EDITH LAURELL HILL.

The Spectrum.

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EDITH L. HILL.

For the third time in three years we must record the death of one of our brightest and most energetic students. Miss Hill died on the evening of Sept. 17, of appendicitis. Her death brings to her class a loss that cannot be repaired. The Athenian Literary Society has lost an efficient and enthusiastic member, and the College one of its most earnest and conscientious students.

Miss Hill entered College Sept. 30, 1896, as a member of the class of 1901. From the very beginning she held the place of honor in her class, and gained without exception the esteem of each member of the faculty and the respect of every student with whom she came in contact. The place she occupied as a member of the Athenian Literary Society cannot soon again be so acceptably filled. Her work was always ready and always admirably performed, and with a cheerfulness that was stimulating to her fellow workers.

At the time of her death she was president of the local Oratorical League. During the college year of '98 and '99 she, as editor-in-chief of THE SPECTRUM, conducted the work with such excellent judgment and ability as to give it a place among the foremost college journals of the northwest. During the past year her connection with THE SPECTRUM was that of exchange editor and assistant business manager. She was an active member of the Chemical Club, and until four weeks from the time of her death was engaged in chemical analysis for the Experiment Station. At the last Inter-Society declamation contest she won the Worst-Hinebauch gold medal for excellence in declamation.

The funeral services were held at the Methodist Church on Sept. 19, Rev. Vance, assisted by President Worst, officiating. A profusion of roses, gifts from friends in the city and members of the College, adorned the church.

It is a source of great comfort to know that she was a devout Christian. She was a member of the Methodist Church and a faithful worker in the cause of Christianity. Mr. Vance's remarks dealt mainly with her influence as a member of his church and showed that through her presence alone others were encouraged to make their best efforts. Her gentle manner and cheerful smile stimulated the faltering to renewed energy. President Worst spoke of her life as a student; of years full of profound study and earnest effort. Her influence was shown in every department of college work, not only as a diligent student, but by the cheerfulness with which all was accomplished.

E. S. KEENE.

CLASS RESOLUTIONS.

Whereas, Death has taken from us our beloved class mate, Edith Laurell Hill, and

Whereas, owing to the friendly relations existing among the members of the class, it becomes appropriate that we tender our sympathy to the bereaved family, therefore,

Resolved, that in the death of Edith Laurell Hill the class of 1901 loses a true and faithful member, one whose conscientious efforts and ambitious ideals were a constant inspiration and help to her classmates.

That these resolutions be spread upon

our class record; that a copy be published in THE SPECTRUM; and that a copy be presented to the grief-stricken family.

Signed,

FLORENCE VANHORN,
LEE B. GREENE,
J. FRED JENSEN
Committee.

SOCIETY RESOLUTION.

Whereas, we are called upon to mourn the loss of one of our members, therefore be it resolved;

That in the death of Edith Laurell Hill, the society has lost one of its most influential and devoted members, who always worked unceasingly for the welfare of the organization and brought to it the result of her noblest effort and untiring energy.

Resolved, that the good influence of the society in the past was largely due to her efforts and that the offices of trust and distinction conferred upon her only partly conveyed the confidence of the remaining members in her worth and ability.

Resolved, that a copy of these resolutions be spread upon the minutes of the society; that a copy be printed in THE SPECTRUM; and that a copy be presented to the sorrowing family.

Signed,

FLORENCE VANHORN,
LEE B. GREENE,
THOMAS F. MANNS,
Committee.

INFLUENCE OF THE BEAUTIFUL AND ITS DEBT TO CHEMISTRY.

From the remotest periods of history there can be traced, from an ill-defined beginning, the gradual evolution of an idea which embodies itself in tangible form as man develops, varies with his changing conditions, and broadens with his advancement. This idea has been an important factor in influencing man's ideals. While its gradual growth has been the result of man's progress, it has nevertheless aided his development.

Two forces have been at work, which have re-acted upon each other. By the degree of perfection attained in the manifestations of this idea may the civilization of a people be judged. It would be difficult to give any well defined name to the slowly developing conception in its earlier stage, but in its advanced form it may be called "An Appreciation, or a Love of the Beautiful."

As man became more familiar with nature there gradually developed within him an appreciation of her charms. The awakening consciousness of nature's beauties aroused in him the desire to reproduce that which he admired. While there may be no apparent connection between the rude efforts of primitive man and the arts of today, in reality the products of modern art are but higher gradations in the gradual evolution which had for its beginning the crude ideals of semi-savage people. As man's intellect developed, his ideals naturally found more complete expression, and we find the development of art co-extensive with that of its ideal.

We may note the influence which the growth of this ideal has exercised over man, and also the influence which the discoveries of man have exerted upon the ideal. An intimate association with things of beauty tends to awaken or develop, unconsciously on the part of the individual, a tendency toward purer thoughts. If such be the effect wrought upon the mind of man by the contemplation of beautiful objects, it follows that those influences which bring man into a better acquaintance with things of beauty have much to do with guiding him toward higher ideals of life.

Having traced the development of man's appreciation of the beautiful, let us turn to those forms of beauty which

owe their existence to chemistry.

The earliest efforts in portrayal were made about the thirty-fifth century B. C., when the attempts were merely expressions in outline of an indefinite mental image. Designs, varying in image, were imprinted on pottery, and reliefs commemorative of kings emblazoned on tombs. The pigments used in coloring these were readily obtained from nature. The next advancement consisted in an endeavor to portray, on plane surfaces, scenes from life, giving to them such colors as then in use. The range of colors was very limited, only three or four being known. With the advancement of knowledge along chemical lines new pigments and more satisfactory methods of utilizing them were discovered. A higher conception of beauty was to be developed by the artist through his power of blending the new materials in works which rival nature in loveliness of color and beauty of form. None will deny that a study of such marvelous paintings as Raphael's "Sistine Madonna" may have more ennobling influences than many a sermon or book of ethics.

But in paying homage to the artist we should not overlook those who, by their efforts, made it possible for him to promote his art to the degree of perfection to which it has been carired.

It is not only on canvas that nature's colors are copied. The work of the chemist has made it possible for our common fabrics to reflect her hues. The ancients, to be sure, as early as 1500 B. C., obtained from shell-fish and the bark of trees dyes with which they colored the vestments of priests and princes. The "Blue and purple and scarlet" of which we read in the Scriptures, were the only colors known to them. The scarcity of the coloring matter and the difficulty of dyeing the linens so added to their value that they were within the reach of only kings and priests. By the conversion of a product, homely and otherwise useless, into nature's most exquisite shades, the humblest laborers have been able to enjoy what were formerly luxuries for the wealthy. Tapestries, rich in coloring; satins, in various hues; velvets, in soft warm shades; and the delicate hangings that adorn our walls, are among the many creations which have been given us by the aid of the chemist.

Immense panels of glass, portraying in delicate colors views rivaling those of the painter, adorn our cathedrals and palatial homes. As we admire these beautiful windows we cannot but marvel at the skill which has made possible such lovely ornamentations.

By working out some of nature's laws man has been enabled to create things of beauty for the enjoyment of his fellow men. If, however, we would see the grand results of the workings of these same laws, we must go to nature herself. The best creations of man's labor come far short of those which we find all about us in nature. The smallest flowers manifest a loveliness which surpasses the most perfect of the works of the human hand. The clear gold of the buttercup, the pale blue of the aster, the delicate pink of the rose, and the contrasting green of their foliage, are evidences of the wonders that may be performed in nature's laboratory by a better working of the laws that have been so imperfectly understood and followed by man.

Perhaps the scenes of inanimate beauty most baffling description are the purely chemical formations, which abound in such profusion of form and color in the Yellowstone National Park. The cones of the geysers and immense terraces are built of the clear geyserite, which is of a snowy whiteness rarely found. The natural color of chemical substances may be seen in their most beautiful tints in the many colored pools and springs, each showing some particular shade. The effect of these linings, when seen through the clear water of the pool, is charming, the deposits having a silky lustre which makes one doubt their mineral texture. Various shades of browns, reds, yellows, and blues are to

be found. In one the life-like form and tints of a morning glory may be seen. The shading, from the clear white of the margin to the deep blue of the center, is so perfect that it seems almost impossible to believe that the flower before us has not life.

The most majestic display of natural beauty may be found in the Grand Canon of the Yellowstone. Here the glorious colorings are all due to chemical formation. Rocks on either side rise almost perpendicularly for two thousand feet, while the brilliant and contrasting colors of the gorge add powerfully to its charm. Dr. Wayland Hoyt describes the coloring in a most vivid style. He says: "These are not simply gray and hoary depths of reaches, and domes and pinnacles of sullen rocks. The whole gorge flames. It is as though rainbows had fallen out of the sky and hung themselves there like glorious curtains. The underlying color is the clearest yellow—this flushes onward into orange; browns, sweet and soft, do their blending; white rocks stand spectral; turrets of rock shoot up as crimson as though they were drenched through with blood. It is a wilderness of color. What you, accustomed to the softer tints of nature, call a great exaggeration, would be the utmost tameness compared with the reality. It is as though the most glorious sunset you ever saw had been caught and held upon that resplendent awful gorge."

E. H., '01.

PLANT DISTRIBUTION.

Before entering into the discussion of plant distribution proper, let us consider the elements governing the life of plants, and which affect their distribution. A plant, like any other natural object, maintains itself under the constant influence of the force of gravity, so it is necessary that it should be well constructed. Some plants need support in order that they may be able to bear the weight of their fruit and leaves. Grape vines, and in fact all vines and herbs bearing tendrils, need a support in this manner.

Another force to which plants must naturally adapt themselves is that of heat. There are those which can endure great extremes of heat and cold. Bacteria, for instance, which survive the temperature of boiling water may, on the other hand, endure extreme cold. Geographically the whole world is divided into three different zones, according to heat, therefore we would naturally expect, and do find, a wide difference in vegetation of these zones. In the polar regions are found the low stunted herbs, trees, and shrubs; in the temperate zone the vegetation has more time to mature and is therefore more extensive, and in the torrid zone is found the most luxuriant vegetation of all.

Another factor essential to all growing plants is light. Certain fungi grow and mature in absolute darkness, but as a rule all foliage bearing plants must have light. If subject to extreme light, many of the foliage plants protect themselves by conserving their area of leaf surface, which may be done by assuming a matted habit, but ordinarily they must grow taller, in order to gain their share of illumination.

There is another element to be considered under this discussion, and that is moisture. It is very essential to all plants, though some need it more than others, for we find many aquatic plants, and some growing on rocks or barren plains.

Such are the principle factors important to plant growth and maturity, and now let us turn our attention to the manner in which these plants are carried to places where they may better carry on their struggle for existence.

First, we know that a distribution must take place, since it is only by this

means that destruction by overcrowding and starvation will be lessened. Plants which can live under conditions fatal to others find much less competition than otherwise. Weeds are probably the only kind which live under such conditions. They live in a variety of soils and exposures, grow rapidly, resist drouths and frosts, and are usually unfit for the food of larger animals. When the farmers abandon land which has become sterile for farm products, weeds quickly take possession and grow rapidly. Once landed, European weeds, the Russian Thistle, for instance, have succeeded in establishing themselves, in many cases, because of their superiority to our native plants in vitality and power of reproduction.

The agencies for plant distribution are wind, water, animals, and man. The seeds intended for distribution by winds are usually light, flat or curved, with some appendage, either wings or pappus, so that they may be easily caught by the wind. Most of our trees bear this sort of seed. The maple and box elder having the winged seeds, the poplars and willows having those with pappus or hair-like appendages. The dandelion is an herb, having seed with the true pappus.

Those intended for distribution by animals are either edible, and so carried long distances, in the intestinal tract, or are furnished with some prickly covering which easily adheres to the fur of animals or the feathers of birds. Many others are carried by being lodged in the mud, which adheres to the feet of animals and birds. The seed of low shrubs and trees are distributed in this manner, as they are in reach of the passing animals.

Distribution by water is a very common method, especially in cases of seeds covered with a shell or tough coat. Cocoanuts are frequently distributed in this manner, but we often find other seeds in no way resembling nuts distributed in this way. It is safe for us to conclude that this accounts to a certain degree for most of the trees in the plains of the west being found along river banks.

Man is a very important agent. In traveling over the earth he carries seeds from one country to another; war often introduces new plants into a region, and commerce is of vast importance in this respect, for many seeds are brought in, in imported goods, and when thrown out, germinate. A vegetation of considerable variety is sometimes produced by this means.

The dispersion of plants depends upon two sets of factors; the structure of the seed itself, which allows it to be disseminated by winds or other means; and the environment which determines whether the seed can germinate and the plant thrive after dissemination has taken place.

It is interesting to note these conditions in our own locality, and to see how readily plants adapt themselves to their suroundings, though seemingly contesting against such odds.

M. L.

HOW SCIENCE STRUCK THE HEN.

Evaporated eggs are becoming quite a valuable article of commerce. The largest evaporating plant in the world is located at Springfield, Mo., from which they have recently shipped to Cape Nome a carload of the product, valued at $14,000. The process of evaporation is very simple and can be carried on both winter and summer, thus making it possible to operate the most economical form of factory, as the laborers can be employed by the year. Hot air is used to extract the liquid portion of the eggs. One pound of the product requires about four dozen eggs. This, according to Lawes and Gilbert, reduces

the weight about 70 per cent. and makes them much less bulky to ship. In shipping fresh eggs each one is given a pasteboard compartment to itself, leaving as much unoccupied space as it occupies and at the same time necessitating the use of a large quantity of heavy pasteboard which makes much aditional weight to pay freight upon.

This product is in such demand, both in this country and in foreign lands, that the managers say they find ready markets for every ounce they have to sell. It is such a luxury in Europe that one or two of the countries would each take, in a single season, twice the annual product of this firm. Possibly the preservation of eggs by this method will so increase their value and the egg branch of the poultry industry will prove so profitable that the man who makes feathers the chief object will turn his attention to building up an egg producing breed even at the sacrifice of a little plumage.

China, in spite of her internal wars, Boxers, and threatened dismemberment, finds time to apply science to the poultry business and is now placing eggs on the market at Sydney, Australia, at 6 cents per dozen, and even at this low price a large profit is made.

These eggs are preserved by some secret method but it is believed that the preservative part of the solution used is water glass.

Here is an opportunity for some enterprising Yankee who has studied "Science With Practice" to cast his lot in the Flowery Realm with an evaporating machine, for it is said that the Celestial hen produces eggs during the entire year, except while moulting, and the results of her labor can be purchased at from 2 to 3 cents per dozen.

Hens, unlike trotting horses, do not have lengthy recorded pedigrees. Professor Gowel, of the Maine Experiment Station, has invented a recording hen's nest, which enables one to keep a record of the eggs produced by each hen. This invention will make it possible for us to soon have standard bred hens with standard pedigrees or ancestry.

Standards of excellence are agreed upon by poultry associations, but in all cases feathers alone may debar the best laying hen from the best laying ancestors that the country has produced. A white tipped wing feather or red ear lobe in the Brown Leghorn, for example, is sufficient to disqualify, also lack of proper barring in Plymouth Rock, bluish colored legs, black bills, and other purely fancy points which have no more to do with the production of meat or eggs than does the imagined signs of inferiority.

Nineteen farmers out of twenty who raise chickens feed them either for meat or for eggs, and care nothing about the color and beaks. It is all very well for poultry fanciers to play with feathers and ear lobes, but would it not be better for them to devote their time and attention to the production of fan-tailed pigeons, fancy cats, sporting dogs, and Belgian hares which do neither good nor harm in the productive world?

ADELE T. SHEPPERD.

CEMENTS AND MORTARS.

Many words of our language have both a material and an ideal meaning. The word cement is one of these. It is derived from the Latin cædimentum, rough unhewn stone or chips of stone from which mortar is made, hence our meaning. The term mortar may be, and is, used in a generic sense which included cements. The figurative meaning of cements as used by fraternal societies derives its meaning and force from the material substance. Lime or calcium oxide is the principal component of all cements and mortars, and the specific properties of each is in accordance with the relative amounts of other material present in combination. Accordingly in our dis-

cussion we can follow the general arrangement as given by Gillmore, as a basis of study. He divides them into the five following classes:

1. Common or fat limes.
2. The poor or meagre limes.
3. Hydraulic limes.
4. Hydraulic cements.
5. Natural puzzolanos, including puzzolano, trass, arines, ocherous earths, schists, basaltic sands and a variety of similar substances.

Class one, or the common lime, contains less than 10 per cent. of impurities and is the ordinary lime as we know it. In slaking it increases about three times in volume with great evolution of heat, and when formed into a paste will not harden under water or in very moist places. The theory of its induration is known by all tyros of chemistry. It shrinks considerably in hardening and hence requires a mixture of sand to give it a body and retain its volume. The fact that it will not harden in the presence of dampness renders it unsuitable for sub-aqueous works. The meagre limes contain 10 to 35 per cent of impurities and as a consequence the heat developed during slaking, and the increase in volume, are much less than the fat limes. In quality they are much inferior and not used for mortars where the fat lime can be procured. Much of the silica contained in them is in an inert state, and hence depreciates their value. The third class or hydraulic limes are sub-divided into three varieties, depending upon the amount of impurities that they contain. All of these slake under proper treatment, though somewhat less than the meagre limes, the heat and increase in volume being very much smaller. When formed into a paste, they will set under water, though slower and more imperfectly than the hydraulic cements. It is from this property of setting under water that they derive their name. They are thus seen to possess properties midway between, and partaking of, the properties of most fat limes and cements and may be prepared from fat limes by mixing with certain silicates.

The fourth group, or hydraulic cements, differ from the hydraulic mortars in that they do not contain any admixture of free lime. They are obtained by a careful heating or agillaceous limestone, or by calcining a suitable clay with a requisite quantity of limestone. They contain a larger amount of silica, alumina, and magnesia than any of the other groups, though the amount rarely exceeds 60 per cent. They do not slake and their mixture with water does not increase in volume, neither do they shrink on hardening, and for this reason may be used without sand. They are valuable chiefly for the property they possess of hardening under water. In this country they are depended on wholly for hydraulic mortars.

In Europe cements are divided into Roman and Portland cenments, and for our present purpose we may use this nomenclature. Portland is the best known form of cement, and derives its name from its resemblance, when set, to Portland stone. No two Portland cements, however, have exactly the same composition, yet their compositions must be approximately the same.

Experience has shown that Portland cements containing over 27 per cent. magnesia are inferior in lasting qualities and by a gradual absorption of water produce cracking and disintegration. Again if more lime is present, as calcium oxide, than can unite with the silica to form tri-silicate of lime, the surplus will absorb carbon dioxide thus forming lime carbonate, which gradually produces seams and fractures after the setting of the cement. However, a chemical analysis alone is not sufficient and must be supplemented by a mechanical analysis, in order to determine fineness, tensile strength and resistance to crushing. If, however, the limit of variations is exceeded, most schools reject such cements without a mechanical test. What has been said applies only to cements that are ready for use. No

locality, however, is known with the exception of Boulogne to furnish a deposit that can be excavated with pick and shovel, possessing in suitable proportions all the ingredients of good cement. Mr. Aspdin of Leeds, England, was the first to prepare a Portland cement. His method was as follows: A large portion of limestone was taken and pulverized, this material was then burnt in a kiln and an equal quantity by weight of clay added to the burnt lime and thoroughly mixed and kneaded with water to a plastic mass. This was afterward dried, broken in pieces and burnt to remove all carbonic acid.. The mass was then ground to a powder and ready for the market.

Since its discovery there has been a great many modifications of the process and many sources of obtaining the necessary material. The sediment washed down by rivers is at the present time a valuable source and one of the most used. The hardening of hydraulic cements and mortars has often been the subject of investgation, and has been studied by a host of men.

According to Von Fuchs, the chemical action taking place during the hardening of Roman cements are principally the combinations of lime with silicic acid, which gives rise to the peculiar properties of hydraulic mortar. Kuhlmann, who has made an extensive study of hydraulic cements, states that lime can be rendered hydraulic by thoroughly mixing with from 10 to 12 per cent of alkaline silicate, which, with the foregoing, seems to confirm the statement that the setting of Roman cements is due to the combination of the acid silicates with burnt lime, the result being a hydrated calcium silicate intermixed with alumina and oxide of iron.

As regards the setting of Portland cements, different experimenters hold slightly different views. According to Winkler, the setting under water consists in the separation of silicate into free lime and combinations formed of silica and calcium, and aluminum and calcium, the free lime combining with the carbon dioxide of the air to form calcium carbonate. According to Feichtinger, the hardening depends upon the forming of compounds between the calcium oxide and silica, and between the calcium oxide and the silicates contained in the cement. The question has not been fully settled and requires thorough investigation before the true results can be given.

As a whole we see that cements differ from mortar in containing a larger amount of silicon dioxide, aluminum and magnesium. That they do not slake after calcination; if formed into a paste there is no sensible increase in volume and no evolution of heat. The paste will harden under water with greater rapidity than any known hydraulic lime. They do not shrink on hardening, which is very marked in fat limes, and hence can be used without sand or any body forming material. Such differences give us a general idea of the value of cements in general and furnish us the definition of cements. Mortars on the other hand are any fragmentary substances, like sand, gravel, pebbles, broken stone or brick formed into a state of aggregation by a calcareous cementing matrix.

The fifth class, or puzzolano, derives its name from puzzolano, a tertiary earth occurring near Naples, as a loose gray or yellow brown mass, partly fine grained and partly an earthy fracture. The masonry of the Eddystone lighthouse is said to be cemented with equal parts of slaked lime and puzzolano.

Trass is a substance of volcanic origin found in the Rhine valley and in Holland, and is used extensively by Dutch engineers as an hydraulic mortar. It resembles puzzolano and is used in the same manner.

Arines is a name given to a species of ocherous sand, claimed by some to be of fossil origin and found abundantly in France. It contains as high as 70 per cent of clay and is hydraulic without

lime, its hydraulic activity being increased by burning. Besides these there are many varieties of natural earth that can be used as cements with the addition of one or more principal constituents.

H. McG.

ALUMNI AND FORMER STUDENTS.

The many friends of C. M. Hall, '95, will be pleased to hear that he is rapidly recovering from his recent attack of typhoid fever, and will soon be able to resume his duties at the College.

H. McGuigan, '98, paid a visit to his old home in Ireland, during the summer vacation, returning Sept. 29, to resume his position as Assistant Chemist. During his absence, Mr. McGuigan visited the Paris Exposition, and a number of places of interest in France, England and Ireland.

T. H. Heath, '00, is engaged in the real estate business in Seattle, Washington. After graduation Mr. Heath went to Idaho, but becoming dissatisfied with conditions there, moved further west, locating in Seattle, which he describes as better suited to his aesthetic taste.

F. G. Benn, '98, is attending Rush Medical College.

Frank J. Newman, formerly with '00, is studying law at the University of Minnesota. E. H. Elwin, with '97, s also engaged in the study of law there, while Merton Field, M. S., '95, is taking a medical course.

Chas. Buttz, who graduated from the Law Department of the University of Minnesota last year, has opened a law office at Minot, N. D.

Miss Mabel Spencer is studying music at the New England Conservatory, Boston, Mass. Her many friends here predict a brilliant future for her.

L. P. Bottenfield, '98, who is practicing Osteopathy in Fergus Falls, Minn., has been elected vice president and director of the Northwestern College of Osteopathy at Fargo, N. D., of which he is a graduate.

L. R. Waldron, '99, Assistant Botanist at the College, visited his old home in Michigan during the summer. During his absence he collected many botanical specimens for the herbarium.

Miss Angie Gibson, '98, is giving lessons in Domestic Economy throughout the state, having established a circuit of the larger towns.

Clayton Worst recently returned from Cape Nome, where he spent the summer in the gold fields.

M. C. Henry, formerly with '01, is now holding a responsible government position on the troopship Grant. Since he joined the Grant, Mr. Henry has visited all the principal ports in China, Japan and the Philippines.

Ed. M. Andrews is engaged in ranching business in Assiniboia, Canada. He may decide to return to College for the winter term.

C. J. Phelan, with '01, will not attend College this year, being engaged in the banking business at Dickinson, N. D. Charley expects to pay us a short visit about Christmas.

C. E. Lee, '97, who has charge of the butter making department of the largest creamery west of the Mississippi, located at Monticello, Ia., had the honor to secure the first prize at the Paris Exposition for butter hermetically sealed in cans. While the exhibit was made under the name of the firm Mr. Lee is entitled to full credit for securing the gold medal which was awarded.

Mr. Philip W. Farnham, formerly secretary of the Agricultural College, was married, Oct. 2, to Miss Sarah Dudley, daughter of Dr. Dudley of this city. Mr. and Mrs. Farnham went east for their wedding trip.

Miss Anna Stapleton of '02 is teaching school near Osgood, N. D. She expects to return to college about the first of March.

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It is Omar Khayyam, we believe, who so aptly says:

"The Bird of Time has but a little way
To flutter—and the Bird is on the Wing."

This would be a good quotation for our literary societies to remember, and might prove beneficial in stimulating them to work before the beginning of the winter term.

THE SPECTRUM is essentially a students' paper, being supported entirely by the efforts of students attending this College. Its columns are open to all who have the ability to furnish literary matter suitable for publication therein, and any student who desires to contribute such literary material will greatly oblige the management by handing contributions to the editor or any member of the editorial staff. While we do not desire to slight any rising literary genius, we must say that we cannot make personal calls upon each individual student who may have literary matter on hand. Hence the above.

One of the most important departments of our College, viz., the English Department, has heretofore been almost entirely overlooked by the advanced students. This should not be so. While a knowledge of the sciences is valuable to everyone, a knowledge of English is no less valuable and important. Owing to our lack of this necessary understanding of the hidden beauties of English prose and verse, much of what we read is almost unintelligible to us, and the works of the world's greatest writers are passed over as meaningless and wearisome. They should be to us like a veritable mine of dazzling wonders and riches. Let us then awake to a realization of the importance of Literature, and devote a reasonable part of our time to its study.

Elsewhere on these pages it is our melancholy duty to record the passing away of one who, during the few brief years she spent among us, made for herself a record surpassed by none, and equalled by but few. Entering College a comparative stranger, she soon made herself favorably known to the faculty by unfailing punctuality and diligent work. Her gentle dignity and unassuming manner commanded the admiration and respect of the students, who consequently bestowed upon her, in unbroken succession, every honorary office within their gift.

The death of this esteemed young lady, just as life was beginning to reveal to her its beauties and possibilities, seems to us not otherwise than a per-

sonal loss. Not one in all our College circle but is painfully conscious of her absence. Her life, in its simple beauty, was always an inspiration to those with whom she came in contact. Her name will be forgotten only with those who knew her.

THE SPECTRUM, which grew to maturity under her skilful pen, although feeling the hollowness of worldly consolation, desires to extend to her sorrowing relatives the heartfelt sympathy of the student body, and to be allowed to place on her shrine an unfading wreath, woven from the sacred leaves of memory.

It is to be presumed that a student entering College here has entered for the purpose of advancing his interests. Conditions in this new state are harsh and rigid, and its citizens have not yet reached that degree of affluence in which a higher education becomes comparatively common. The ideas prevalent of the good which will result from an education are no doubt as numerous as the students themselves. Various as these may be, we believe that it is perfectly true that the majority of students would fall in one class. That majority somehow expects that knowledge, and incidentally power, will be poured into them as water is poured into a dish. Some of them will learn later, and some of them will never learn, that work is the foundation of all success. This applies equally to mental and physical efforts. It is only by hard thinking that we are able to assimilate the product of the thought of another person. To have read such and such a book may mean but very little, but to work out the meaning of a book, to consider it in its different aspects, to hold it in perspective, as it were, means a great deal. It is painful to see students continually neglecting to take advantage of opportunities for beneficial work. As few studies as possible are selected and these prepared in the most slipshod manner, compatible with a passing mark. Saturday is looked forward to as a day of idleness, which, if the student were interested in his work, he would look forward to as a day when more time could be given to his favorite occupation. Again, we repeat, if students enter College with an idea of gaining distinction or success in life, it will be impossible for them to do so without severe application, for many years.

Many students are apparently imbued with the idea that a complete education is to be obtained only through a continual study of many text-books, and accordingly devote their entire effort to a mastery of the text, to the utter exclusion of everything else. To them everything worth knowing is embodied in the College curriculum, and their sole object in studying is to complete a course and receive the coveted diploma. Then, according to their method of reasoning, nothing remains but to sally forth and reform the world by means of theories and formulæ.

With such ideas as these we disagree most emphatically. While cultivation of the intellectual and spiritual faculties should be the aim of all education, we do not believe that this can best be accomplished by a study of text-books alone. The study of the problems of every-day life, and a knowledge of the habits and customs of nations and individuals may well be allowed to demand a portion of our time. Keenness of perception and readiness of thought can be attained more easily by developing our natural abilities than by striving to conform our ideas to those entertained by someone who was considered a genius during the age in which he lived, but who, if placed in our present surroundings, would appear dull and common enough.

The office in the Drill Hall is being fitted up as a dressing room for the basket ball girls. It will be furnished with lockers and a shower bath.

ATHLETICS.

Remember the Bolley foot ball medal, ye kickers, and drop into the preliminary contest which comes off shortly.

Now is the time, basket ball players, to commence training for the coming season. Remember, fellows, we stand a good show for the banner this season. The training opportunities offered by the Athletic Association were never better.

It is about time the ladies were working up a little enthusiasm towards their basket ball team. The St. Cloud boys inform us that their ladies' basket ball teams have been practicing for the last two weeks and they would be very much pleased to meet a ladies' team from our College this coming season. How do you like the proposition, ladies?

How few there are who know the history of foot ball. As the term signified originally the game was wholly played by kicking. The origin, as far as history is able to determine, was in Greece. The game was played by an unlimited number, having equal sides. The object of the play was to kick the ball across the opponents' goal line. The goals were two parallel lines laid out any convenient distance apart so as to accommodate the number playing. The game was very coarse and all sorts of roughness was resorted to in order to advance the ball.

The next page in its history is found among the Romans. Here the game bears the name of Harpastum, a word derived from the Greek, and meaning to seize, hence a new feature had been introduced, that of carrying the ball, although most of the gains were made by catching and throwing the ball towards the opponents' goal.

The game was introduced in England by the Romans, but we do not hear much mention of it until about the fourteenth century, when, in 1365, Edward III passed statutes against the sport "as one of the pastimes to be prohibited owing to the decadency of archery." Similar statutes occur under Richard II. In England the game became very rough. It was a pastime that well suited the hardy Britons. Often as many as 500 to 1,000 would engage in the game, which would last a whole day. The first half in the morning and the second half in the afternoon. "Shrove Tuesday was the great foot ball festival of the year. On this occasion both sexes and all ages seem to have taken part. Shutters had to be put up and houses closed in order to prevent damage."

It is no wonder that the game under such violent roughness and eccentric usages, fell into bad repute. James I forbade the heir apparent to play the game and described the exercise as "meeter for laming than making able the users thereof." The game became so fatal that Shrove Tuesday "Foot Ball day" gradually died out about 1830. For the next thirty years the game was wholly kept up by the great educational institutions.

In 1863 a league was formed of those colleges which played the kicking or association game, as it is called, and a committee selected to revise and unify the different rules and methods of playing.

It was as late as 1871 that a Rugby Foot Ball Union was formed and a set of uniform rules adopted. It was about this time that the game was introduced into America. In the same year (1877) that the "Big Four" of the East formed a Rugby league, in England a set of rules were established to eliminate the rough features of the game.

It is a curious fact that England originated the modern Rugby game, while British America has taken almost wholly to the Association game and may easily be said to lead the world in it, while the States have made

Rugby their only national collegiate game, and are the world's champions.

Tuesday, Oct. 9, the St. Cloud Pedagogues buried the hatchet of their forefathers and turned over the banner of victory to the A. C.'s, after a well fought battle on the latter's grounds. The game was scheduled for the 6th, but owing to a heavy rain which poured down all day, and their being scheduled for the "U" on the 8th the game could not come off earlier.

The "teachers" came back from Grand Forks with their banner trailing in defeat, but with expectant visions of restoration at Fargo. It was just four years lacking one day that the same teams met upon the same grounds, under similar conditions and played a tie game with a score of 4 to 4. But during these four years conditions have been reversed. The last two years the A. C. team has had practical coaching, which showed up well in the latter game, although the team had been weakened by five of its best members being laid on the bench through accidents. The line up was as follows:

St. Cloud		A. C.
Nordstad	L. E.	French
Grundahl	L. T.	Wicks
Goerger	L. G.	Billings
Fredenberg	C.	Jensen
Owens	R. G.	Bagley
Courteney	R. T.	Schmidt
Flynn	R. E.	Olsen
Raymond	Q.	Greene
Anderson	R. H.	Probstfield
Holliday	F. B.	McGuigan
Olsen (Capt.)	L. H.	Manns (Capt.)

Referee, F. D. Cameron.

Umpire, Ad. Leech.

Timekeeper, Dr. Wheeler.

Fifteen minute halves were played.

A. C. won toss, choosing west goal.

First half. St. Cloud kicked to five-yard line. caught by Manns and on clever crisscross with Greene, advanced ball to center. A two-yard gain made by Manns around right end, and by a well worked crisscross between L. H. and R. E., Olsen succeeded in carrying ball on a forty-yard run for a touch-down—time 1½ minutes. Score, 6 to 0. St. Cloud kicked to five-yard line, caught by Manns, caried to twenty-yard line. Greene punts to fifty-yard line, caught by St. Cloud, and advanced in two downs for forty yards, then lost on downs. A. C. sent Olsen round left for twenty yards. Lost ball on fumbles. St. Cloud makes short gains and loses ball. Greene punts poorly and Normals advance ball to thirty-yard line in A. C. territory. St. Cloud sends Holliday round right for a twenty-five-yard gain. Ball within five yards of A. C.'s goal. On three heavy line plunges the Normals succeeded in scoring a touch-down. Failed goal. Score 6 to 5. A. C.'s kickoff to ten-yard line. Holliday advances ball to twenty-five-yard line. After several gains, St. Cloud loses ball on fumbles. A. C. sends French by crisscross for a touch-down. Kicked goal. Score 12 to 5. St. Cloud kickoff. Advanced to fifteen-yard line by A. C. French sent around right for forty yards. A. C.'s halves carry ball to St. Cloud's forty-two-yard line. Time called. Score, A. C., 12; St. Cloud, 5.

Second half. A. C. kickoff to ten-yard line. Advanced steadily to forty-seven-yard line and lost on fumble. A. C. steadily advance it to twelve-yard line. Greene tries drop, but fail, resulting in touch-back for St. Cloud. Ball kicked by St. Cloud on twenty-five-yard line. Caught by Greene and advanced within forty yards of goal. Schmidt, on a tackle play, advances ball ten yards, and by steady line rushes, Manns carries ball over for a touch-down. Goal kicked. Score 18 to 5. St. Cloud kicked. A. C. carried ball to twenty-yard line. A. C.'s half backs advance ball to thirty-seven-yard line, from which French, on superb end run, makes a touch-down. Goal kicked. Score 24 to 5. St. Cloud kickoff to A. C.'s ten-yard line. Greene advances ball to twenty-yard line.

Schmidt advances it to thirty-three-yard line. Greene punts. St. Cloud steadily advances ball to A. C.'s fifteen yard line and loses it on downs. It is then rapidly advanced by A. C. to their thirty-yard line. French made another glorious run and scores a touch-down. Goal kicked. Score 30 to 5. Three minutes left. St. Cloud kicked off. McGuigan fumbled and Umpire Leech erroneously gave ball to St. Cloud, calling the play a forward pass. Ball seven yards from A. C. goal. Three heavy line rushes by the "Teachers" secured them another touch-down. Goal kicked. Time. Final score, 30 to 11. Greene kicked five straight goals.

The game passed off very pleasantly. The officers gave entire satisfaction. The St. Cloud boys are perfect gentlemen and play good, clean ball. The A. C. hopes to have a game scheduled annually with the St. Cloud team hereafter.

EXCHANGES.

First Microbe. "Are you going to the banquet tonight?"

Second Microbe. "Certainly, and so must you. They are going to pass a loving-cup, and it will be the chance of our lives."—*Ex.*

That sport of the gods, commonly alluded to as foot ball, seems to be the "paramount issue" with most of our exchanges. We may have something to say on the matter ourselves, in this and succeeding numbers.

One by one our old friends are finding their way to our exchange table, but not so rapidly as we could wish. However, as this is the beginning of the college year, we must refrain from criticising others, as we hope to have others refrain from criticising us. Before the month has passed we hope to welcome back all our old exchanges, together with a great many new ones. There is nothing that keeps us so in touch with other colleges as the reading of their college papers.

For the benefit of our new students, we will say that the exchanges are intended for use as reading matter by all students, and many a pleasant hour may thus be spent in becoming acquainted with fellow-students throughout the entire country, by means of our exchange department. The only request we have to make is that you will kindly place the papers in their respective places when you have finished reading, as the exchange editor cannot possibly act as a librarian for your benefit.

LOCAL HAPPENINGS.

Seniors, get your fountain pens!

Fowler expresses a preference for blue ink.

Schmidt has lost faith in fountain pens.

Oscar Dahlgren, who drives the College team, is ill.

Miss Eloise Waldron is a new arrival in College circles.

Professor Keene spent ten days sightseeing in Chicago.

Mrs. Evans spent her month's vacation in Wisconsin.

Miss Georgia Morris visited College on Monday, Oct. 8.

Miss Aldyth Ward of '02 is teaching school at Sims, N. D.

Professor Bolley, at the present time, is a much talked of man.

H. B. Schmidt came back last week, much to Osgood's delight.

The choir are practicing some new music for chapel exercises.

Mrs. Bolley and Mrs. Keene have joined the English Literature class.

Professor Senn spent a very enjoyable vacation at her old home in Kansas.

Professor McArdle renewed old acquaintances in Michigan this summer.

Professor and Mrs. Shepperd visited in Iowa during the month of September.

Professor in Logic. Now, the term "beef" is concrete, what is the abstract?

F—. Beef tea.

Miss May Pullin, who was with us last year, has returned, to resume her studies.

Miss Amy Nichol of the Sewing Department, visited in Canada during the summer.

One of our bashful juniors is greatly concerned over the increase in young lady students.

Colonel Stark is in the railroad business at Mandan and will not return to school this fall.

Rev. G. A. Henry visited chapel on Wednesday and entertained the students with a short talk.

Miss Sorenson presided as hostess at the dinner served to the Board on Wednesday Oct. 10.

Miss Pearman, a sister of Mrs. Keene, spent the summer in Fargo, the guest of Professor and Mrs. Keene.

Drake Bottenfield, formerly of the class of '01, is attending the University at Minneapolis this year.

The Misses Dorothy and Katherine Jensen of Buffalo entered the freshman class at the beginning of the term.

Mr. Wilcox of Otter Tail County, Minn., visited College on Friday and was shown around by Mrs. McVeety.

Professor Waldron has had charge of the classes in astronomy and arithmetic during the illness of Professor Hall.

We noticed by the bulletin board that E. F. Ladd and Prof. Hugh McGuigan had purchased season foot ball tickets.

Owing to Miss Senn's illness, the classes in Domestic Science missed a few lessons at the beginning of the term.

The ladies' bath room in Francis Hall has been opened and will be free to all young lady students on Wednesdays and Fridays.

Mr. McMurray of Belfast, Ireland, visited with Mr. McGuigan Tuesday, Oct. 8. Mr. McMurray is a large linen manufacturer in Belfast.

Professor Mills spent the greater part of his summer vacation at his old home in Illinois. He also made trips to Kansas, Missouri and Chatauqua, N. Y.

Prof. C. B. Waldron and L. R. Waldron visited their home in Michigan during the summer vacation, where a family reunion was held—the first in ten years.

Professor and Mrs. Bolley passed the summer vacation traveling in Wisconsin, Indiana and Kentucky. They also visited the University of Chicago during their trip.

Professor Waldron's jovial countenance is decorated with a large and flourishing boil. He will be greatly offended if you don't ask him what is the matter with his face.

Miss Maude Manning of '02 is at Fergus Falls, where the family now reside. She will be unable to continue her work at College this fall, on account of trouble with her eyes.

President Worst attended the National Farmers' Congress, held at Colorado Springs, Colorado. While there he made the ascent of Pike's Peak and brought home a few plants as souvenirs.

Mr. Fowler, who had his collar bone broken in a practice game of foot ball, is getting along nicely. He seems to be getting used to it, as he says it isn't half so bad as last year's fracture.

Professor Hult has organized a Shakespeare class, to meet at half past eight on Saturday mornings. The students should take advantage of this opportunity to study the great plays of Shakespeare.

College students should patronize those who patronize us. It seems rather un-

fair for a business man to have the patronage of the students for nine months of the year and then refuse to buy a foot ball ticket.

Mr. McAllister returned from Argusville the eighth of this month, and will take his place in the foot ball team.

The janitor was somewhat previous in removing the screen windows from the buildings and as a result the flies make life miserable for the occupants.

H. McGuigan returned last week from a visit to his old home in Ireland. He brought back a carload of mementoes of his trip, which he has generously distributed among the faculty and some of the more favored of the upper classmen.

T. H. Heath of '00 has given up Mechanics and gone into a real estate office in Seattle. The communications received from him at THE SPECTRUM office show that he still clings to the habit of using strong and vigorous English.

Dr. Hult, Professor McArdle, Professor Mills, Mr. Harrison, Mrs. McVeety, Mrs. Ash, and Mr. Shattuck were entertained at dinner on Wednesday by members of the freshman class in Household Economics, Miss Sorensen acting as hostess.

Professor McArdle, though he mourns the loss of most of last year's choir, is apparently undismayed by such a trifle. At the beginning of the term he appeared with a new assortment of "sweet singers" and is now doing business at the old stand.

Mr. Clothier, the tree man from the Department of Agriculture at Washington, was at the College Oct. 5. He expressed himself as much pleased with progress made by the Horticultural Department in beautifying the campus.

Professor Bolley visited the Experiment Stations at Brandan, Manitoba, and Indian Head, Northwest Territory. He spent two days at each place and found that they were run in a very perfect manner. Much attention was given to growing shrubbery and hedges, showing that fine effects may be produced in this way even so far north. The soil and climate conditions are much the same there, as on our western prairies.

The seniors, evidently believing that "in union there is strength," have adopted the plan of reciting in concert.

One morning at chapel Professor Keene was the only member of the faculty present, with the exception of those who take part in the exercises. The senior class, wishing to show their appreciation of the professor's presence, lined up outside the chapel door to shake hands with him as he came out. After waiting in vain for his appearance, they sent one of their members to reconnoiter, only to find that their man had escaped, either through a window or behind the protecting cover of some little prep.

Dr. A. C. True, director of U. S. Experiment Stations, and first assistant to the secretary of agriculture, made an inspection of the local station at the close of September. He expressed himself as highly satisfied with the results obtained, and spoke very flatteringly of the work of the station officials. Dr. True visited the station five years ago, and during his latest visit commented favorably upon the improvements which have been made since he first made our acquaintance.

The faculty are busy getting out the fifth biennial report—a report of all the work done by the College and the Experiment Station for the last two years. The report has been carefully written and will be profusely illustrated, the Horticultural Department alone having twelve full page plates. The work would be very helpful to the agriculturists of the state and a good advertisement of the College, if copies could be circulated through the state, and it is to be hoped that arrangements may be made so that at least one thousand copies may be sent out. Heretofore the appropriation of the legislature has only been sufficient for the printing of five hundred copies and this does not admit of a very wide circulation.