Verna Lantz to Thomas D. Mott (Law, '95) took place in South Bend, last Wednesday evening. Very Rev. President Morrissey officiated at the ceremony. Tom came a long distance to get his bride, but he is to be congratulated in having as his helpmate one of South Bend's fairest daughters. The SCHOLASTIC sends its best wishes to Mr. and Mrs. Mott, and prays that their home in distant California may long be one of contentment and joy.

—Gus Cooper (Com'l '89), of Dubuque, Iowa, went on a voyage of discovery to Alaska, and tells the story of his trip in the *Dubuque Daily Telegraph*. The ruling passion must assert itself even in Alaska, and so Gus organized a baseball team among the boat's crew, and challenged the soldiers of the fort in Juneau. The score of the game shows that his arm hasn't forgot its cunning, for his team won by a score of 23 to 3. But Gus found other things in the North quite as interesting as baseball, and his stories of glaciers, Indians, mosquitoes and other delightful accessories of life in Alaska fill several columns in the *Telegraph*.

## Local Items.

—FOUND—A sum of money. Owner may have the same by applying at Students' Office and describing property.

—The old faculty of the gym. has departed from his former realm. However, his place is *filled* by the genial form of Mr. Edward Herron of Chattanooga.

—If you forgot to subscribe for the SCHOLASTIC attend to the matter at once. It was a great oversight. Subscriptions are received at the Students' Office.

—A certain Carrollite was heard telling another a yarn of his prowess on the gridiron. When asked in what position he played he answered "In the field."

—The Carroll hand-ball alleys have been repaired and are much more lively than ever before. The association will soon be formed and a schedule of games arranged.

—The St. Joseph and Carroll Hall nines played an uninteresting game of ball on the 13th. With the exception of two sensational catches the game was featureless.

—Boru says that there are a few half-backs at Notre Dame, a few full-backs and a few quarter-backs; but there are so many *hold-backs* that the football outlook is not very favorable.

—The Carrolls and the ex-Carrolls played a game of football on Brownson campus last Thursday. Of course, the Carrolls won. They had little trouble with their opponents. The score was 6 to 4, and Herron, Naughton, Frank Cornell and others of the Carrolls didn't play. Well!

—We will not have Captain Walsh with us this year, we are sorry to say. This will be regretted by his friends at Notre Dame, and every student that knows him here is his friend. Notre Dame loses not only one of the pluckiest football players she ever had, but one of her "best fellows" also—and that is saying a great deal.

—The boat-club held a meeting last Thursday, to select captains for the six-oared races this fall. Mullen and Neizer were chosen. There will be only one race in fall, and that about Oct. 13. But the boatsmen are determined to keep in training for several good races in spring. A number of new members are in the club.

—The Carroll Hall football team is expected to be stronger this year than ever before. Four of the old team, Cornell, Naughton, and Burns behind the end and Fennessey at right end have returned. There are many new candidates and all have had experience. A series of games will be arranged, if possible, with the ex-Carrolls and other strong teams.

—At a meeting of the University Stock Company, held last Thursday evening, Thomas T. Cavanagh, '97, was chosen manager, and Edward E. Brennan, '97, assistant manager. Those who wish to become members of the company, which is a purely dramatic organization, should make application to the Director, Father Moloney. The membership roll is limited to fifteen names.

—The Local Editor is trying to worry along for the present without any political ideas. He wired Willie O'Brien's private secretary to find out which side the paper should favor; but secretary Ducey telegraphed back that Shamus would not declare himself until after his return to Notre Dame. In the meantime the SCHOLASTIC is simply an independent weekly sheet.

—Fair-haired Charley and his corner grocery are with us once more. He carries only a small stock at present, but after election day is over, and the financial question solved, the corner grocery will burst forth in all its former glory. If you want anything from "a bar'l of appel-sass" to a curling iron, anxious purchaser, read the corner grocery ad. on the editorial page before visiting any of the other wholesale establishments.

—All those who desire to become members of the Mandolin Club or the University Orchestra or the University Band should present themselves to the Director, Professor Preston, as soon as possible. His room is number 60, Main Building. No great degree of proficiency is required in candidates; if they have any talent for instrumental music they will find Professor Preston only too willing to help them to enter the clubs.

—The overseer of decorations is having a hard time of it just at present. All the rabid "gold-bugs" want that silver-leaf removed from the dome of the Observatory and gold-leaf substituted, and the "Unterrified-sixteen-to-one-no-compromise-middle-of-the-road" people are making a big fuss about the gold dome of the Main Building. If the overseer of decorations wants to place his reputation for wisdom above par, and please everybody in the meantime, we shyly suggest that he have both domes painted green.

—There have been so many improvements made on the Brownson campus during vacation that we are hardly able to recognize it. The work of widening the bicycle track is progressing steadily. Oscar and our other crack-riders will be able to smash records with ease when it is finished. The old grand-stand has been torn down and a new one erected over near Mechanic's Hall. This will give the spectators a better view of the "gridiron," provided the students keep out of the way (which they won't, of course). Now, when the work of marking the football field will have been completed, the

Brownson men will own one of the best athletic fields in the state.

—The hours for recitations and lectures remain about the same. There is an activity about the work in the class-rooms that foretells a successful year. The opening of a systematic course in electrical engineering and another in mechanical engineering brought to the University a large number of students for these courses. With its increased facilities for thorough and practical work in engineering Notre Dame will soon be a recognized school of technical arts. The work in civil engineering has always been the best, and graduates from the University in this course are now commanding attention.

—For the benefit of new arrivals we publish the College yell:

N. D. HURRAH! D. U. HURRAH!

THE GOLD, HURRAH! THE BLUE, HURRAH!

HOU-OO-RAH-HOO, RAH-HOO, RAH-HOO!

NOTRE DAME, NOTRE DAME! N. D. U.!

Be it understood, this is the University of Notre Dame yell. Any man attempting to change it will be given short shrift and a long rope. There are a number of special yells for football and baseball games, for band-concerts, etc., and then each hall and each class has its own yell. But, remember, the authentic College yell is given above. It must be brought out rapidly and with a snap.

—No, gentle reader, that is not a representation of "The Last Days of Pompeii" in front of the Brownson gym. The ex-Carrollites are lighting their cigarettes. That's all. They are not obliged to skulk round the hedges this year, you know, in order to enjoy a "drag," and they want to let the whole world see that they are not. What a pleasure it is to sit and smoke and dream, just like a dignified law-student! They could sit and smoke and dream last year occasionally, but unfortunately the smoke always floated away in ribbons that were horribly suggestive of a long black strap. That is a habit smoke has over on the junior side. And in the meantime the undertaker is getting some "boy's sizes" ready.

—Those who are desirous to be well read in football for '96 should secure copies of "Spalding's Guide" at once. It contains valuable information for every one interested in the sport, and gives pictures of Notre Dame's captain and manager of last year. The director of athletics in Brownson Hall will order them, while in Carroll Hall, Bro. Albeus has a few copies for sale. We would respectfully commend these "Guides" to the attention of players in the Carroll association. A careful study of the rules will do away with private lessons to the umpire during a game. A uniformity in playing rules is very desirable, and until the Carrolls publish their regulations the country must rest satisfied with "Spald-

ing's Guide," and try to get on as best it can.

—The Law Debating Society held its first meeting Wednesday evening. Full attendance expressed the deep interest taken in the work of the society. After a short talk by Col. Hoynes, the election of officers followed: The Rev. President Morrissey was chosen Director; Colonel Wm. Hoynes, President; Francis J. F. Confer, 1st Vice-President; S. Joseph Brucker, 2d Vice-President; Albert S. J. Magruder, Recording Secretary; Fred J. Schillo, Corresponding Secretary; J. M. Haley, Treasurer; Edward J. Mingey, Critic. A debate, "Resolved, That the present gold standard should be maintained until the co-operation of foreign nations can be obtained to establish a bi-metallic standard," was set for September 26. F. H. Wurzer with F. J. Confer as second will uphold the gold standard, while S. J. Magruder with J. O'Shaughnessy as second will defend the negative.

—The poetic Sorinites, who enjoyed the privilege of a walk to the "stile," and the select few of the Brownsonites who did not enjoy the privilege, but who walked just the same, are looking with blood-shot eyes for the base Philistine who had their beloved resting-place removed. That picturesque old bundle of wood, with its rickety gate and decaying posts, decorated with its innumerable scribblings and cuttings, was considered as much a part of Notre Dame as Hotel d'Haney. The iron gates are very neat, it is true, but they are merely gates. Our fair "cousins" on the other side of the fence seem to object to the improvement, too. Some of them say that a group of students standing back of those bars reminds them of the interior view of the "Violent Ward" of an insane asylum out for an airing. The bars, of course, are the cause of this optical delusion, not the students.

—The first regular meeting of the Athletic Association was held in the Brownson reading-room on Thursday. After the applause which followed Colonel Hoynes' opening speech had subsided, Mr. Barry moved to so amend the constitution as to permit the election of an alternate football manager by the executive committee and an alternate captain by the members of the team. This motion was unanimously adopted. The following officers were then elected: Directors, Rev. J. W. Cavanaugh, C. S. C., Bro. Hugh, C. S. C.; Promoter, Rev. W. A. Moloney, C. S. C.; President, Colonel William Hoynes; Vice-President, Fred C. Schillo; Recording Secretary, Eugene A. Delaney; Corresponding Secretary, James W. Browne; Treasurer, Frank J. F. Confer; Field Reporter, John W. Miller; Captain of the Track Team, M. T. Daly; Executive Committee, F. J. O'Malley, R. O'Malley, J. A. McNamara, Chas. M. B. Bryan. A vote of thanks was tendered to Father Morrissey for his very generous offer to pay one-half the expense of securing a foot-

ball coach, and also to Father Burns for the interest which he took in the association as its promoter.

—Hering, who played full-back for the University of Chicago, has been engaged as coach for the season. His presence should be a boom for football. Although a large number of last year's eleven have not returned, there is still good material for an excellent team. Mullen and Cavanagh and Rosenthal of last year's eleven, Brennan, who played well in '95, and Schillo, who was with the giants of '94, have all matriculated and will play. Then a number of the substitutes of last year have returned, or will soon be back; and with several promising candidates to choose from, who will say that Hering will not be able to select a good team? Palmer has been acting as captain, and working hard; but his position has been rendered a bit difficult by the hesitation of candidates to appear on the field. Faint hearts never made a football team or won a game; and it is too much to ask the captain to play second to the coyness of those who are anxious for exercise on the gridiron. All those who have strength and pluck should be out for practice at every rec, so that when Hering comes the elements of the game will have been learned. Nothing but vim and determination will land the Gold and Blue in the van of Western elevens. Games are rapidly being secured with other teams.

—The societies and clubs of the University are now organizing. All Catholic students of Sorin, Brownson and Carroll Halls should be active members of a branch of the Archconfraternity of the Immaculate Heart of Mary and of the League of the Sacred Heart. There are two religious organizations in St. Edward's Hall. The impetus given the temperance movement last year should fill the ranks of the Total Abstinence Union. Those who are interested in literary, dramatic or musical work will find ample field for the cultivation of their talents. In Sorin Hall will be found the Philodemics, a purely literary society; Brownson Hall has the Columbians, literary and dramatic; whilst the Carrolls may gain admission to one of two literary and dramatic organizations—the St. Cecilians for the older students, and the Philopatrians for younger members. Among the Minims is the Sorin Literary and Dramatic Association. The law students have their own special organizations, a debating society and numerous courts. The choir, the glee club, the mandolin club, the orchestra, the cornet band give chance to musicians. For athletics there are cycling clubs, the boat club, a hand-ball association, tennis clubs, a lacrosse club, and any number of nines and elevens. Those who have entered the University this year for the first time will do well to consult the directors of their halls about requirements for entrance to the different organizations.

### Roll of Honor.

#### SORIN HALL.

Messrs. Arce, Atherton, Barry, Bryan, Brennan, Cavanaugh, Confer, Costello, Crilly, Delaney, Wm. Fagan, Fitzpatrick, Golden, Kegler, Lantry, Medley, McGruder, McDonough, Mingey, McDonald, E. Murphy, J. Murphy, Miller, Marmon, McNamara, O'Hara, Palmer, Piquette, Pulskamp, Reardon, Reilly, Sheehan, Steele, Sanders Spaulding, Sullivan, Steiner.

#### BROWNSON HALL.

Messrs. Armijo, W. A. Berry, J. E. Berry, Baab, Brown, Blanchard, Byrne, Brucker, Barry, Cuneo, Cullinane, Crowley, Cavanagh, Crawford Cypher, Desmond, Dooley, Donovan, J. F. Daley, Duffy, Dukette, Dreher, Davies, Duperier, M. Daley, Fadely, Fetherston, Foster, Fisher, Fitzgerald, Franey, Farrell, Frazer, M. J. Flannigan, Fox, Follen, Guilfoyle, Garza, Gilbert, Grady, Hartung, Hay, Hessel, Howell, Hayes, Hoban, Hagerly, Haley, Herman, Hengen, Jelonek, Kidder, Kraus, Kearney, Konzen, Kurze, Lyons, Long, Lutz, Lichtenwalter, Landers, Lowery, McDonald, McKenzie, McConn, McNichols, McCormack, McCarrick, Massey, Martin, Miller, Maurus, Monahan, Mulcrone, Morris, Morrisson, Moorehead, Meagher, Neizer, F. O'Shaughnessy, M. O'Shaughnessy, R. O'Malley, F. O'Malley, B. S. Pickett, A. J. Pendleton, Putnam, Quandt, Reed, Rahe, Reinhard, Singler, Schulte, Shillington, Stulfauth, Smoger, San Roman, Scott, Stearns. Speake, Summers, J. J. Tuohy, Tong, Taylor, C. Tuhey, Thiele, Thams, Voght, Welker, Wiczorek, Wheadock, Wimberg, Wilson, Wade, Whitehead, Zaehle.

#### CARROLL HALL.

Messrs. P. Armijo, R. Armijo, Abrahams, Beardslee, Burns, Becker, Breslin, Berger, Burke, Behout, Cowie, Cornell, Coquillard, Curry, M. Condon, T. Condon, Conklin, Curtis, Davidson, Devine, Drejer, Druiding, Dellone, Dinnen, Darst, Ellwanger, Elliott, Flynn, Fox, Frank, L. Fish, A. Fish, Fennessey, Funke, Foley, Gonzalez, Gimbel, Houck, Hagerly, Hoban, Herron, Hawkins, Johnson, P. Kuntz, J. Kuntz, F. Kasper, Kirkland, Kiley, Klein, Keiffer, Kelly, Kilgallen, Land, Lyle, Leach, Lovett, Moss, Morgan, T. Mulcare, J. Mulcare, Moore, Mooney, Mohn, Merz, Moxley, R. Murray, J. Murray, T. Murray, Maher, Meagher, Morrissey, O. McMahon, J. McMahon, McCarthy, McElroy, McNamara, McMasters, McNichols, McDonald, McCallen, Newell, Noonan, Nolan, J. Naughton, D. Naughton, T. Naughton, O'Malley, O'Connell, F. O'Brien, Ordett, G. O'Brien, O'Neill, Peterson, Pyle, Pulford, Padden, Powers, Putnam, Quinlan, Richon, Rudnicki, Reuss, Swan, Shiels, W. Scherrer, G. Scherrer, Schaffhauser, Sexton, Sample, Sullivan, E. Sheekey, J. Sheekey, Shillington, A. Schmitt, H. Schmidt, Selvin, Shea, Sanford, J. Taylor, F. Taylor, Tong, Watterson, Waite, J. Ward, F. Ward, Wagonman, Walsh, Wells, Wilson.

#### ST. EDWARD'S HALL.

Masters Arnold, Abercrombie, Atkinson, Allyn, Abrahams, Butler, Bosworth, C. Bode, F. Bode, Beardslee, Cowie, Clark, Casparis, Cressy, Cunnea, Cotter, Coquillard, Davis, Dorian, Ebbert, Ervin, Engleman, Frost, Fetter, Freeman, Griffith, Graham, Hall, Hart, Hubbard, Kasper, Kelly, Lovell, Lawton, P. Manion, E. Manion, McMaster, E. McCarthy, G. McCarthy, L. McBride, P. McBride, J. McBride, W. McBride, McMahon, McConnell, Paul, G. Quertimont, E. Quertimont, Philips, Reese, Rennolds, Spillard, Steele, Strauss, Terhune, R. Van Sant, L. Van Sant, Welsh, Wilde, Weidman.

