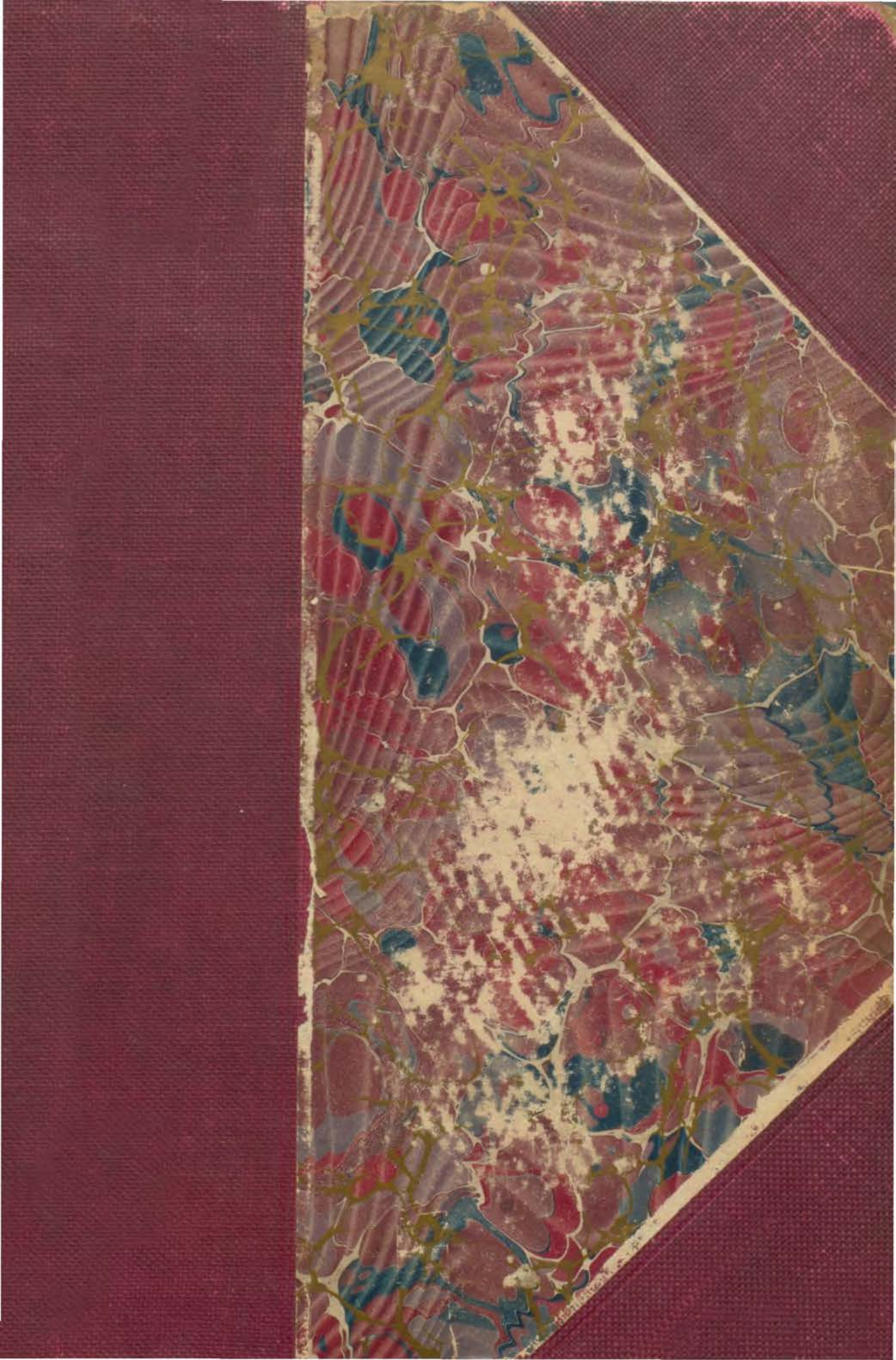

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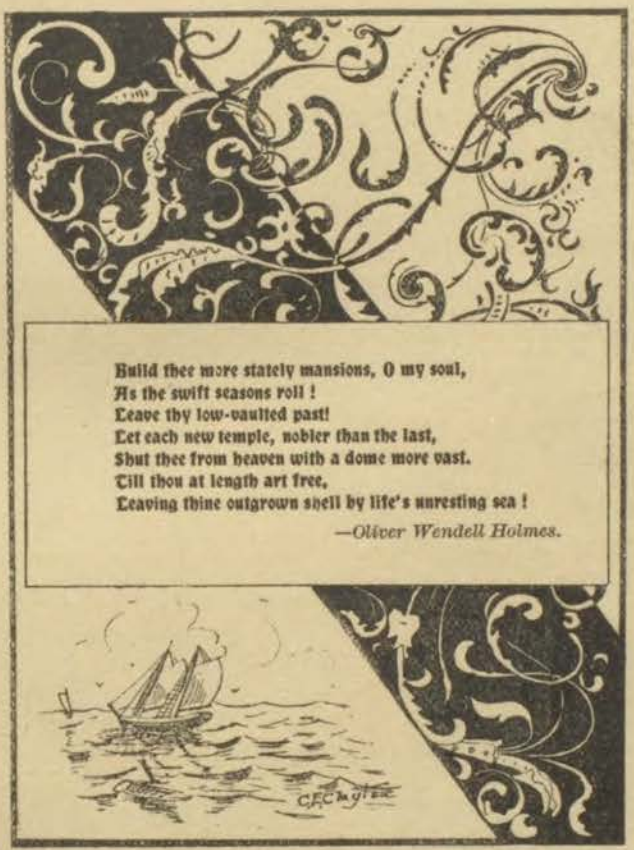

Build thee more stately mansions, O my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast.
Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea!

—*Oliver Wendell Holmes.*

Manual Training High School
Kansas City Missouri.

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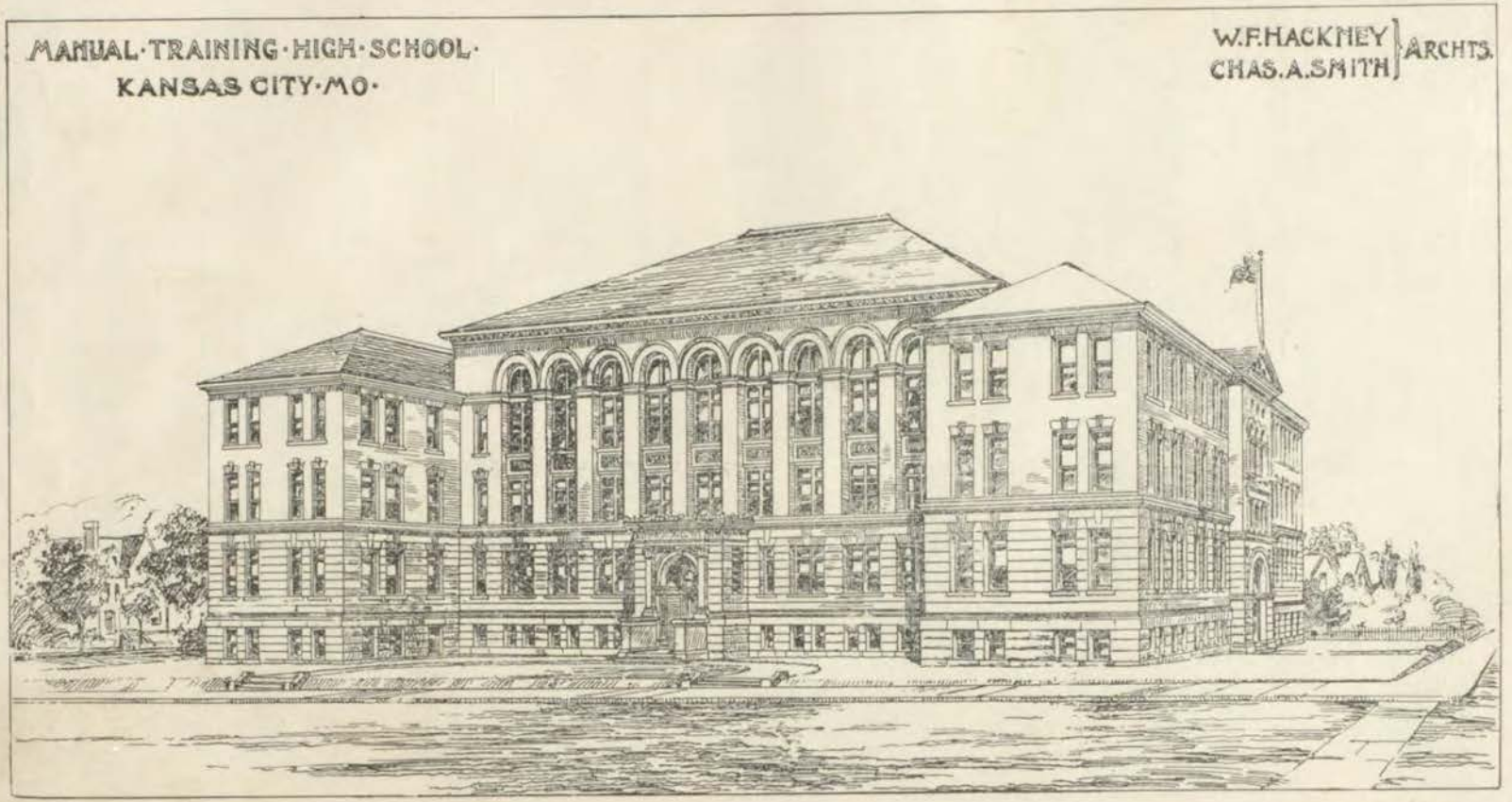

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OUR SCHOOL.

The Kansas City Manual Training High School is a realty,—a live, breathing, glorious realty,—a realty full of the hope and promise of sturdy youth, with all the health and strength of adult maturity.

Seven hundred and forty pupils—boys and girls—who pinned their faith to the new enterprise, are not disappointed. The outcome has been even better than we expected. Our school is rightly regarded as the flower and blossom of the educational system of Kansas City. It has been built in the light of all that has preceded it while taking a step in advance of all others. It is at once a follower and a leader. It follows that part of past experience, which has led to present achievements; it leads in those activities which, in an advancing civilization, are essential for future victories.

We are glad to note that the aims and purposes of our school are each day becoming better and better understood by the public, and with this understanding comes public appreciation. From the time that such an institution for Kansas City existed as an idea, until the present, its growth has been steady, systematic and certain. One reason for its success lies in the fact that its policy from the start has been constructive, rather than destructive—to build up rather than to tear down. Its function is to aid, and to supplement the good work of Old Central, and to incorporate into its curriculum certain features which, for many reasons, could not be secured in the old way.

For this grand achievement all honor to our progressive school board. Schools like ours, are impossible in towns where educational interests are dominated by party politics and ward politicians. Improvements which are the result of the continuous and systematic work of years can be made only by men who are above selfish or political ends. The pupils of this school appreciate the great opportunities made possible by our Board of Education, and they will grow up to perpetuate their methods, and to imitate their untiring labors to secure the best things for the public schools.

Our school was opened under many unavoidable and perplexing difficulties. The building was unfinished, and we have carried on the daily exercises of the school amid the sound of hammers, and cries for "mort." Our assembly hall was the last part of the building to be finished, and the school had to be organized in one of the corriders. Notwithstanding all these difficulties, we made our beginning without a hitch. Our faculty has, with patient persistence, overcome the many difficulties which beset its path; all of its members have worked together as one man toward a common end.

We have had since our opening many visitors, all of whom seem surprised at the order, interest and spirit of industry which pervades the entire school. One of the several causes for this condition is the nature of the course of study, which exercises different powers of the mind at different hours in the day, together with the employment of the hand in working out our exercises.

The boys' Manual Training is of course confined this year to first year work, there being no pupils in the school prepared for work more advanced. This work consists of bench work in wood, under the able management of Mr. Moore, assisted by Mr. Arrowsmith, formerly of the St. Louis Manual Training School. The shops, under the able management of these gentlemen, are veritable hives of industry. The boys, in their white caps and blue aprons, and intent upon their work, present an interesting sight to the visitors, who come to our school to study our methods.

Next year this class will pass in their Manual Training work, to a turning and pattern making shop, yet to be built, and will occupy a place in the new wing which is intended to be built next summer.

The Domestic Art department is this year doing the first year work—that of sewing, and will next year pass to dressmaking. This work, with other manual departments, will be in the new wing, which, it is proper to refer to as the shop wing. The department is under the management of Miss Casey, who, with her bright and interesting manner, and skillful hands, makes this work a source of constant delight to all the girls taking sewing.

Cooking comes regularly in the fourth year of the course. The classes this year are composed of girls who came from the Central school to finish their course in our school. This year girls who had finished two or three years in the Central school were allowed to take cooking. In addition to these there are several post-graduates, who are taking cooking in addition to other selected studies. Under Miss Bacheller's energetic management, this is already one of the popular branches, and many applications for instruction have been made by ineligible outsiders. The cooking is done in small quantities, and is easily disposed of. What is left after the sampling by each embryo cook, necessary to test the product, is sold or given to the numerous charities in the city. Not a penny's worth of food is ever wasted; in fact economy is one of the features for study in this department. In addition to her duties in cooking, Miss Bacheller presides over the lunches, which are taken in the cooking room, where all pupils who take lunch in the building are required to come. A clean, white napkin is spread for each, and the lunch period is made one of education, instead of, as is often the case, one of demoralization.

All manual training is supplemented with drawing which is taken on alternate days, the periods being eighty minutes long, and double the academic periods.

The drawing this year is mechanical for the boys, and free-hand for the girls. The drawing rooms are beautiful apartments on the third floor, and furnished with all the modern appliances for teaching. The equipment of these rooms shows the breadth and culture side of our school as it includes, not only the appliances for drawing, merely, but many casts and pictures after the best Masters of the different periods in the world's history. Drawing and art, as they constitute a universal language, have been made a special feature of our school, and probably a larger proportion of pupils are taking drawing in ours, than in any other high school in the country. Mr. Sloan has charge of the mechanical drawing and Miss Murphy the free-hand. These teachers are artists as well as teachers, and while our pupils are only just beginning, the spell of the artist is over them as evinced by the earnest and absorbed manner in which they pursue their work. In the mechanical drawing room, the shop drawings are prepared, and are made to supplement the wood-working department.

Another characteristic feature of our school is the way mathematics is taught. The classes are all beginning the course with inventional geometry. The chief feature of the work is that pupils are made to think and to invent, instead of to memorize. The teachers in this department are Messrs. Dodd, Chase and Connell; their work along this new mathematical path, is much appreciated by pupils and by parents; it is intended as an introduction to the course in the higher mathematics.

The English work, under the able management of Mr. Phillips, assisted by Miss Fisher and Miss Van Meter, is as attractive to visitors as it is interesting to pupils. It is studied in our school chiefly as a means to an end, and that end the expression of thought. It furnishes an illustration of the correlation

of studies, which prevails throughout the entire school. We write our essays on the work done in the other departments, and make use of our drawing for illustrations.

Our History and Economics are in charge of Miss Gilday, who enlivens the work by a constant reference to modern affairs and by frequent visits to mercantile establishments. The pupils recite on alternate days, changing with exercises in the business department. The business department is indeed full of business, as many pupils who have applied for entrance to the classes had to be turned away for lack of room. Mr. Peters, the teacher in charge, has Typewriting, Book-keeping and Shorthand, at different hours of the day. The interest shown reveals the character of the work.

The Language department, in charge of Mr. Richardson, assisted by Miss Drake, is furnishing a necessary part of the course for those who expect to go to college. And pupils who at first smarted while making their first trip through the briar patch of roots, stems and case endings, are becoming reconciled, and are quietly and sensibly yielding to the environment.

Last, but not least, is our science and our laboratories. The laboratory method prevails in all science subjects. Our laboratories, finely equipped, with light on three sides, and teachers who are scientists by nature, as well as by education, furnish an incentive to the pupils amounting to a contagion. Every hour in the day, in session and out of session, pupils may be seen working out special problems and experiments with Mr. Merrill in Biology; with Mr. Page in Physics; with Mr. Miller in Chemistry, or with Mr. Kent in Steam and Electricity. Each laboratory has a private apartment equipped with apparatus where research work is carried on by the teacher, and our teachers in these branches are of that sort which makes the most of these advantages.

Since the school opened a department of Music has been added, and from room twenty-one there issues at all hours of the day, tones from the rich, strong voice of Miss Wilson, mingled with those of her pupils.

Our auditorium deserves a word of mention. It may be briefly described as ample, light, well ventilated, beautiful, and with perfect acoustic properties. One of its most interesting features is the device for controlling the light of the room. It consists of an elevated platform on the side opposite the rostrum, on which there is a permanent electric stereopticon, mounted on a combined stand and cabinet for the storing of slides. On the wall behind this lantern, and within easy reach of the operator, there is located a switch-board, from which may be controlled the electric lights in the room, the current which feeds the lantern, the rheostat for the lantern, the dimmers for the lights, and the current which moves the large darkening shades to the windows. The mechanism, which accomplishes this later result consists of a one horse power Westinghouse motor to which is attached a winding drum, worm gear and magnetic clutch for stopping the curtain movement automatically. The room contains 1,200 opera chairs, and there is room for about 400 more, which will be put in next year. This hall is used regularly as a study hall, where pupils pass their vacant periods in the preparation of their lessons. Mrs. Elston has charge of the room, and her strong, cultured, matronly presence has a wholesome effect on all pupils who spend an hour here.

Mrs. Speers, our matron, looks after the needs of the girls and nurses them in their illness. Her room is a depository for lost articles, which are delivered to the owners on application.

This sketch would be incomplete without mentioning the man who keeps us warm—the man whose labors contribute most to our bodily comfort, and of whom we possibly think least. Reader, you do not know his name, therefore let me in-

troduce to your favorable acquaintance, Mr. Claflin, our worthy fireman. This man, take particular notice, is a great deal more than a fireman; he is a gentleman and a student. Not that he attends classes, but he is a thoughtful reader of books. While attending to the comfort of the whole school, he improves his mind. His face is usually blackened with soot, but his heart is clean; also his tongue; for he never utters a vulgar or profane word. His modest and gentlemanly bearing can safely be taken as a model for any boy in our school. He neither smokes, chews, nor drinks spirituous liquor. He spends more hours in the building than any other individual connected with the school and is as faithful as the sun. His position is one of the most honorable in the school, simply because he makes it so.

And now our clerk—the accommodating, alert, methodical Miss Osgood, who keeps the office books, and turns the search-light on the derelict, and brings them to judgment. Her acquaintance with the pupils is extensive, and intimate, especially with those who fail to report properly. M.

HOW TO MAINTAIN A STANDING, AND BE GRADUATED FROM THE MANUAL TRAINING HIGH SCHOOL.

The standing of a pupil in the Manual Training High School is determined by the actual work done and is accredited as follows:

1. Any pupil who satisfactorily performs the work prescribed in any subject for one daily period of forty minutes will be entitled to one "credit" which will be allowed at the discretion of the teacher in charge. Three thousand six hundred of such credits are required for graduation. By taking Manual Training and Drawing with three academic studies a pupil will accomplish the work in four years.

2. No pupil can graduate this year (1897-8) who has not taken one year of Manual Training and Drawing, and who has not an equivalent of thirty-two "points" as counted in the Central School.

3. After this year (1897-8) no pupil may graduate who has not had at least two years of Manual Training and Drawing, two years of Mathematics, two years of Science, and four years of English.

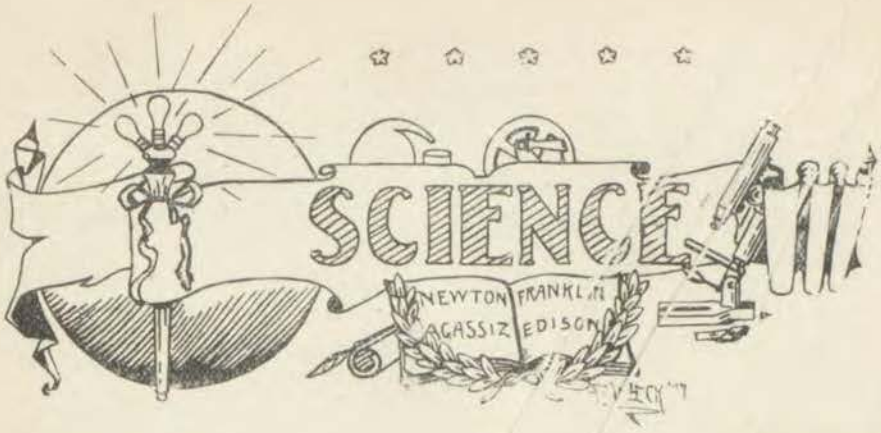
4. Absence from a recitation or exercise forfeits a credit for each absence of forty minutes. For example, if a pupil takes three academic studies of forty minutes each, and Manual Training eighty minutes, and is absent all day he will lose five credits. Days lost on account of absence may be made up and passed upon by the teacher. Twice tardy will be counted an absence, and a credit lost by tardiness cannot be made up.

5. Ninety days constitutes a term's work, and any pupil, who, on account of absence or failure, secures less than eighty accredited days, in any subject, must go over the work of that term again before any credits in that study will be allowed.

6. No "per cents" will be kept, except as private memoranda of the teacher.

7. Written examinations will be given as class exercises at the discretion of the teacher.

G. B. MORRISON,
Principal.



The founders of the Manual Training High School have prepared the way for a training in the study of nature which is equalled by few of the secondary schools of this country. In doing this they have planned wisely and have placed themselves in harmony with the best educational thought of the present generation.

To say that this subject has been altogether neglected in the past is hardly correct, for it has long held a high position in the theory of education, but the problem of how it is to be made to fit into a system of education has never been satisfactorily solved.

In the educational reaction which ushered in the new education, nature study was given a prominent place in the primary schools. At that time the primary schools began with the kindergarten and extended to the college.

In reorganizing the course of study, Comenius, a German educator of the seventeenth century, realized that the material by which the child is constantly surrounded and with which he has to deal all his life should be made an important factor in educating him.

This principle has been sanctioned by all the best educators since that time and it has been introduced with greater or less success in many of the schools of Europe and America. The high school is an outgrowth of the primary school and the sciences taught in some form have generally been present in its curriculum.

The natural science subjects in our school may be divided into two general headings, biology, and geography in its broadest sense.

Biology. In the study of nature, biology occupies a fundamental position. It involves the study of plants and animals, not so much as to form as to manifestations of life. A living plant or animal represents a combination of forces both physical and chemical which are constantly at work producing health, vigor, energy. What these forces are and how they build and use the body constitute the principal subject matter of the biological studies.

This phase of the subject is of recent development and indeed may be said to date from the masterly researches of Charles Darwin and others of the last half century. Its use in the high schools and colleges is due largely to the efforts of Huxley in Europe, and Agassiz in America.

For this character of work the botanical and zoological laboratories and classrooms of our school are admirably suited. The tables are large enough to give each student sufficient room, and contain drawers to give each student a private locker for his note books, instruments and materials for study. In addition to this each student has access to a compound microscope, stains, reagents and apparatus for preparing and illustrating the work in hand.

These facilities are rendered more valuable by the location and arrange-

ment of the laboratories. Situated in the west wing of the building, occupying the entire second floor, they get the light and sunshine best suited to the work to be done. The zoological laboratory is in the north end and gets the best light for microscopic work, while the botanical laboratory, in the south end, gets the sunshine necessary for the growth of plants. Both laboratories are provided with aquaria for the study of living organisms, and have private laboratories for the storing and preparation of material intended for class use.

Each laboratory has thirteen windows, and to temper this abundance of light, the walls are finished in plain red brick, and the ceiling in hard oil.

While these facilities are not costly, yet they are modern in every respect, and present conditions unusually favorable to the study of biology.

But the laboratory is not the only agency used in this line of work. The study of an organism involves a careful observation of the leading details of its structure for the double purpose of finding out its method of carrying on the vital processes, and its relationships with other organisms and with its natural surroundings.

These relationships may be arranged in three categories, viz: those of structure, of development, and of ecology.

The structure is studied in the laboratory in connection with the physiology of the organism, and may be used also in classification. The development or life history is studied by continued observation of change of form over a period of time extending from the beginning of growth to maturity. This leads to genetic or natural classification, which is gradually supplanting older and more artificial classifications. The third category, ecology, is studied in the field where the plants and animals are under the conditions and limitations that nature has put upon them.

Field work involves two lines of observation; form and distribution. The first has to do with structure, which is studied in connection with its adaptation to its surroundings; the second deals with the struggle for the mastery, which is constantly going on in both plant and animal life. Food supply is the primary cause of this organic struggle, and the organism or group of organisms that is best able to use the existing conditions obtains possession of the favored districts.

To get practical possession of these facts and principles and to encourage close observation and reasoning, field work is continued throughout the courses of zoology and botany.

It is believed that this work will furnish an excellent basis for the study of the social and economic problems of the day.

Physiology, the last subject in the biological sciences, comes in the third year. The work of the courses in zoology and botany is made a foundation for the study of the structure, physiology and hygiene of the human body. The work will be conducted in the zoological laboratory, and the various tissues of one of the higher vertebrate animals will be studied as an illustration of the tissues of the human body. Experiments illustrating the strength of the different organs, and the force and influence of the nervous system will be performed. In this way a knowledge of the symmetrical development of the body will be gained. The health of the human body will be the principal topic of the course.

"A sound mind in a sound body" is a greatly desired condition, but it is doubtful if this can be attained unless a knowledge of the body precede it.

Geography. The geography line of subjects consists of physiography, mineralogy and geology.

Physiography continues a half year. It includes the simple problems of changes and movements of the atmosphere and crust of the earth. Each of

these is made the subject of experimental test. In the study of the atmosphere, the pressure, temperature and relative humidity are determined, and from these the laws of atmospheric movement and rain-fall are derived. The subject matter of this part of physiography is derived almost entirely from the experiment, observation and reasoning of the student. For this work the school is provided with a barometer, hygrometer, and maximum and minimum thermometers.

The problems of the earth's crust which are taken up in the latter part of this subject, are the oceanic movements and the origin and development of the land forms of the various continents. A continent consists of coast lines, river basin, and mountains; and each of these is studied in its origin, formation, productions and civilization. In this part of the course field work is a prominent feature. It gives the student a knowledge of the changes that are going on in his own vicinity that are generally overlooked by all classes of people.

The region around Kansas City is a fine area for this kind of work, and as much advantage will be taken of it as the time allotted to the subject will permit.

Mineralogy is given in the first half of the fourth year. It is intended to familiarize the student with the principal common minerals composing the crust of the earth. The minerals will be studied in the laboratory with chemical re-agents and blow-pipe, and the determinations made by mineralogical tables. Considerable attention will be given to the forms of crystallization of minerals, which will be illustrated by celluloid and wooden models. The ores of the precious metals will also be studied, and the simpler methods of assaying used. The structure and composition of soils will also be given some attention. There may be some field work in this course to illustrate the natural association of minerals in the rocks.

It is expected that there will be a class in this subject the latter half of this year.

ZOOLOGICAL LABORATORY

Geology comes in the latter half of the fourth year, and is intended to include as a basis much of the work of the preceding courses. It deals with the for-

mation and growth of the different continents, and the history of plant and animal life as shown in the fossilized forms. The earth's crust as folded and faulted by the agencies of earthquake and volcanic forces affords a rich field for the study of dynamics, as applied to continent building.

The earth is not a lifeless mass, but a living, growing organism, which is acted upon and modified by the forces of nature as it advances towards its destiny. In the growth of plant and animal life up to the present time, the rock record shows that it has had its waves of progress and decline, common to all development.

In this way the study of geology is connected with the history and the growth of civilization.

The school has access to a good collection of rocks showing the formation of stratified rock and the effects of volcanos and earthquakes. It has also a fairly good collection of fossils illustrating the geological ages from the Archaean to the Tertiary.

In addition to these facilities the region around Kansas City will be taken as a unit, from which the work will broaden to the State and the United States.

In the building of the Manual Training High School ample provision has been made for the study of mineralogy and geology, as is shown by the setting aside of the large well lighted room on the north side of the second floor for laboratory and museum. We hope to place in this room as soon as possible a collection illustrating all phases of the subject. The room is used this year for manual training work, but will probably be open to the students of geology next year.

A HISTORY OF SOAP.

A history of soap should be very interesting. Who invented it? When and where did it first come into prominent use? How did our remote ancestors wash themselves before it was invented?

These are historical questions that arise on first contemplation of the subject. But as far as we are aware historians have failed to answer them. We read a great deal in the ancient histories about annointing with oil, and the use of various cosmetics for the skin, but we find nothing about soap.

We are taught to believe that the ancient Romans wrapped themselves round with togas of ample dimensions, and, that their togas were white! But how did the Romans keep these togas clean? Historians are silent on this point!

When Pompeii was again laid to view by our students of ancient history, a great many curious things were found buried in the cinders and lava that had flowed from Vesuvius—bread, wine, fruits, and other domestic articles; among other things several luxuries of the toilet were found, such as pomades, pomade-pots and rouge for the ladies' faces. It was apparent that the ladies of those times were just as prone to put on the beautiful complexion which we find in our day, but nothing was found which indicated the use of soap.

Finding no traces of soap among the Romans, Greeks, or Egyptians we need not go back to the pre-historic cave-men whose flint and bone implements are found imbedded side by side with the remains of the mammoth bear and hyena, in such caverns as the Torquay, and many others that have been very industriously explored during the last twenty

years. All our knowledge (and that still greater quantity, our ignorance) of the habits of the ancient savages indicate that solid soap, such as we commonly use, is a comparatively modern luxury, but it does not follow that they had no substitute. Observance of modern savages has taught us that clay, especially where it has some of the unctious properties of Fuller's earth, is freely used for body washing purposes, and was probably used by the Romans, who were by no means remarkable for anything approaching true refinement.

A refinement upon washing with clay is to be found in the practice, once common in England, and which still prevails where wood fires are used. It is the old-fashioned practice of pouring water on ashes, and using the lees thereby obtained. These lees are in realty a solution of alkaline carbonates of potash and here it is interesting to note that the modern name of potash is derived from the fact that it was originally obtained from the ashes under the pot. In a like manner carbonate of soda was obtained from sea-weeds, near the sea-shore. The potash or lees, being so universal as a domestic by-product, it was natural that they should be commonly used, especially for the washing of *greasy* cloth as they are to the present day. Upon these facts we may build up a theory of the origin of soap.

Soap is a compound of oil or fat, with soda or potash, and would be formed accidently if the fat on the surface of a pot should boil over and fall into the ashes below. The solution of such a mixture boiled down, would give us soft-soap. If the oil or fat became mixed with the ashes of soda plants it would give us hard-soap. Such a mixture would most easily be formed in regions near the coast, where olives flourish, as in Italy or Spain for example. This mixture boiled down would be castile soap, which is largely made by combining refuse or inferior olive oil with the soda obtained from the ashes of seaweed. The primitive soap-maker would, however, encounter one difficulty; that arising from the fact that the potash or soda obtained by the simple burning of wood, or sea-weed, is more or less combined with carbonic acid, instead of all being in the caustic state as is required for effective soap-making. The modern soap-maker simply adds lime, which forms calcium carbonate with the objectionable ingredients, and takes them out of the lees. How the possibilities of making this change became known to the primitive soap-maker remains a mystery; but certain it is that our same modern method was used in a crude way very early. It is probable that the old alchemists had something to do with this.

The alchemists in their search for the philosophers stone, the elixir of life, or drinkable gold, for the universal solvent and other such things, mixed together everything that came to hand. They boiled everything that was boilable, distilled everything that was distillable, burnt everything that was burnable, and tortured all their simple and complex substances by every conceivable device, thereby stumbling upon many curious, many wonderful and many useful results. Some of these alchemists were not altogether visionary—were in fact very practical, and therefore, were quite capable of understanding the action of caustic lime on carbonate of soda, and were also wise enough to turn the same to account. Of course their apparatus was crude, and therefore their results were necessarily crude. It is probably thus that our modern method of purifying the lees was discovered.

As cleanlines is the fundamental basis of all true physical refinement, it has been proposed to estimate the progress of civilization by the consumption of soap. The relative civilization of different communities may be discovered as follows: Divide the total quantity of soap consumed in a given time, by the population, and the quotient will express the culture of that community, as compared with that of another. B. R.

THE WORLD'S GREATEST BRIDGE.

In 1883, a bridge was opened in New York, spanning the East river between New York and Brooklyn. This bridge, a triumph in engineering ingenuity, was held to be a feat which would not be paralleled for a century at least, but its glory was short-lived. Even before its opening, work was begun on a bridge in Scotland, which was destined to totally eclipse the Brooklyn bridge—the Forth bridge. But even this structure seems doomed to a "back seat," for preparations are now being made in New York to bridge the Hudson River with a span almost twice as long as the Brooklyn bridge, and half as long as the Forth bridge.

When seen from the end, the Forth bridge is probably the ugliest object of its kind in the world, yet this unseemliness is only the result of extreme stability of construction.

It cannot be compared to the East River bridge in some particulars, because it is built on an entirely different principle, yet in such matters as height and span, it shows its superiority by the accompanying figures. The Brooklyn bridge has one span of 1,595½ feet, while the Forth bridge has two 1,700 foot spans; and against a height of 272 feet in the Brooklyn towers, the Forth structure stands 361 feet above high-water mark.

These two bridges illustrate the two principles which are perhaps recognized as foremost in bridge construction—the suspension and the cantilever.

Everyone is familiar with the suspension theory as applied to this class of designing, but the cantilever is not so well known, and an explanation may not be out of place. It acts on the same principle as the bracket on a shelf, that is, the support is from the piers towards the center of the span. Thus the philosophy of the cantilever is just the reverse of the suspension, which depends on the tensile power of a suspending cable for its support.

The Forth bridge is built across the Firth of Forth at Inverkeithing, about a mile from Leith, where the little Island of Inchgarvie in the middle of the Firth made it a convenient point at which to construct a bridge. It was begun after much controversy in 1883, and the work was given to Messrs. Fowler and Baker, who carried out the plans.

The first thing in the construction was the building of the piers. These were built in groups of four, a set on each shore and one on the island. Caissons were sunk to bed-rock and filled with concrete, upon which the steel work was founded.

This was started by erecting the twelve cantilever supports on the piers from which the cantilever arms were projected, and was finished by the joining of the girders which connect the cantilever arms.

The whole construction took seven years, the sinking of one caisson alone consuming fourteen months, and the bridge was opened for traffic in March, 1890.

Its total length is 8,098 feet, and the cantilever portion is 5,349 feet. But it is not so wide as its rival, for, while the latter accommodates five separate roadways, the former has room for only two railroad tracks. The middle cantilever arms are 1,620 feet in length, and the two side pairs are 1,514¾ feet. The cantilevers rise to the height of 361 feet above high-water mark, and there is room for masts 150 feet high to pass under the structure.

Some idea can be gained of its gigantic proportions, when we say that each pair of arms, independent of the central girders is 250 feet longer than Eiffel Tower, and the cantilevers reach to within five feet of the height of St. Paul's.

This great work cost about $16,250,000, about double the original estimate. Yet this does not seem exhorbitant for a bridge of two spans, either of which would cross the Mississippi at St. Louis, or the East River at New York. K. Z.

THE FORTH BRIDGE

RANATA FUSCA.

This queer looking insect, although unknown to most people, is found in many of the lakes and ponds around Kansas City. It belongs to the order Hemiptera. The main characteristics of this order are piercing mouth-parts and half wings; that is, half of a leathery texture, and half membranous. The family to which this insect belongs is Ranatridæ. This species is about the only representative we have in this vicinity. This insect would be seen more, but for the fact that it remains beneath the surface of the water on the stems of smart weed, and other plants in shallow, muddy ponds. I collected about seventy-five of the creatures in two hours last August.

They feed on larvæ and small aquatic animals, which they fasten to by means of their front pair of legs. These legs are especially modified for grasping firmly. After they secure their victim they pierce through the skin, and draw out the blood in about the same manner that the mosquito (Culea Pungeus) does.

The insect is slim, and of a brownish color. The head is flat, and the anteunal have three segments. The reason for their not having a greater development is because of little use. Any organ that is unnecessary is finally obliterated by Nature. The compound eyes are very large in proportion to the rest of the head. The mouth parts have been developed into a beak for piercing. This beak is composed of four segments and is at the front part of the head or rostrum.

The prothorax is very slender. The meso-thorax and meta-thorax are loosely connected. As a general rule, when the middle and last thorax of an insect are loosely connected, they are poor fliers, or totally unable to fly. In this case the animal is wholly unable to fly. At some time in the past this insect was probably able to fly, but since he has taken to the water this faculty has become dormant. Some of our aquatic insects come out of the water and fly to the electric lights. The giant water bug (Belostoma americanum) and the water beetle (Hydrophilus triangularis) both have this habit.

The legs are very slender, and are used in propelling the insect through the water. They cannot travel very fast. At the posterior end of the body are two long, slender tubes. These are the respiratory tubes. The animal while resting on some submerged stem, thrusts these above the water, and so takes in air.

SEWARD HOSP.

THE NEWS IN SCIENCE.

Brazing Aluminum. Aluminum has for some time been recognized as an ideal metal for bicycle manufacture, but the fact that no practical method has been devised for brazing it has been the barrier to its use so far. A. T. Stanton, in Nature offers this solution of the problem: "If cadmium iodide is fused on a plate of aluminum, the decomposition of the salt will take place long before the melting point of the metal is reached, and the result is the violent evolution of gaseous iodine and an alloy of cadmium and aluminum over the surface of the latter Now if the chlorides of zinc and ammonium, previously fused together, are heated on this alloy, a flux is produced which enables tin or compound for soldering to adhere readily.

Rude Lightning. From Muncie, Indiana, comes this report of their ill-mannered lightning: "During a recent rainstorm the lightning knocked hundreds of people right and left, but none were seriously injured."—Electrical World.

A New Locomotive. In the last Electrical World an interesting account is given of a new motor. It is a small affair, relatively, weighing but eleven tons, yet it hauls surprisingly heavy loads. The source of power is a twenty-five horse power gasoline engine, which is connected with a 220 volt generator. The current is carried through a battery of storage cells to electric motors on the axles. The gasoline is stored in a tank of twenty-five gallons capacity, above the operator's head, and another seventy-five gallon tank above that holds water for cooling the cylinder. By means of the storage battery the engine can run on during stops, and a good accelleration be gained for starting again, thus recommending it for street railway use.

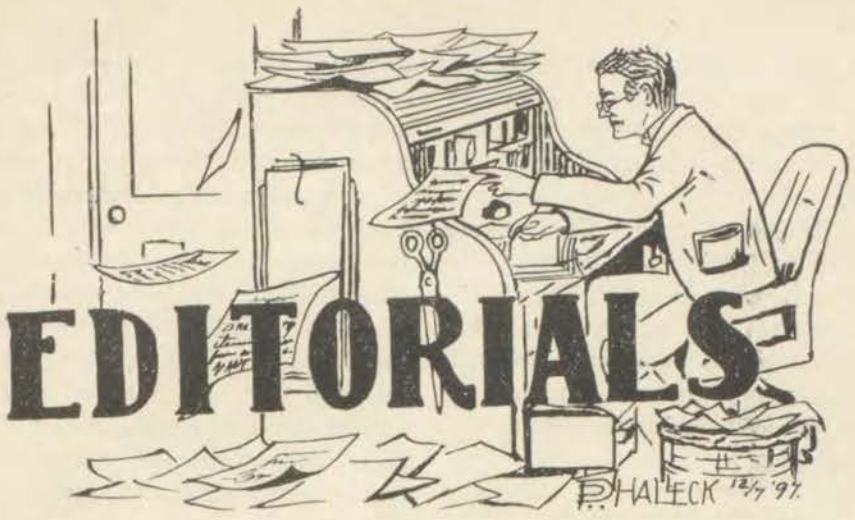
Stroutium in America. The Scientific American reports that stroutium has probably been discovered near Put-in-Bay Island, close to Toledo. If this is true, it will greatly affect the prices of those fireworks which make use of red lights, since all the stroutium now used comes from abroad—mostly Germany. One New York manufacturer uses 150 tons of it annually, and pays seven and one-fourth cents for every pound of it.

A Note on The Nautilus. Perhaps you never knew the construction of the nautilus' eye. It is formed on the same principle as a camera obscura without a lens — merely a pinhole and a membrane, sensitive to ether vibrations. But let us improve the eye of *our* NAUTILUS, as Daguerre improved his camera obscura, make it not only see those things within its range of vision, but record them for all time.

K. W. Z.

"Bright and glorious is that revalation
Written all over this great world of ours."

"Man is the interpreter of Nature—
Science its right interpretation."



THE NAUTILUS.

THE NAUTILUS is published once every two months in the general interest of the Manual Training High School, at Kansas City, Mo

The subscription price is 30c per year by mail; 25c to pupils of the school. Single copies 10c. There will be four numbers this school year.

Contributions are requested from all members of the school.

Address all communications to

THE NAUTILUS,
Manual Training High School,
KANSAS CITY, MO.

Our First Issue.

It is with some degree of pride that we present to our readers the first issue of THE NAUTILUS. This being a new field for us, we have had to work from the ground up. We have labored hard and conscientiously. The time has been none too long, but with the full sympathy of the faculty, and of the pupils we have forged ahead and after overcoming many difficulties, we place our paper in the hands of the public hoping that our patrons will appreciate the effort made.

It is the purpose of our paper to interest all of its readers; to this end we aim to be the exponent of all that is highest and best in the Manual Training High School.

We will endeavor to instruct, as well as amuse, and to build upon a foundation of good judgment, common sense, truth, justice and morality. We will discuss all matters without prejudice, believing that prejudice is indicative of a lack of judgment, and knowing that all cannot see through the same glasses nor occupy the same point of view.

This paper will give special privileges and favors to none. It is of the School, for the School, and by the School. THE NAUTILUS will receive contributions from all pupils, thus representing the interests of the whole school. It will not be managed in the interest of the staff, or any set or clique.

The object of this school, namely, the training of heart, hand and head, will be kept before our readers, and the worth and beauty of this wise and happy combination will be emphasized.

In conducting our paper, we hope to

improve with experience, and with each succeeding issue, like the nautilus, to build our realm larger and higher. "Nothing wins like success," and the way to be successful is to believe in ourselves, our cause, and in hard work. There is no inspiration in "Blessed is he who expects little, for he shall not be disappointed." Blessings and victory always follow high aims and industry. So with your help, sympathy and support we enter the field of school journalism, and expect to win.

The Flag Presentation.

Elsewhere in this paper will be found an account of an important event in the history of our school—the presentation of a handsome flag by the Sons of the American Revolution. Our beautiful building needed only this finishing touch of the National Colors, and we return our sincere thanks to the donors. It was the occasion of some stirring speeches by eminent citizens, good music, and the singing by the entire school of patriotic songs. We cannot appreciate all that our flag represents. It has been defended and protected amid all the vicissitudes of war. We honor our country's heroes, Washington, Lincoln, Grant and a score of others; but to us who live in this fortunate time, who are young, to whom the past is only a history, our flag speaks only of Peace, Freedom and Safety. We know not the future; if ever the time should come when we are needed to defend our country's flag, we hope none of us will be "found wanting." But let us remember, especially in these times, when there is so much foolish talk of freedom, what Lowell our great poet and patriot says: "It is Honor, Justice, Culture that makes liberty invaluable, else worse than worthless, if it means only freedom to be base and brutal."

Our Principal.

Fifteen years ago the Board of Education, after carefully considering the qualifications of scores of applicants, elected Prof. G. B. Morrison to fill the important vacancy of professor, in the the department of Physical and Natural Sciences, in the Central High School.

From thereon Prof. Morrison's career has been that of a man with a purpose, reinforced with the resources and will to achieve it. He entered upon the duties of his new position well equipped to build up an enviable reputation for himself, and for the Kansas City High School, having taught and supervised all the common school grades, conducted teachers' institutes, and edited an admirable school journal.

His enterprising New England spirit, and aggressive intellectual character, were too active for the ordinary routine of the class room, and in due time he was recognized, not only as an expert chemist and physicist, but also as an original, pleasing and reliable writer on scientific subjects. His papers and monographs have been in demand at state teachers' associations, as well as at home.

Much of Prof. Morrison's success, as a student of science and of the philosophy of education, is due to his painstaking investigations outside the routine of school work. Before even his most intimate friends knew that he was engaged upon any elaborate work, Prof. Morrison's volume on the "Heating and Ventilating of Buildings," was published in the International Educational Series. This book is recognized as an excellent authority by the most competent scientists and architects of this country. But the cherished ideal of his heart, was to see the introduction of the manual training features into the curriculum of our secondary schools.

The story of the origin, growth and culmination of this educational ideal in Kansas City, constitutes thus far the most important chapter in Prof. Morrison's educational work.

The appreciation of Prof. Morrison's services to Kansas City, by our Board of Education, in placing him at the head of this school, is a fitting tribute to his judicious and untiring efforts in its be-

half. So intimate are his relations to each step in the course of its foundation and growth, that his name is inseparably associated with it. His promotion illustrates what self-help, perseverance and consecration of mind and heart to a noble ideal can accomplish.

Esprit de Corps.

One of the noteworthy features of our school is the animating spirit of unity, which everywhere prevails. Everybody seems to have implicit confidence in everybody else, and there are no bickerings or misunderstandings. By the arrangement of the daily schedule, the teachers frequently visit other departments than their own so that they may exchange ideas and methods and secure material, which they use in making each department useful to all the others. For instance, the English teachers are often seen in the workshops or laboratories studying the work there, that they may find appropriate subjects on which to assign essays. The drawing and shop work are intimately correlated calling for frequent conferences between the teachers of these departments. In fact every department seems to depend upon every other. A commendable spirit of fellowship also prevails between the societies. The tendency toward a clanishness in these organizations which was barely discernable at the start, has disappeared and each society is content to fully occupy its time and talent in the pursuit of its own business. This is to be commended, for nothing is more subversive of the good which societies may secure to their members than the petty bickerings, narrow jealousies, and spiteful thrusts and repartee too often indulged in by school societies. The industrial spirit of our school forbids that perverted use of language, which employs it as a weapon of warfare, instead of an agency in conveying thought and in making the world wiser and better. Any tendency toward caste and snobbery would find a very chilly atmosphere here. Our aristocracy is of the heart and brain, rather than of the purse. Everybody is ranked on his own worth and behavior—not on what his father is supposed to be.

The co-operative spirit everywhere prevails between principal, teachers, pupils and societies, filling our industrial army with that vigor and strength, which is found in union.

Our Heating System.

It is but fitting that special mention should be made of the excellent heating and ventilating facilities of our school. There are two separate systems—the steam radiators and the heated air, or indirect system, either of which would be sufficient. The steam radiators are for the purpose of heating; the indirect system answers both the purposes of heating and ventilation. In the summer time, however, the air is cooled instead of heated and so reduces the temperature. The following instance will illustrate the exact nicety of their working. During the entire time of the exercises in the Auditorium recently, the thermometer did not vary one degree from seventy. This, notwithstanding the fact that the day was cold, and the indirect system the only one in use, the radiators for steam not yet having been placed. This same evenness of temperature was maintained on two previous occasions. The most perfect ventilation is associated with this equable heating. It follows that the pupils of our school have every condition favorable for clear and accurate thinking. It is only just to add that these results could not be obtained without the faithful and efficient management of our engineer.

Our Monday Morning Entertainments.

On Monday, the 29th of November, we were favored with a highly interesting address on ' Some Helps to Success,'' by Mr. Homer Reed. His remarks were entertaining as well as practical, and held the attention of the pupils from beginning to end.

Another pleasant entertainment in the

auditorium, consisted of a concert given by Prof. Max Decsi. Prof. Decsi is a well known Hungarian vocalist. He was assisted by Miss Frankie Whitney, Miss Gertrude Concannon and Mrs. Thomas Gillispie. The selections were of the first quality, and much appreciated by the students.

On Monday, December 13th, the weekly entertainment was furnished by the Belle Lettres Society. This occasion has an historic significance, it being the first open session in our school given by an organized student's society. We are glad to record that the beginning was creditable, and well received by the school.

Tardiness.

School should be a place to acquire those habits, not only of thought and industry, which will best prepare the youth for the duties and responsibilities of life, but it should also inculcate habits of punctuality, which is one of the chief requirements of life.

No person can succeed without promptnesss and punctuality. In what ever business a young man or woman may engage, tardiness is one of the shortcomings, which the employer will not excuse; he has no time to argue the necessity of the tardiness or to teach his employees their obligations to him; he simply informs them that their position is vacant and ready for another who will be more faithful to his interests. Tardiness has become so common in our schools, and so much leniency has been shown it by teachers, that its true nature is usually overlooked. A pupil who enters school late is not only forming unbusinesslike habits, but he is interfering with the rights of others whom he is disturbing by his untimely entrance. Time is money, and he who robs us of our time, robs us of our money. The vigorous measures which have lately been started in our school to break up the habit of tardiness, are producing the desired effect, the cases which now occur being only those which are unavoidable.

Notes.

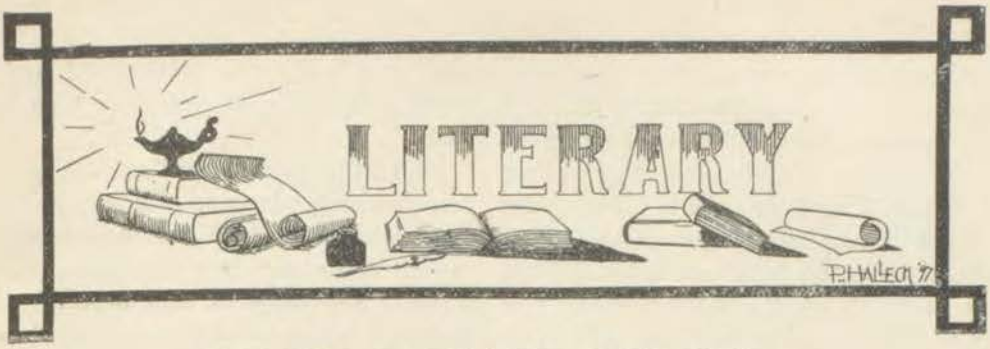
The design of our cover is the result of a spirited competition among the students. A surprising amount of artistic talent was brought to light, and many excellent designs were submitted. From these Mr. Huppert, one of the well-known artists of the city, selected that of Charles Clayton.

The interest the school takes in the paper is shown, also, in the large subscription list, about one-half the students having already subscribed.

We have been very successfully financially, thanks to the enterprise of our business manager and his assistant.

We hope the pupils will continue to take a personal interest in the paper, and to make contributions, especially to the local department.

The season of good cheer and festivity is rapidly approaching. Everything is beginning to wear a joyous and holiday aspect, and the signs of Christmas times are here—the markets with their abundance of provisions of every description, the stores with their show windows gay and attractive with a lavish display of goods of all kinds—while holly with its red berries and green leaves, and mistletoe, which has as we know a peculiar charm attached to it, are everywhere in evidence. The streets are lively with the temporary bustle of Christmas shopping, and the stores thronged with people buying presents which it has been the custom from time immemorial to send and to receive. Everywhere the spirit of peace and plenty seems to reign. The coming holidays is the time of the first vacation of our school. That we will all enjoy it goes without saying. We extend to all the compliments of the season.



GREETINGS OF THE NEW YEAR.

"'Tis midnight's holy hour, and silence now
Is brooding, like a gentle spirit, o'er
The still and pulseless world. Hark! on the winds
The bell's deep tones are swelling—'tis the knell
Of the departed year."

Relentless Father Time has drawn the sombre curtain of the past over the year of 1897, and with all the graceful majesty of her waning life, she yields the scepter to her fair successor—lost forever to mortal vision and activity! Treasured deep in her indulgent heart lie all the golden opportunities, noble deeds, innocent pleasures, and profoundest griefs—live realities of the yester eve, mere memories of this glowing morn.

Ah, restless soul, why pause in such idle reveries? A brighter day has dawned, and standing at the tightly curtained threshold of the New Year's palace, behold thyself, in all the weakness of thy curiosity, eaves-dropping to catch even a whisper of her plans for the next twelve months of '98! But in such secrecy does she work, that not the faintest murmur penetrates to the anxious world. Devise her calendar, and build thy storied castles in the air, guided by the teachings of the past.

Winter is the time of the Year's diplomacy. She sends the birds away that they may not tell her secrets; she strips from the trees the rustling leaves, from the plants the budding flowers, lest in the joyous innocence of their life they might betray her plans; upon the lips of the brook she lays an icy finger, and over the earth thus made so bleak and dreary she throws a mantle of silence, mysterious in its purity. Within her palace, rich in the festive mistletoe and holly, she silently pursues her work. Though bereft of all these fair ministers to her court, not entirely unaided does she toil. Wintry Elves, and magic Jack Frost she retains, capable in themselves of silencing the world to awe and reverence.

Spring is the season of the Year's debut. Now our Queen, robed in garments of the brightest green, bedecked in violets and daisies fair, first trips forth to waken earth from her long slumber. The merry brook once more babbles over the pebbles in its mossy bed; the song-birds return to aid her now in the execution of her plans; and the tiny leaves put forth from bush and tree to peep at their fair sovereign. All nature comes forth to participate in this festival of Life and Beauty.

Summer is the season of the Year's victory. At early morn, nature's smile of encouragement, the golden beams of dawn, wakens earth from a night of rest to engage in the busy pursuits of the day; at eve, with the last beams of a setting sun, she caresses earth to sleep again. Sol drives his chariot in triumph over the Heavens; the busy bee gathers honey from the clover blossoms in the meadow; the gorgeous sun-flower waves its stately head with the summer zephyrs, and the silken tassels of the corn, ripening in the heat of the torrid sun, sway in graceful movements to and fro.

Autumn is the season of the Year's retreat. She clothes the earth in the most gorgeous tints before retiring again to her wintry solitude, and stands aloof in admiration of her work. The gaily colored leaves, however, soon drop from their branches to the ground; the golden rod rears its pretty head over all the wide expanse of prairie; the birds betake themselves to other climes; and the persimmon ripens with the first touch of frost. The old year, now, must soon age into the obscurity of the past, and a younger one be ushered in to take her place.

Thus, the pursuit of Time—thus, his never-ceasing labors! With a fond farewell to "'97," we hasten to welcome to our realm our new sovereign, propitious in her auspices, and blessed with Nature's beauty. Patience only do we ask and a chance to begin anew. Welcome to our life!

"JEAN."

THE MERRY CHRISTMAS TIME.

Green were the meadows with last summer's store;
The maples rustled with a wealth of leaves;
The brook went babbling to the pebbly shore,
Down by the mill with its cobwebbed door
And swallow haunted eaves;
The air was warm and calm and clear
As if hoar winter could ne'er come near.

Now the wide meadow lands, where we strolled,
Are misty with a waste of whirling snow;
The ruined maples, stripped of autumn's gold,
Sigh mournfully, and shiver in cold
Yet something makes this frosty season dear,
The merry, merry Christmas time is here.

The merry Christmas with its generous hoards,
Its fire-lit hearths, its gifts and blazing trees,
Its pleasant voices uttering gentle words,
Its genial mirth, attuned to sweet accords,
Its holy memories!
The fairest season of the passing year;
The merry, merry Christmas time is here.

The sumac by the brook have lost their red,
The mill-wheel in ice stands dumb and still,
The leaves have fallen and the birds have fled;
The flowers we loved in summer are dead,
And wintery winds grow chill.
Yet something makes this dreariness less drear
The merry, merry Christmas time is here.

Since last the panes were etched with Christmas frost
Unto our lives some changes have been given;
Some of our barks have labored, tempest tossed,
Some of us, too, have loved, and some have lost,
Some found their rest in heaven.
So, humanly, we mingle smile and tear,
When merry Christmas time is drawing near.

Then pile the fagots higher on the hearth,
And fill the cup of joy, though eyes be dim
We hail the day that gave our Saviour birth,
And pray His spirit may descend to earth,
That we may follow Him.
'Tis this that makes the Christmas time so dear,
Christ, in His love for us, seems drawing near.

—P. D.

A CHRISTMAS RESCUE.

For some days before the opening of our story, the snow had been falling steadily, wrapping all the world in a silvery mantle, as if the Father looking down with compassion upon us had spread a fair white cloth over the stains and bloodshed in our land, fitting emblem of that white-robed peace, which was soon to stretch its pinions from shore to shore of a re-united country.

It was nine o'clock on Christmas eve. The great fire blazing on the open hearth, half revealed, half concealed the occupants of the room. It brought into bold relief the figures of Mr. and Mrs. Dent as they rested in their easy chairs; it fell lovingly on the face and form of a young girl, at one time throwing into startling brilliancy the stately, regal, yet withal, coquettish beauty, which was her dowery from the south land.

Indeed, a beautiful picture she made, surrounded by the witchery of the firelight as she rested there and dreamed of the war, which had been so cruel to her. In one short year she had seen home, father, brother, all swept away. The war had swept through her land and passed on, leaving behind it a devastation worse than that of the celebrated Huns. Wild with anguish, she had then offered her services to the Confederate Government—offered and been accepted. Thus the identity of Betty Girard, the belle and the richest heiress of the South, was lost in that of Rose Coghlin, most trusted agent of the Confederate Government.

Minute after minute passed; a quarter of twelve sounded Betty could stand it no longer. "Can anything have happened?" exclaimed she, "the message said distinctly he would be here on Christmas Eve, I will look outside and see if anyone is in sight." The clock ticked steadily on. Finally with a great rumble and burr, twelve clanged out rustily.

Hardly had the last stroke died away, when a rap on the pane brought Mr. and Mrs Dent to their feet. Yes, there it was again; a third time it sounded, a low distinct knock. Mr. Dent had by this time reached the window. "Who asks admittance at such a time?" said he. "A weary traveler," was the reply. Then in a low spoken voice, "For the South." At the same instant a young man vaulted lightly through the window into the room.

Mr. and Mrs. Dent at sight of that well known face, rushed to him and dragged him to the fire. "Why, Robert, Robert Cameron, is it possible?" said Mrs. Dent. "Can I believe my eyes? But not one word until you have been warmed and fed. Ah! we know what starvation means in time of war," and she bustled away, returning shortly with a well laden tray of dainties.

The moments fairly flew; no one noticed Betty's continued absence, no one noticed her return. The first idea they had of her presence they heard her gasp, rather than say, "Robert, Robert Cameron!" and with a bound he was at her side, his arms clasped around her, whispering loving, reassuring words.

For a moment consciousness seemed to have forsaken her, but as the danger of the only one she loved forced itself upon her, she rallied. "Quick! you must fly," she panted, "you are discovered. Oh, my God! it is already too late." Instantly the lights were extinguished, but the sound of hurrying footsteps and quickly issued orders told them that indeed it was too late. Too late to save himself but not to save the dispatches.

To dart back in the shadows, carrying Betty with him, was but the work of a moment. He pushed the packet into her hand; "Care for these more carefully than life. On no account let them be taken; if necessary, burn them. Good-

bye, dear!" holding her in a last embrace, and he would have parted from her, but she clung to him in an agony of despair. "Oh, Robert! Robert! I cannot let you go. It is to certain death; let them take me instead." "Hush, dear, hush; they are at the door. Would you have me lose honor as well as life? I go, but I leave my honor with you. Care for the dispatches."

Just as the door swung open admitting the soldiers, Capt. Cameron stepped forward into the full glare of the light.

His only thought being to give Betty time to hide the dispatches, he made no objections when he was arrested and searched, only making the process as long as possible.

Meanwhile Betty trained in the exigences of the war, to quick acting and quicker thinking, the moment she saw Robert standing in the midst of the soldiers, had darted from the room, rushed down the narrow path, pulled from its resting place a stone, undisturbed since the days when she and Robert had played postoffice, thrust into the opening the packet of dispatches, replaced the stone and returned to the house in time to make the signal to Robert signifying that the dispatches were safe.

Through all the excitement following she had borne up bravely; but when it was over and the last sound had died away in the distance, she gave way utterly. Crouching before the fire, it was evident that her thoughts were following her absent lover; she heard his accusation, his defense, and his sentence. Sob after sob burst from her as she imagined him about to be shot, and springing to her feet she would have rushed after him, but slipped and fell forward. Unconsciousness had happily come to her rescue.

As Mr. Dent, who had gone with the soldiers, entered the room, she showed the first signs of returning consciousness. "Robert?" she gasped.

"There's not much to tell, Miss Betty," returned he. "Of course you know the sentence a 'rebel spy' receives. But it seems, although no dispatches were found on him, there is reason to believe he is possessed of very valuable ones; so his life has been offered him if he will produce them. He is given until tomorrow to decide, and meanwhile is confined in the Spanish Library, in your old home, the Balfour House."

"Capt. Cameron will never purchase his life at the price of his honor," returned she proudly. "But I must see him; I can do that, can I not, Mr. Dent?"

"I'm afraid not, afraid not, Miss Betty. Though if any could, it would be you who know the old Balfour House so well."

At the words "the old Balfour House," and "the Spanish Library," a strange tale flitted through Betty's mind, a tale learned in her childhood days when she knew every nook and corner of the old home. Intimes of such poignant sorrow the mind seems to act entirely separate from the body, grasping ideas with a clearness of vision, and working out results with strange exactness, impossible often to the body in full possession of all its faculties. Thus it was with our heroine; in an instant she seized upon the only possible means of seeing her lover, or effecting his escape.

Hurriedly she recounted to the Dents the tale, and gained their aid to help her carry out her plan.

* * * *

It was Christmas night and the old Balfour house rang with unwonted merriment. All formality had been laid aside and the soldiers turned eagerly from the sight and sounds of the carnage of war to the more peaceful pursuit of celebrating Christmas day.

In the great dining room a company of soldiers were making merry over the departing day. The youngest of the party was relating a story, none other than the one which had occured to Betty.

"And then," he continued, "the Lady Evelyn consented to elope with her handsome lover. On Christmas night her father gave a great ball in

her honor, but unperceived she managed to slip away to the 'Spanish Library,' where she and Donald were to meet. Instead of the expectant lover, she found an angry father who accused her and threatened to banish her forever to a lonely convent. At this moment Donald himself entered the room. As may be expected words ran fast and furious, until finally Sir Ronald drawing his sword and calling on the other to defend himself began a battle for life.

A start ran through the company as each heard the rapid strokes as of swords hitting together.

"At length a blow, fiercer than usual, broke through Donald's guard and he fell, pierced to the heart. The Lady Evelyn, paralyzed by the suddenness of events, now rushed forward with a scream and threw herself on the dead body, only in time to receive a second blow which Sir Ronald, wild with rage, aimed at the prostrate form."

The entire company leaped to their feet. Distinctly, all had heard the fall as of some heavy body, followed by a woman's scream, wild, piercing, agonized.

For a moment they stood uncertain, until the General said, "It is nothing, gentlemen, only some drunken soldiers fighting. Christmas day, you know. Will you continue your story, Captain?"

"Well, her father, overcome with grief, felt his anger vanish. In vain he would have called the dead to life; in vain he implored his daughter's forgiveness. She gave no sign, save that the expression in her great dark eyes as they fell upon him made all afraid. She never spoke nor moved again and in a few short hours had ceased to breathe, her arms still clasped around her lover.

Such, gentlemen, is the tale, and it is said that on Christmas night the Lady Evelyn, clad in her ball dress, and shroud still walks the halls of Balfour House, enters the Library, where the scene I have described is enacted, and then disappears; and it is further said at whomever the glance of her eyes fall upon dies within a week."

The clock chimed eleven, the very hour for Lady Evelyn's walk. It was no imagination that aroused the company this time; for Bill Wront, the guard of the prisoner, tumbled into the room, his face whiter than any ghost's. "Save me! save me!" he shrieked; "Oh! It's comin'! It's comin'! Ough! It's looking right at me! Oh, the ghost of the Lady Evelyn! Ah! I'm dead! I'm dead!" And with that he went off raving and they could make nothing more out of him.

Insensibly they all wavered. A man may be as bold as a lion at the cannon's mouth and yet the veriest coward where superstition is concerned. Bill Wront was proverbially the bravest and most daring man in the camp. And to say the least, it was an odd coincidence. Even the General's voice wavered a little as he said, "The fellow has been drinking too much, and has been frightened by the nightmare. Guard him while we look to the prisoner."

Their tour of inspection disclosed nothing unusual Captain Cameron was apparently in his room, undisturbed either by the noise or the ghostly visit, so they returned, leaving a second guard in place of the befuddled Bill.

Meanwhile, what of our heroine? Doubtless, you have discovered her intention. It was the very tale you have heard that had suggested to her the plan of escape. Clothed in an ancient ball gown, she had passed down the hall, carrying in her hand a great lighted candle and trusting in her likeness to her great-great-grandmother's picture to complete the disguise. The sentinel, half asleep and half drunk, had fled at the first sight of the ghostly visitant, leaving her free to seek her lover and carry out her plans.

Late as it was the condemned man had not closed his eyes in sleep—time enough to sleep after tomorrow. When he too was aroused by the beautiful figure of the Lady Evelyn flitting into his room. In an instant the ghostly wrap-

pings were dropped and he beheld Rose Coghlin, dressed as the exact counterpart of himself. "Quick, dress yourself in these clothes and escape before anyone comes. Haste! make haste! you can easily escape—a horse awaits you at the end of the garden. Ah, go, before it is too late! Do not stop for me. I have planned my own escape, too! Have you forgotten the secret passage that leads from this room? Haste! haste! you have not a moment to lose! Perhaps on some future Christmas, when this dreary war is over, we may meet and be happy yet." By this time he was robed in the ghostly disguise. Realizing that without quickness both were lost, and knowing that the secret passage was known to Betty alone, clasping his daring sweetheart in a last embrace, and seizing the packet of letters, he glided through the long hall, out into the darkness of the night. Here he threw himself upon his horse and in a few short minutes was far beyond pursuit.

His rescuer meanwhile prepared to take his place; she well knew that it could not be long before someone came to take the place of the fleeing sentinel. If she could succeed in delaying them, Capt. Cameron's escape was assured. But first she advanced swiftly to the canteen which the frightened guard had left, and dropped into it some fine white powder. Then she retreated to the farthest corner where the shadows were thickest. It was here, surrounded by gloom, her face turned to the window, that she had managed to deceive the General on his tour of inspection.

The new sentinel paced up and down in front of the door, resolved that no ghost should drive him from his post. The minutes dragged along. Suddenly the sentinel observed the canteen half full of liquor. He hesitated a moment, but the temptation was too strong. He lifted it up and drank the contents at a gulp. Minute after minute passed. "Would the powder never take effect?" His steps dragged slower and slower; well, he could watch as well sitting down; his eyes grow strangely heavy; they shut and opened, and shut again, then followed a long drawn snore.

Betty bent for a moment over the sleeping man, then turning swiftly into the room, she approached the picture of the Lady Evelyn and touched the secret spring. True to its purpose, the picture slid back, disclosing a stairway leading down through the house; in an instant she seized upon the only possible means of seeing her lover or effecting his escape. To slip the bolt back and accomplish this was but the work of a moment. Within one hour from the time, Betty had first started upon her daring attempt, her lover was free and she again at home with the Dents, dreaming perhaps of another Christmas day, not far off now when she and Robert, all fear of war passed, would meet again, and again in the old house, and recount the talk of Lady Evelyn's ghost.

L. M.

A CHRISTMAS STORY. THEY MET AGAIN.

It is Christmas day. On the bleak and rocky shores of Sweden, stand two peasants—a young man and a young woman. Are they admiring the blue-gray sky, which stretches over head, or gazing wonderingly on the steep, rocky heights towering so far into space, or listening to the roaring of the ocean as it breaks on the sands at their feet? No, these surroundings have ceased to stir any emotions, other than feelings of weariness, and a longing to reach out into unknown regions.

Peter, that is the young man's name, has made up his mind to leave home, but finds it a sore trial to leave Brenhilda, just when they were to be married; still he had grown so weary of his ordinary life, that he longed for a change, for something better, and so concluded to seek his fortune beyond the seas, in that much heard of country, America.

A few days later, and we see Brenhilda sitting alone on her little door step, looking out across the wide sea. She is lonely, but hopeful. Peter has gone far away, but he will come back; he will have money, and they will be married. She smiles as she pictures this future and forgets the present. Such is the lot of woman. She must work and wait. She must be patient and courageous.

Peter, meanwhile, is sailing over the rough sea, farther and farther away from his home, and his friends. He is leaving behind him what has always been nearest and dearest to his heart, his home, his sweetheart and his country. He is entering a new, strange land, where he will have no friends, no home, but the work. There is so much to be done in a big city, there is always some means for an honest man to earn at least a living. However, it would not always be a mere living he would earn. Some one would discover his worth, give him regular employment, and then it would be but a few years before he would have sufficient to realize his dream. Then what rejoicing there would be in that little village so far away — when Peter would come home!

He has landed in America at last. With a bouyant step and a brave heart, he begins his new life. With unfaltering courage and perseverence he pursues and continues his search for employment. For weeks and weeks he searched, until the weeks lengthened into months, and still no sign of employment. True, he had always managed to get something to eat, and a place to rest, but this was not success. Not the success he had dreamed of. This is the cause of that careworn, haggard face, that was once so bouyant and hopeful. The bravest of hearts will falter, and the brightest eyes grow dim, and so he wrote to Brenhilda, "There is so much to be done in a big city, but there are so many to do it."

Now years have rolled by. Peter has always done his best, yet he is not much better off. Sickness and disappointments have come upon him. He has not the means to go home. How far away it sounds. How could he have been induced to leave it? There he had lived the simple, free life of a peasant, and he had been happy, for did he not have as much as his comrades. Now it is the day before Christmas again—a dreary, lonely day. Discouraged and disheartened he seeks his cheerless lodging, for he is out of work, without money, and he feels a strange illness creeping over him. "There will surely be a change," he muttered, as he gazed into space, and there was a change. The next day he was found exhausted and unconscious on the steps of a public building. He was taken to the hospital. Only the best of care could bring him back to life. His ravings moved all to tears, through them they could almost learn his life. He talked of home, his friends and Brenhilda. The city life moved on oblivious of all this misery. What is one individual to the many thousands, who are enjoying this busy, active life?

And Brenhilda, how had life gone with her? She had lived through two years very well, there was no use to worry. She had conned over Peter's promise to come home in two years. Then her hopes would carry her forward to the time of his home-coming, how nicely she would arrange the house, what a good supper she would have, for he would take the first supper with her, and what a pretty dress she would wear; it should be red, for he always admired her most in that dress.

But alas! When the two years passed they brought no Peter. His letters finally lost their hopeful tone, but when they stopped altogether, it seemed more than she could bear. Was he sick, was he dead, or had he forgotten her? Bravely she strove against the last thought, he would not, he shurely could not have forgotten her. She who had loved him so, who had been so faithful to him. Waiting in such anxious suspense is more than any human being can bear for a long time. She must know for herself, if he were sick or in trouble and if so, she must help him.

Those simple people, living comparatively away from the busy world, know so little about the conditions outside their narrow confines. To determine to sail for America and find Peter, meant one thing, but to reach that city, and to really find Peter was another, and a very different thing. She knew where she should go to take the ship for America, for she had gone there with Peter, and she knew in what city he was; but that was all. She reached America, but no one can ever understand the weary, anxious months of wandering, and inquiring that followed

her landing. A city seemed to her a world. So many, many houses; in which one could Peter be? She wandered for days and days, her purse growing lighter, her strength growing weaker, and yet she must seek employment as her supplies are fast dimishing. She finally secures a position as nurse to an invalid lady, but her health was declining. She pined and fretted in her loneliness. One morning she was missed from her accustomed duties. They found her ill and tossing in a raging fever. Having no one to care for her, she must be sent to the hospital.

It is the morning of Christmas day. Three years have passed since the parting on that bleak and rocky shore; three years of wandering, he hunting for work, and she hunting for him, and then for work. In ward number ten, Woodlake Hospital, there seems to be an exceptional quiet, an exceptional anxiety. All interest is turned toward the third bed; the nurse is standing there, leaning over a sick man. His thin, pale face, bright supernatural eyes, and emaciated hands, all verify what every one is expecting in that ward. His breath grows shorter, his eyes dimmer and dimmer, until they fade entirely; he is quiet. The nurse weeping, leaves the room, and in the corridor meets a companion, who accosts him with the question, "Your patient?" He is dead; and yours? The poor little lady just breated her last—calling, calling for Peter.

How strange! Some unseen magnet has brought them together, if but to die, and at the gates of a better world—They meet again.

G. P.

A FRESHMAN'S REPORT OF THE FLAG PRESENTATION.

On the morning of Nov. 22nd, our school was presented with a beautiful flag, the national emblem, by the Kansas City Chapter of the Sons of the American Revolution. When the exercises began the hall was well filled with people, among whom were many visitors. On the platform sat the speakers, a few of the members of the Sons of the American Revolution, the Board of Education, and the officers and teachers of the school. The wall behind the platform was decorated with the flag, which was soon to belong to the school, strips of bunting of the national colors, and a few portraits of prominent Americans.

Hon. H. S. Hadley, delivered the presentation address and Hon. R. L. Yeager the response.

Mr. Hadley told briefly the story of Philip Nolan, the "Man without a country," written by Edward Everett Hale, and advised us all to read it. He spoke of the time when the civil war began "but now," he said, "we see in the golden rays of the setting sun of the nineteenth century all of those differences settled, there being 'no North, no South, no East, no West.' "

Mr. Yeager said that the flag of a country is the protection of its countrymen, and we cannot honor ours too much. Our flag represents our liberty, and any other one than that of the stars and stripes, should not be raised in this land of freedom. Mr. Yeager suggested that a color guard be appointed to care for the flag.

Hon. F. A. Faxon spoke about "Industry and Patriotism." He related the following anecdote of Abraham Lincoln: "An English 'snob' once observed that 'English gentlemen never black their own boots,' to which Mr. Lincoln replied, 'Whose boots do they black?' "

An excellent declamation, entitled, "Public School Patriotism," was delivered by Maurice Simpson, a fellow student. The central thought of this declaration was, that next to God and parents, our country should receive our greatest love and respect.

The school children of today should study to prepare themselves for a time when their influence may affect the welfare of this country for good.

WALTER HIDDEN.

BOYS' MANUAL TRAINING.

Educational Value of Manual Training.

Nothing testifies so strongly the sociological condition of these, the closing years of this century, as their rapid and revolutionizing steps in scientific progress. The day dawn of an age of correct and accurate thinking is already upon us. The problem for solution is: What is the best method, and how is the mind trained to think correctly and accurately?

Everyone knows that accuracy in any department of life is obtained only by persistent practice. The picture, the symphony, the oration; each may have occupied but a few hours in its production, but what of the years of toil, trial and strivings ere the artist gained this ability? We must take them into consideration. To become accurate one must *do*. To think accurately one must be able to produce in material the conception, i. e., make the idea real, giving it an objective existence. Until the individual has an accurate conception of a thing he is unable to produce it accurately, and an attempt to produce it in the real immediately demonstrates the degree of accuracy of the idea; it is only after repeated modifications and readjustments that the idea becomes a definite something. The training of the mind and hand simultaneously is, then, the natural way as, witness the manner in which an infant learns the physical properties of matter. Manual training has been placed in our educational institutions for this purpose, and take it as it is, it has an educational value which no other study possesses. People are fast discarding the notions of trades, carpenters, blacksmiths, and machinists at the mention of manual training; for their reason tells them that it is as much an intellectual study as any ever placed in a curriculum. Let anyone who is still doubtful as to whether manual training is an intellectual as well as a physical process, try to "square up" a piece of pine making it exactly one and one-half inches square and eight inches long. To illustrate the value which men of intelligence place upon such matters I quote from The American Machinist: "The British Scientific Society will pay £1,000 for a cube whose dimensions will be exactly one inch." Does anyone think that modern achievements in mechanics—our electric locomotives, the steam plants of our "ocean greyhounds," and the long distance transmission of light, power and sound by electricity—were produced by a chance, or "lucky" thought? They were produced in a happy union of theory and practice by the man whose mind was trained in such a manner that as certain as an idea evolved that idea could be made to have a definite objective existence—he knew he could make it himself. It is easy to see that a mind trained to think in mathematical quantities such as inches and fractions thereof, and to produce exercises which have for their dimensions these quantities, will

think more accurately than one trained in any other way.

Kansas City points with pride to her educational system, and well may she be proud of her Manual Training High School, which without doubt, or prejudice is the best equipped institution of the kind west of the murky current of the Father of Waters. Nothing has been spared to make it equal to the best. Each piece of machinery is driven by its own motor; and down to the claw-hammers in the shop everything is as good as money will buy.

The crowning fact is that this institution is free. Tuition may be had for the asking by one who is intellectually and physically qualified to do the work.

S. H. M.

The Shops.

What boy with American blood in his veins does not feel at home, when in possession of a plane, saw or hammer, tinkering at or making some object? You will find none. This is the reason for the shop department being a favorite with the boys. This department is under the supervision of Mr. Moore and Mr. Arrowsmith from the St. Louis Training School.

Each boy is provided with planes, saws, chisels, and in fact almost every tool necessary in the construction of a building. All wear white caps and blue aprons.

Our first exercise was the planing and squaring up of a block one and a half inches square and eight inches in length. We were given rough material for this exercise, and on some of the sides not more than three sixteenths of an inch could be planed off. Many people would think this task not difficult, but let them try it for themselves, and form conclusions afterwards.

The second exercise was one similar to the first, except that we had to saw angles of thirty, forty-five, sixty and ninety degrees. Our third was an exercise in sawing and chiseling. Our fourth the making of a bench hook.

We not only work with wood in the shop, but are expected to keep our planes and chisels well sharpened.

The Tools Express Themselves.

"Something attempted, something done,
Has earned a night's repose."

It was night in the shop, and all the tools had certainly earned a night's repose, but the cross-cut saw sighed, somebody else sighed, and so did somebody else, then the try-square asked, "What is the matter?" The saw said, "I've worked all day and overtime, too." "Well, so have we," answered all the other tools, "and we don't complain against moderate overwork, but there is too much now." "I am afraid if we assert ourselves, Mr. Moore will sell us to somebody who is worse," suggested the thumb-guage. "Oh, you don't count, you are always under somebody's thumb," said the chisel who is supposed to be sharp. "Come you," said the plane, who is peace-maker of the tools, because he smooths things over, "let us all go back to bed." "I will tell you what to do; let's strike," said the mallet. "What good would it do?" asked the rip saw. "Now, they are only too glad to get me to work; they coax and persuade before I will move an inch, and if a boy tries to force me I tear his block so it is unfit for use. Such tactics avail not." This conversation occurred in the shop a few nights ago. The rip saw's speech is certainly true; it is the hardest tool we have to handle. The planes and chisels are locked in drawers, but one of the drawers happened to be left unlocked and this was probably the means of preventing a fight, or a violent quarrel. The controversy was ended by the entrance of the night watchman.

WILL HALL.

Shavings.

Line up! Boys!
Grind your chisels!
Saw to the knife line!

A certain manufacturer wants boys to work on piano tops. Boys should have applied to Mr. Arrowsmith yesterday.

A manly boy is manly in the shop. It takes a good boy to make a good exercise. A manly man to truly succeed.

Keep your drawing on your bench when you are working on an exercise. That's the place for it.

There's a meter dactylic, pedantic,
There's a meter for gas and for hate,
But the meet 'er to me most romantic
Is to meet 'er alone at the gate.

The Drawing Department.

In the southwest corner on the third floor of the Manual Training building is a large spacious room, well lighted and amply fitted up. This is the boys' mechanical drawing room. The pupils number two hundred and seventy and are divided into six classes. Each boy has a table and a locker, in which he may keep all his drawing materials. We have just supplied ourselves with drawing sets. This department at first was a mixture of boys and girls under the directorship of Miss Murphy and Mr. Sloan, but alas we had to be separated, to wander in a strange drawing-room just across the hall.

MECHANICAL DRAWING ROOM

Willie had a little plane, a little plane, a little plane.
Willie had a little plane, its iron was full of nicks,
And every time he planed the stock, planed the stock, planed the stock,
And every time he planed the stock, the teacher sighs and kicks.

In the shop's low whir and bustle,
Don't be "half a chick!"
Get down to your work and hustle,
And stick! and stick!! and stick!!!

Try to do everything on the *square*.

Our first exercise was the drawing of a block one and a half inches square and eight inches in length, showing the top, side and end views. All work was done free hand as it is yet. The next day these drawings were taken to the shops where we were given rough material out of which we had to plane and square up our first exercise. The drawings since the first one, while no

exactly a repetition of it, have been very similar, and an explanation of them would be of no interest to the reader, yet don't convey the idea that we have been at a standstill, for we are progressing with such rapidity that in a very short time you may expect to see some of the most magnificent and artistic buildings not only planned by us, but also erected by the carpenters and mechanics now in training in the different departments.

THE ART ROOM

GIRLS' MANUAL TRAINING.

Drawing.

Of the three departments, sewing, cooking and drawing, the drawing is perhaps the most important, for it is the foundation of all manual work. In the recent classification of the drawing classes most of the boys went with Mr. Sloan, but the girls and a few boys who preferred the free hand drawing, remained with Miss Murphy.

At present we are having a drill in form and proportion. This is necessary before we take up the advanced work. Our drawing models include both antique and modern forms.

To show us the contrast between modern and ancient art, our teacher called our attention to the pictures "Bernardino Pintuncchio" and "Laborers in the Vineyard." The former is a very old picture, and illustrates the return of Ulysses to Penelope. The anatomy is very poor. None of the muscles of the body are brought out. Everything is stiff and cold.

The other picture is more modern. Every muscle of the body is shown, and all the folds in the garments are very graceful.

The artist of the latter had studied the anatomy of the body, while the former knew nothing of it.

Another picture that is very fine is "Madame Lebrun and Her Daughter." Madame Lebrun painted it herself. She is a beautiful woman, and the picture is a fine specimen of woman's work.

It may interest some to know that the

sketches hanging in our art room, were done by one of the Manual Training High School's artists, Miss Murphy.

Charcoal Scrapings.

When doing the blocking in, Miss Murphy told us that any kind of a head could be made out of a block. There is hope for all of us.

A smart boy, after seeing the number sixty imprinted on the top of a cast of a foot, asked, "Does that mean sixty cents a foot?"

Bernardino Pintuncchio. Freshman learned the letters. Latin pupil pronounce.

Did the boys prefer the free hand drawing, or the girls?

Miss Murphy:—"Paul, you have drawn those ears too small." Paul, after Miss Murphy had correctly enlarged the ears:—"How you have metamorphosed those ears!"

Sewing.

If there's a hole in your coats,
I rede ye tent it;
A chiel's amang ye takin' notes,
And faith he'll prent it.—*Burns.*

Something to wear is as essential as something to eat. Some may derive the idea that we are learning to be dressmakers. Oh no, we are learning to do plain sewing, so that if we tear our clothes we can mend them neatly. Or when having a garment made, we will know what materials will be most suitable.

The majority of girls who began sewing, thought they could already sew fairly well, but their first day's experience taught them that they did not know how to thread a needle.

The first thing they did was to equip themselves with needle, thread, thimble, emery, tape measure and work basket. Then came the exercise book, in which they describe every stitch that they make.

After being taught how to thread a needle, and how to hold it, the girls were given two pieces of striped goods, and were taught how to match stripes.

THE SEWING ROOM

On finishing two models of this kind, they did some weaving in order to get some idea of how cloth is made. On their next model they were taught six different stitches. We are soon to have a model book in which we will keep all

our models. Then in case we forget anything, we can refer to our written exercise books, or examine our models.

This year's work will include a skirt and a shirtwaist. The heavier garments are not made until next year.

As yet there are no sewing machines but there are to be some as soon as the girls begin work on their skirts. In making the skirts, the girls will fit one another, but they will cut out and make their own.

Out of Our Scrap Bag.

The girls in the sewing classes would like to inform the chemistry pupils that they enjoy the fragrant odors from the laboratory.

In having our pictures taken the other day, the photographer used a flash light after which the exhaust draught carried off all the smoke in a remarkably short time.

It is quite evident that the floors are not deadened between Mr. Sloan's room and the sewing room.

Cooking.

"We may live without poetry, music and art;
We may live without conscience, and live without heart;
We may live without friends; we may live without books;
But civilized man cannot live without cooks."

—*Lucile.*

We all like to eat good things but it is not everyone who can make them.

In the cooking department of the Manual Training High School we are taught the art of cooking. We may never have to practice it, but how can we show others, if we know nothing of it ourselves.

It seems strange, that so many families employ the most ignorant persons for servants. They forget that the servant is responsible for the health of the whole family, and should therefore know what food is proper for the human body.

Ours is one of the brightest rooms in our beautiful new building, and although it is not our permanent quarters, we use it to good advantage.

All of the girls wear white caps, aprons and sleevelets. The first thing we provided ourselves with was a cook book, by Fanny Merritt Farmer. We then got our note books, for we not only cook the food, but we must know the history and composition of the materials of which the food is comprised.

The average daily diet of a person should be, (approximately:)

Proteids	.4 lbs.
Starch, etc	.1 "
Fats	.4 "
Salts	.1 "
Total (dry)	1.9. lbs.

Another important point is the serving of the food, for a great deal depends on how the food looks when one sits down to partake of it.

About the first things we made were preserves and jellies. This might seem strange to some, but we were obliged to make these things while the fruit was in season.

The custom of working in small quantities in the Domestic Science laboratories of institutions and colleges is practiced in our school.

We have heard people say: "Will the girls be able to make things in large quantities?" It would be easier to cook in large quantities for many reasons. Most receipts are given in large quantities, and in the cooking it is easier, for the fire does not need so much attention as when in small quantities.

We are allowed to eat the water and milk foods, but the fruits have been put up in jars, and set on a shelf, where they tantalize everyone who looks at them. This is true, especially of the boys, who make frequent calls on Miss Bachellor. No one knows what for.

It may be interesting to some to know how we dispose of our cooked food.

After preparing our jellies, preserves, chopped pickles, etc., we are allowed to take out, *as much as we like* in a saucer

and eat it. The rest goes into one large sauce pan. We do not see it again until it appears on the cupboard shelves, when it is ready for sale, the price being just the cost of materials.

In making our egg-nogg and punch, we were strictly prohibitionists. We had a splendid substitute for liquor—fruit juice.

When we made bouillon, Miss Bachellor told us what kind of meat she had bought and by referring to our beef chart we had no difficulty identifying the spot from which the meat was taken.

To learn the process of canning, each girl put up a pint jar of peaches, and I am glad to say that not one jar has spoiled.

Everyone who visits our room remarks about the cleanliness. Each girl tends to her own table. If it is not clean she takes her little brush and sapolio and scrubs it.

The most critical audience would be compelled to call us neat.

Crumbs.

All of the domestic science rooms have pictures on the walls. In the cooking room there are pictures of fruit and vegetables, as well as food charts.

Girls, if you don't wash your dishes clean, you are going to be sent for.

The wash of the sea on the wind swept strand,
Is a sorrowful sound I ween.
But not half so sad as the classic refrain,
"Can't you wash those dishes clean?"

Custard should stand undisturbed until cool. *Never stir it.* But poor girls, they were so hungry they could not wait, so they stirred it with a vengeance.

The one aim of our school is to give us a practical education.

We are very grateful to the Board of Education for our part of this beautiful building and are striving to show our appreciation of their generosity by becoming useful women, under the guidance of kind and patient teachers.

Echoes.

Rumors have reached our ears, that a certain teacher below us has remarked that, "A boy's feet were the most *decided* feature about him." But passing remarks like these do not interfere with us, as *feet* are a secondary consideration with us, because our measurements rarely exceed inches.

With drooping head and weeping heart,
Miss Murphy said at our depart,
"I am S—Lone."

EMINENT EDUCATORS ON MANUAL TRAINING.

Industrial education does not, as I understand it, mean a lessening of intellectual vigor. There is no design of lowering in any degree the standard of scholarship. It is in no way associated with learning a trade or serving an apprenticeship. Industrial education does not fit the child for any particular industrial work, but for any work in which, in the emergencies of life, he may be forced to turn his attention. Change the adage, "Knowledge is power," so that it may read, "*Applied* knowledge is power," and we have at once the key to our present civilization and progress. —*Henry Sabin, State Superintendent of Iowa.*

Public education should touch practical life in a large number of points; it should better fit all for that sphere in life in which they are destined to find their highest happiness and well-being. —*Prof. John D. Runkle, Ex-President Massachusetts Institute of Technology*

Let the child be taken to school whole

instead of in parts; let him be considered to have a body as well as a mind.—*Anna C. Garlin.*

It is not enough to instruct a boy in the branches of learning usually taught in our common schools and there leave him. He must be allowed a chance to prepare himself to earn a livelihood. It takes more than a mere knowledge of books to make a useful member of society and a good citizen.—*State Superintendent Wickersham, Pennsylvania.*

It is desirable that children should learn to think, but is indispensable that they should learn to work, and the great question is, how to render the desirable thing and the indispensable thing mutually helpful and supplementary.—*Dr. H. W. Hudson.*

We cannot continue in this age full of modern artillery to turn out our boys to do battle in it equipped only with the sword and shield of the ancient gladiator.—*Prof. Thomas Huxley.*

Far be it from me to detract in any way from the glory of that splendid and self-sacrificing body of educators who have made illustrious the title of teacher. But the teachers have been so compassed and pinioned by legend, tradition and environment that they have been unable, except within a recent period, to emancipate the curriculum. Steam, electricity and inventions have hardened the conditions of competition and multiplied indefinitely the number of specialties. In the briefest time, and almost without warning, we are brought face to face with the problem that education and prosperity, education and livelihood, education and morals, education and law, education and liberty, are indissoluably welded together. It is only within our own generation that the perfection of the old education for all the requirements of life has been questioned. The groping after the desired results within the accustomed lines led to the creation of that most abused and misused word, "culture." Culture became popular. It was the badge of a higher order of selected morals. It excused the universal range of superficiality; it stood for a little information about everything and no accurate knowledge of anything. It became the veneer of the quack and finally the decoration of the dude. But it was not culture, either in its loftier signification or in its degraded use, which the time required; they needed the practical training of youth for the new and the sterner realities which science and invention had created. The old education simply trained the mind; the new, trains the mind, the muscles and the senses. It is the happy inspiration of youth that the distinguished characters of the past are presented through the lenses of the years in heroic proportions. It would not only be sacrilege; it would be a calamity, if modern criticism and research stripped Washington of his majesty, Hamilton of his genius, Jefferson of democracy, Jonathon Edwards of his intellectual superiority, or Daniel Webster of his peerless pre-eminence; but, for all practical uses of the labrynth and revolution through which we are passing, these worthies of the past are as far from us as King Arthur and his Knights of the Round Table, or William Tell with his arrow and his apple.—*Chauncy M. Depew.*

In these days of repeating rifles, Harvard sent me and my class-mates out into the strife equipped with shields and swords and javelins,—*Charles Francis Adams.*

The flowers of literature should be cultivated and gathered, though it is not wise to send men in our fields of industry to gather the harvest when they have been taught only to cull the popies and push aside the wheat.—*Sir Lyon Playfair.*

People often talk and write as if school-time should be utilized for teaching those things which a child is not likely to care to learn in after-life, whereas the real aim of school education should be to prepare, as far as possible, for the whole work of life.—*Sir Philip Magnus.*

In the department of athletics we have made only a beginning, by organizing a Foot Ball Team. We hope, however, to add other dapartments in the Spring.

"A sound mind in a sound body" is a happy combination, and we wish to take up athletics with this thought as a guide. Abnormal developement in any line produces monstrosities; a very undesirable result, and one to be avoided by all well balanced people. "The happy medium," "The golden mean" is the part of wisdom. It is possible to carry physical industry to an unwise extreme, and thus dwarf and dull the brain. Abnormal developement of any part means a sacrifice of some other part, and in this way harmony is destroyed.

Going back to what we have done in Athletics, the Foot Ball Team has made a beginning and acquired some wholesome experience. We are crawling now and hope to be able to walk by and by. A gradual developement is always best, and what we have done was good discipline. We belong to the crowd who do the pulling and scrambling at the foot of the ladder, but anticipate more room as we climb toward the top. While it is a grand thing to be born great, it is grander to achieve greatness. We have had several games and with one exception have had to say, "We have met the enemy and we are his'n." But this we regard as a trifle, for the illustrious Longfellow said, "It has done me good to bes omewhat parched by the heat and drenched by the rain of Life." Furthermore it is unwise to despise small beginnings.

The history of Athletics is interesting. Among the ancients it was studied as a branch of art and occupied a position of much dignity. Physical strength and activity were highly honored by the Greeks and in order to enter the Olympic or other public games, birth, social position and moral character were considered—a perfect pedigree was required. Chrysuppus and Cleanthes, "the learned philosophers," the "eloquent Plato," and "meditative Pythagoras" were among the ancient athletes. So we see learning and athletics can go hand in hand if common sense and good judgment be of the company.

Taking a retrospect of our season we have been fortunate in some ways. We have taken an inventory and find no one minus an ear or even a tooth; none need crutches, glass eyes, or wigs. Who knows but we have been weaving a web, with which to ensnare some unsuspecting and proud conquerer. "The race is not always to the swift," and "All is well that ends well."

To the leading spirits, Harrison, Quest, Rowe, Lindsay, and to thet eam, we take off our hats in acknowledgement of their endurance, industry, tact and manliness.

Our first issue.

Freshman: "Where are we at now?"

That sweet bashful boy? Mr. Douglas.

Lytle Harrison is very fond of water.

Miss Settle:—"Oh, how my face hurts me!"

Miss Bachellor said that it was "prohibition egg-nog."

Boys will be gladly received in room 20 the third hour.

Why does Miss Miller enjoy herself so in the physics room fifth hour?

Everybody:—"Isn't Miss Gilday the jolliest little woman you ever saw?"

Boys when you want a nice haircut go to Rechner's.

Young lady addressing the janitor:—"Have you found my heart?"

Miss Lieberman said, "He was intoxicated with his own verbosity." Who?

Where is the young lady who goes by the name "Golden Rod?"

Several teachers asked to be excused from teacher's meeting. Do these teachers teach by precept?

Yes, girls, Mr. Moore is married, but Mr. Page is still on the market.

We are pleased to hear that Madge has returned from her wedding (?) trip.

Ask Miss Settle why she was away from the chemistry laboratory some weeks ago.

To the Faculty:—If the Assembly Hall floor wears out, charge it up to Mr. Slavens.

"What a surprise it would be if you would know your lesson," said Mr. Richardson to a certain boy.

Miss Wilson:—"Now pupils, when you sing 'Great God Our King,' just look at me, please."

If your razor needs fixing up, take it to Rechner's.

Lady visitor to Mr. Morrison:—"That Venus de Milo is lovely but the artist forgot the arm."

How horrid of the young lady to insinuate that Donald couldn't reach the door knob.

Buy your Christmas gloves of the Louvre Glove Co.

Martha is not a walking advertisement for the cooking department as she puts salt instead of sugar in her cocoa.

Why does Miss Purnell wear that one little curl "in the middle of her forehead."

We don't doubt that the decorations on the "Art Club's donation," proved very useful to the poor.

We don't believe that all the girls wish they could take mechanical drawing.

A TRAGEDY IN A NUTSHELL.

Canto I.
Boy,
Gun,
Joy,
Fun.
Canto II.
Gun,
Bust,
Boy,
Dust.—*Porcupine.*

Louise, don't blush when asked to take the chair; you will learn.

In short hand, it is hard to catch Mr. Peters, unless - - - the rule is too BROAD.

The matron's room is always crowded. We wonder that there should be so much sickness (?) in the school.

What a change has come about; Mr. Richardson has shaved off his Vandyke whiskers.

Aimee:—"Oh, that poor fellow! Twelve cents for a special delivery stamp —and the letter to me."

It would seem that some of the Freshmen have forgotten that "little folks should be seen, not heard."

Who are the people who enjoy a delightful tete-a-tete every day in the Assembly Hall the fifth hour?

Just look at the girls in the cooking and sewing classes. Boys, doesn't this look well for the future?

"A Study in Scarlet," Mr. Burton's face when he struck the waxed floor at the Social Session.

Miss Magill is not partial to raspberry juice in egg-nog.

Mr. Black says that he is so rushed that he can not do a single thing. Don't rush so fast Mr. Black.

Myrtle's admirer had better keep quiet. "Little pitchers with big ears" sometimes stand about the corriders.

A well known young man of the Belles Lettres was seen in the cooking room with two dolls. Is it his second childhood?

When Miss Kelly talks about people at the Monday Assembly hour she must remember that they may not be entirely deaf.

Dancing taught correctly at Duncan's.

The slight earthquake shocks felt in Miss Casey's room are only Freshmen falling from the pinnicle of their stools in the room above.

Wonder why the boys were afraid to eat the pudding brought into Miss Fisher's room the other day?

Teacher—"What is meant by Legendary Greece?" Student:—"History at this period was made up of leggins (legends)."

A teacher remarked to Mr. Vivian that one of such a strong family name should have more life, even after a football game.

Passenger, to conductor:—"How often does your motor car kill a man?" Conductor, tartly:—"Only once."

For the world's broad field of battle,
And the bivouac of life;
Boys, go ye to the training school
And pick you out a wife.

One of our most popular teachers is said to be a Fisher of bad spellers. At any rate her net is always full.

Mr. Merrill seems to have learned the true tactics of pedagogic warfare. When the class runs out of ammunition "it takes to the woods."

A young lady speaking of a well known society young man in our school asked: "Is he the missing link?" What did the young lady mean and who is the young man?

"The first part of my paper wasn't heard." "No the people made too much noise getting out."

Amo! Amas! I love a lass
That's tall and very slender.
Amas! Amat! I'll bet my hat
She's got another "feller!"

"What do you make in this shop?" asked a visitor of Prof. Morrison, while looking through the wood working department. "We make men," was the quick response.

"It's too bad, Miss Moore, that my notes come at a time when you have such a mash on your hands."

Jay:—"I wonder if Professor P. meant anything by it?" Guy:—"By what?" Jay:—"Why; he advertised a lecture on 'fools,' and when I bought a ticket it said amit one."—*Owl.*

The young ladies who so anxiously inquired whether Mr. Miller is married or not will be relieved to know that he is still an unappropriated blessing.

"Sie wohnton allien und hatten nichts mehr." "They lived alone and had nothing more." Freshman, translating:—"They lived alone and had nightmare."

The young lady, who used the gas stove in the cooking room to curl her hair, and left a lock behind, may have the same by applying to Miss Bachellor.

Mr. P. "The Prince of Wales has become alarmed at the continued good health of the Queen and has sent to the United States for our rain makers, for fear his reign in England will be short."

The Belles Lettres Society held a Social Session on November twenty-sixth. The evening was a perfect success and the hospitality of Mr. and Mrs. Swan is fully appreciated.

We understand that each young lady in our cooking department is required to eat what she cooks. We admire their heroism and devotion to the cause, and hope there will be no serious results to chronicle.

The studies in the M. T. H. S. are so closely correlated that the sewing pupils are wrapped in the noise of the drawing room and steeped in the refreshing odors of the chemical laboratory.

While it is a source of deep grief to us to announce the sad accident which befell our friend, Paul Kirtley, it is a source of greater pleasure to report a marked improvement in his condition.

A good sentiment:—"I don't take pie crust promises from anybody."—Arrowsmith.

The girls in the cooking classes look very neat and tidy in their new caps and aprons. How wishful and hungry the boys look as they pass, with halting steps, by the doors of the cooking laboratory.

Mr Kent's recently organized class is now under a full head of steam. The boys have quickened their mental gait, and now allege that they can keep step with their genial instructor.

Athletic Association take notice: Jack Schwitzgebel is a great base ball player. He got behind a stump to catch a swift liner.

When the type-setter set up the names of the editors of the NAUTILUS all went well until he came to the names of the Manual Training editors; here he tried five times before he got one of the names correct, and then, alas, discovered that he had used all the type in doing it.

A new law in physics:—The deportment of a pupil varies inversely as the square of the distance from the teacher's desk.

It is wonderful how the sickness has decreased since the enforcement of the rule that all pupils must have a permit from the office to go the matron's room.

The business managers of this paper wish to thank Fred Graff for his liberal help in getting advertisements.

Professor:—"How much are apples per dozen when fourteen cost twenty cents?" Student:—"Let X equal the number of apples in one dozen."

Mr. Arrowsmith:—"If I could buy some of you boys for what you are worth and sell you for what you think you are worth it would be a great investment."

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The Nautilus

Vol. I. No. 2

February 1898

Build thee more stately mansions, O my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast,
Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea!

—*Oliver Wendell Holmes.*

MANUAL-TRAINING
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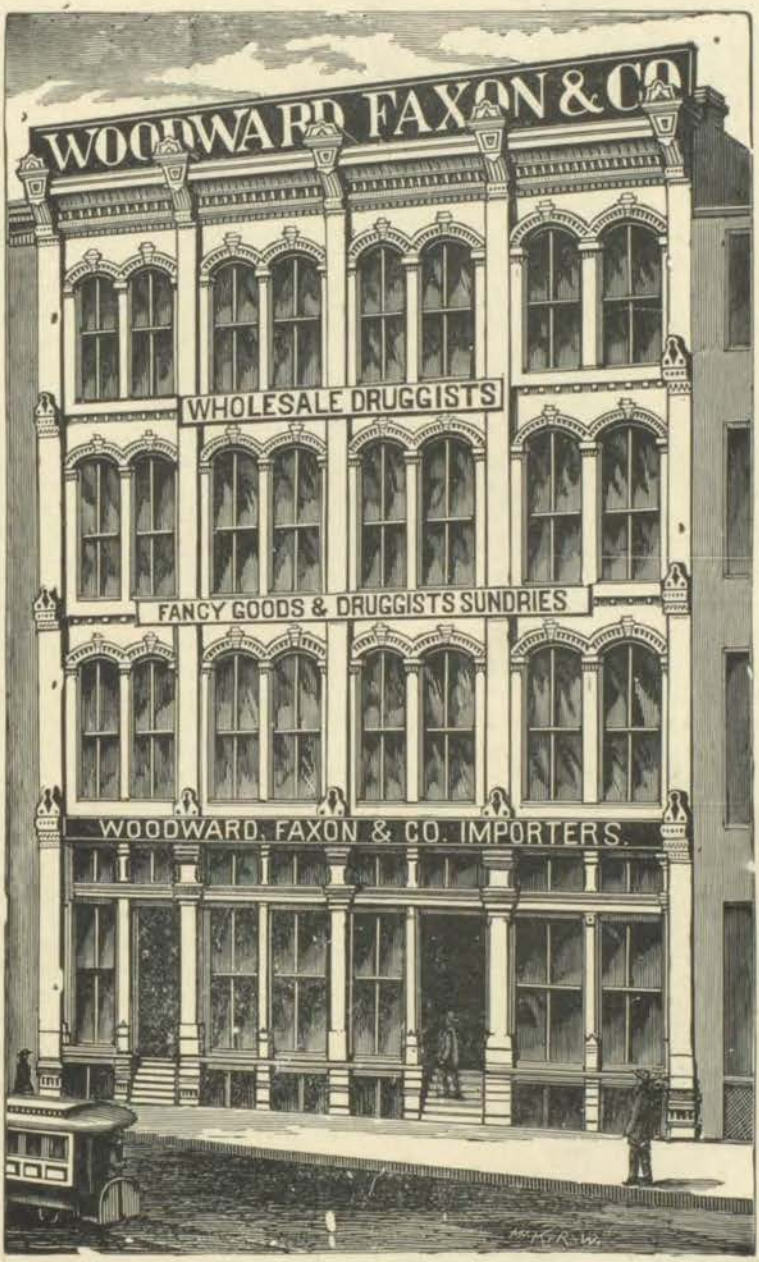

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THE NAUTILUS

Vol. I. KANSAS CITY, MO., FEBRUARY, 1898. No. 2.

LITERARY DEPARTMENT.

THE MANUAL GIRL.

You rave about your Vassar girl, with stylish dress and hat,
Her pretty face, her dashing air, and all such things as that.
She cannot hold a candle to
The Manual girl I say
For she's the girl that's sure to make
Our lives as bright as May.

She's sweet as peaceful odors from the blooming locust tree,
Or cargoes of the zephyrs, wrecked upon some flowery lea.
She's bright as June's own sunshine, and
As precious as a pearl,
For happiness is always with
Our joyous Manual girl.

The last and fairest flower on the thorny stem of Time,
A woman who can reason, and who thinks to cook no crime.
She knows the teeming pages of
Crowned Science and Queen Art;
The Manual girl of all the girls,
The girl to do her part.

A cultured mind to mould her face, a health that laughs to see,
Her cunning hand and graceful form, and all her spirits free.
In admiration you will thrill,
And all your being whirl,
When you have spent a sunny hour
With our gay Manual girl.

Her presence breathes a music through the dull prosaic days,
For she's the girl that does not grasp each shallow, tinseled craze.
A true, whole girl whose soul will lead
Where Truth's bright brooklets purl,
And that is why I'm singing of
Our noble Manual girl. —*S. Tar.*

A MASQUERADE BALL.

The pupils of the Westphalia Academy for young ladies were all in a flutter and had been for the last two weeks, the teachers finding it almost impossible to get the girls to concentrate their minds upon the subject in h a n d—namely, their lessons.

There was something in the wind. This the principal was sure of, for she had not been the most model, strict principal of the Academy of Young Ladies for five years for nothing.

Even an outsider could see that something was up from the whispers and comments that were abroad.

Katherine Grey in mythology class whispered to her seat mate:

"Don't forget the spread tonight. She's to be away. I'm surprised that she would ever have the assurance to face us after that. But how shall we get there?" said Miss Katherine, settling herself for a prolonged conversation.

"Shall we"—but what "they should" was never disclosed for just then the professor said:

"Ten demerits for d i s o r d e r, Miss Katherine."

"Horrid old thing!" pouted Katherine. But she said no more, for ten demerits were not to be despised.

But now to explain the cause of this excitement.

The young men of Westphalia were going to give a masquerade party on February 14, St. Valentine's night, and when they issued their invitations four weeks before, they had invited the girls of the Academy to attend.

Miss Graham, the principal, had decided that she did not want the responsibility of chaperoning twenty young ladies, so in reply to the card of invitation she had written that "the young ladies regretted that they could not be present," but in attending to all these details, she had failed to inform the young ladies of either the invitation or her treatment of it.

But one of the girls, Bess Jones, whose brother was to be one of the hosts of the masquerade ball, had found it out and had told the girls, and highly indignant were they.

Mr. Jones explained it to the young men, and it ended in each girl receiving an individual invitation to attend, which each promptly accepted. They had been planning and thinking what they should represent, until an idea struck Katherine Grey, that evening at the feast, which was given in honor of Miss Graham's absence, and she said:

"Girls, I've an idea!"

"No?" "Is it possible." "How serious!" came from all sides.

"Now leave off chaffing, can't you?" answered Miss Katherine, indignantly.

"What is your idea, Katherine?" asked Marian.

"Well, if you want to know, it is about the masquerade. Let us go in a body and let us impersonate some one of Shakespeare's characters. No two girls alike, I mean. What say you?"

"Grand!" "Wouldn't it be simply stunning?" "That's a go!" came in a chorus from the chaffers.

"All right. Remember, no girl is to tell her name or to give us away in any manner. Now, right this minute, let each one of us decide whom she will be and then spend the remainder of her time preparing her costume. Then and there was wild confusion. At last it was decided.

Katherine was to be Portia, because she was so dignified and tall; Marian to be Ophelia, because, the girls said, "She'd look too stunning when mad." And each of the twenty was at last given her name and the costumes were being discussed with an eagerness with which girls only can show for such things, when the bell rang for the return of Miss Graham, and the girls rushed off to their respective rooms.

Then two more busy, bustling weeks, and on the night of February 14, 1890, had you happened in the halls of the "Academy" you might have heard something like this: "Say, can you lend me a hairpin? Mine are all gone." "Hush! There comes a 'prof'." "Miss Graham is coming down the hall, Kathie, look out." "Say, Margaret, can you let me have a button-hook? I haven't one to my name, and"—was there ever such good luck!

The carriage rolled to the door and Miss Graham went out.

It took but a few seconds for twenty girls to go softly down to the side entrance, out the side door, then across the road to the hall.

When they arrived, they found that they were the last to go down, so they hastily arranged themselves and then marched down to join the grand march, two abreast.

Juliet and her Nurse led the conclave, Lady Montague and Lady Capulet followed, conversing in the most friendly manner, then came Imogene and Ophelia, then Portia and Desdemonia. Slowly and solemnly they filed into the ball-room, creating the wildest excitement by their impressive and beautiful appearance.

Every one asked every one else who they were.

The young men were the most excited of all. Who were they? How did they come? Not a man was to be seen with them. Could it be possible that they were some Ladies Club of Students?

There was such an organization in the town, and they finally decided that this was what the Shakespearean representatives were.

The girls enjoyed the sensation they created, and they danced, and skillfully parried questions as to their identity,—though it was a little surprising that no one thought of the girls of the "Acad," as it was familiarly called—and had, as Katherine said: "A perfectly grand time," until the hour to unmask came.

Here was an emergency that they had not prepared themselves for, but they acted with their usual calmness and deliberation, and, by order of Katherine, did not unmask.

Then again curiosity ran high, and as the girls passed, people would say; "Who can they be!"

It at last became very embarrassing to the girls for their act was being misinterpreted, but they dare not unmask. They were too well known, and should Miss Graham get hold of this escapade, no telling what would happen. But Katherine was equal to the emergency and passing the word to the girls, they re-organized ranks and were preparing to march in state to their dressing room when they noticed a lady who, also, had not unmasked and who had represented the "Witch of Endor," step in front of their ranks. When the dressing room was reached, and the girls, one by one, began taking off their masks, the "Witch" deliberately and slowly took off her mask and then faced the young ladies.

It was Miss Graham!

"Young ladies," she began, in her most terrible tones, "Young ladies, you have behaved in a most shameful, a most disgraceful manner tonight,"—the girls stood paralyzed—"in a most disgraceful manner in coming here without my knowledge or consent, and—" but

she got no further, for Miss Katherine exclaimed:

"Well, Miss Graham, this is rather cool. I say that you owe us an apology for not telling us about those invitations for tonight, but nothing will be said if you'll allow us to finish the dances unmasked."

Strange to say, Miss Graham entered no form of protest against "Portia's" argument, but seeing that the girls had discovered what she had done, merely nodded her head in assent.

The Shakespeareans, led by the "Witch of Endor," re-entered the ball-room still masked, but as they approached the Master of Ceremonies, they unmasked, and great was the applause and astonishment of all present, to see the dignified Miss Graham and her pretty pupils.

The class of 1891 of the Young Ladies Academy of Westphalia, although they are far apart now, hold a delightful memory of St. Valentine's night, 1890.

SADIE KINLEY.

SO.

I

Whenever you hear
People hail with a cheer
Our school far and near,
  You may know
  It is true;
Report has it right
Our school's "out of sight,"
With a future so bright,
  It is so;
  All so, too.

II

In the botany hall
We have samples of all
Nature's plants, short and tall,
  As they grow
  When they grew;
And when any we need,
We supply it, indeed,
By sowing some seed;
  It is so;
  All sow, too.

III

Just over the way,
Throughout the whole day
Quite alone the belles sway,—
  Not a beau
  Is in view
Who with courage has faced
The beauties there placed,
As they hem, stitch, and baste;
  It is so;
  All sew, too.

IV

Mathematics' a grind,
But that we don't mind,
For 'tis pleasure we find
  As we go
  In fields new;
To learn to compute,—
At that we're so cute;
Our teacher's a "beaut,"—
  It is so;
  Also, two.

V

In chemistry rooms,
'Mid sweet-scented fumes,
The Junior consumes
  H_2O
  And Cu;
He experiments then,—
Takes two parts oxygen,
And some sulphur again;
  It is so.
  SO_2

—*Djessiarre.*

A VACATION TRIP TO THE GULF OF MEXICO.

To a person unaccustomed to traveling a trip from Kansas City to the Gulf of Mexico means a great deal. Accordingly it was not without much hustling and hurried preparation that my friend and I got ready to take a trip to Sabine Pass, Texas, where we were prepared to spend the Christmas holidays duck shooting.

At seven o'clock Thursday evening, December 23, we entered the Pullman car "Maggorie" full of the thought that now we were beginning to realize our dreams for which we had worked so hard during the past month. Fortunately L——'s father came with him to the train, and, as luck would have it, met Col. Wright, a wealthy Arkansas cotton planter, whom he introduced to us and who was going our way as far as Texarkana. We appreciated this opportune meeting, particularly as he was a good story-teller. We found this out that very evening while waiting for the train to start, as it was delayed three hours owing to some mishap.

In the morning we woke up at Joplin, Mo., about half past six o'clock Near where the train stopped were three large ore smelting furnaces which were evidently in full operation, as we could see the characteristic violet flames which come off of melted zinc. South of Sulphur Springs, Arkansas, the train ran along the Cowskin river. This is a beautiful stream in the crystal waters of which many kinds of fish, best known to anglers, abound. Beyond the rocky hills bordering this river the land is more flat and cultivated; here were acres and acres of young orchards, which told us we were in "The land of the big red apples." Several miles farther on we entered the hills again. Almost the first thing that met our gaze was a clump of pine trees. The effect of this bit of green, after miles of dazzling snow, was quite refreshing. At Stilwell in the Indian Territory several Indians and white men were loafing about the depot. Many had feathers in their hats and all but two, who wore red blankets, were dressed like civilized laborers. The soil of these regions has a bright red color due to the iron oxide present. This ore is extensively used in commerce as red paint. Near the town "Bunch" the Indians have large well cultivated farms. On one of these we saw the first cotton patch on our trip. A little farther on the trees took on a new aspect under the effect of mistletoe which grew in clusters on the branches. While looking at this new sight, L—— called my attention to a mountain. It was a long distance off and at first I thought it was a blue cloud towering above the horizon, but after my eyes grew accustomed to the distance, I could see the pine trees distinctly outlined against the snow.

There had been a heavy sleet storm here only two days before and the havoc it had wrought was evident from the broken and tangled condition of the trees. Small pines were bent over by the weight of the ice until their tops touched the ground. Holly trees were plentiful in these forests, and with their bright red berries gave everything a delightful Christmas-like effect. At Mena, Ark., the train changed engines and during the interim we got off and took a hurried glance at the town. It is situated in the heart of a mountainous country on a plateau not so large but that part of the future city may be crowded to a picturesque position on the sides of the mountains. Owing to the melting of the recently fallen snow the streets were very muddy. However, this did not deter the people from doing their Christmas shopping, as the sidewalks were thronged with men and women. Deer, bears, and wild turkeys hung in front of the meat markets in profusion. Holly and mistletoe were used to decorate the stores and shops with pleasing effect. The business like aspect of the town was personified by the editor of the *Mena News*, who gave us a copy of his paper and a piece of mistletoe. It was almost dark when we left Mena and we gladly resigned our-

selves to Col. Wright, who told stories of war and romance with such enthusiasm that we would shudder or laugh, according to the nature of his narrative. At Texarkana the colonel left us. Surely in his home in Southern Arkansas, "God's country," he called it, the hours are always gay.

It was Christmas eve. The city of Texarkana was ablaze with Roman candles and rockets. Add to this the warm air and a gently falling rain and a strong Fourth of July effect is the result. Thus it was not without considerable effort that we made ourselves think that this is one of the Southern ways of celebrating Christmas.

The railroad from Texarkana to Port Arthur runs through swamp lands so full of water, owing to the recent rains, that fast traveling over the soft roadbed was impossible, therefore at daybreak Christmas morning we were only twenty miles south of Shreveport, Louisiana. At 10 A. M. we overtook two freight trains which had run off the track at a curve. We did not get away from here until five o'clock that evening. During the intervening time we went out into the woods and gathered botanical specimens. In our rambles we found a violet. Nearly all the trees are festooned with the grey "moss" or lichen which grows so abundantly throughout the South. In spite of the green of the pines and hollys the general tone of the woods was silvery grey; the trunks of the pine trees, the carpet of dead pine needles, and the long streamers of lichens all aided this effect. Add to this a grey sunless sky and you can imagine what a dreary Christmas we had.

At Beaumont, Texas, we left the pine barrens and the remainder of the way ran through a flat prairie country. In this town, as in all the gulf coast places, the cisterns are built above the ground; *i. e.*, they are simply large tanks for holding the water supply of a household.

We arrived at Port Arthur at 9:30 A. M. December 26, twenty-five hours after schedule time. This new town is situated on Sabine Lake, fifteen miles from the Gulf of Mexico. This lake is so shallow that a pier a half a mile long is necessary to allow sail-boats to land. Business is thriving. Working for the railroad is the principal occupation. When the immense ship canal that is being dug from the gulf to Port Arthur is finished, a new industry will be added. Both the depot and the Sabine hotel are fine specimens of modern architecture. After a stay of two hours, we boarded the steam launch, "Boston," bound for Sabine Pass, and arrived there at noon. Sabine Pass consists of two parts, known as "New-town" and "Old-town." We counted twelve ships in port, at "New-town" and ten in port at "Old-town" At "New-town" there are two enormous slips for vessels to harbor. It is the terminus of the Southern Pacific R. R. It has also a large new hotel. The chief industry of the people is loading ships and furnishing supplies for the same. A variety of vegetables are raised near here, which are shipped to Kansas City for its winter market. Oyster fishing is successfully engaged in by many. In the country back of Sabine Pass cattle raising is the principal industry of the people. Here is the winter home of the mocking-bird, the rails, the bitterns, the turkey-buzzard, black birds, meadow larks, swallows, herons, and last but not least, snipe, geese and ducks.

It was for the enjoyment of hunting the last named three, that we had traveled nearly a thousand miles from home. We were advised, by an acquaintance there, to board in Sabine Pass, and ride horse-back to the marshes. We tried this plan, but it proved unsatisfactory. Owing to the distance, it was so late in the morning when we arrived at our hunting grounds, we found the ducks had finished their breakfast and were all sitting on the water alert and active. Tiring of the tedious ride, back and forth, we obtained board at a farm house near the marshes and also near the home of Mr. Lane, a hunter, whose acquaintance we had formed a few days before. From that time to the end of our stay we enjoyed good hunting.

A description of one day's hunt will suffice to show the rest. Before sunrise, we started from Mr. Lane's house, in company with him, all fully equipped for business. We were dressed in old clothes and our shoes had holes cut in

the bottoms to let the water out. Waders will not do, as one often gets in the marsh so deep that the boots get full of water. The hunting grounds are the brackish marshes, which are overgrown with tall rushes and canes. Here the mallard ducks flock in great numbers, in the evening, to be near their feeding grounds early in the morning. They eat the roots of a kind of grass called "duck grass." The little ducks and the canvass backs, stay on the lakes and bayous. A person needs a good rifle to kill them.

The morning, that we started before sunrise, was frosty; the marshes were covered with ice, an eighth of an inch in thickness. Through the marshes we waded, shivering in spite of ourselves. Soon we began shooting and forgot the cold. The ducks flew well all morning and each killed several during the forenoon. The place where we met to eat our dinner was near the feeding grounds of the snow geese or "brant."

"If you are careful in sneaking upon those 'brants,' you can get four or five at one shot," suggested Lane. With this plan in view we separated and began stalking the geese. I tied my handkerchief to the top of a cane stalk and laid my coat and hat on a pile of rushes nearby. I then went toward the place where the big white birds were feeding. When in about a hundred yards of the flock the tall rushes ended, and I had to depend on a few bunches of grass for cover. Laying flat down in the water, I worked my way slowly and cautiously until I was nearly in the midst of the flock. The geese were not eating and appeared to feel the presence of an enemy; they were standing, with their long necks stretched up, uttering the most ear-splitting sounds I ever heard. Fearing they might take alarm and fly, I looked to see if I had a chance to kill "four or five at one shot." Bang! bang! rang out the guns of my comrades on both sides of me. My geese instantly took flight. I sprang to my feet and brought down two as they flew off. The result of that day's hunt was thirty ducks and six "brant."

There are many other kinds of birds besides geese and ducks in these marshes. Among these is the glossy ibis, a specimen of which I was fortunate enough to get. I also brought home with me specimens of many other birds of this locality.

Whenever you kill a duck in the marshes, you should watch the spot where it falls very closely or you cannot find it. Sometimes the duck is only crippled and after looking for it awhile, you think you hear it splashing in the water a few yards off. Then you go tearing madly through the rushes in that direction only to find it is nothing, but an alligator. That is what we were told—we did not see any alligators.

Tuesday, January 4, 1898, we bade good bye to the ducks and marshes of Texas and started home, where we arrived without a mishap, Thursday morning, having spent a very enjoyable vacation never to be forgotten. C. R.

KEEPING OUR RECORD.

In our school no attempt is made to show a pupil's relative value by a per cent mark. We simply accredit him with the successful periods which he spends in his classes. By successful periods we mean that he has performed the work prescribed in a manner which indicates that his time has been profitably spent, and that he is ready to advance with his class. In assigning credits the question with the teacher is not, is this pupil as bright as some other, but has he done his best, and is that best effort good enough to justify passing him without detriment to the rest of the class.

Pupils come to school with every rank of natural ability. It is manifestly impossible to show by a per cent—even if it were desirable to do so—the relative ability between the boy who bears the stamp of genius on his brow, and one

who plods his weary way to mediocriaty. There is no good reason why our school, which is intended for the good of both of these boys, should continually advertise this difference, and taunt the slow pupil with what he cannot help. There is not the slightest danger that the bright pupil will not be discovered, or that his merits will not become generally known. The pupils know, and form a very accurate estimate of one anothers ability, and the love of approbation which comes from a consensus of opinion of our fellows is a stronger incentive to effort than any artificial system of grading can be. If a pupil is careless and indifferent with his work, and often absent from his classes, he does not deserve his credits, though he may, by a natural shrewdness, be able to pass his examinations. But the pupil whose character is developing by a persistent attention to his work, and who is forming those habits of patience, order and punctuality, which are the prime essentials to success in life, deserves all the encouragement the school can give.

It is the purpose of our system not to give credit for what nature has done for the pupil, but for what the school has done for him, and what he has done for himself. Nature will take care of herself, and the pupil thus gifted will not be injured because he is credited with the same number of days of successful, profitable work, as the pupil who has perhaps worked harder, and developed more, but who has less to show for it. The world needs men and women who will conscientiously do their best, and do it every day. The sole object of our education is to acquire the habits of doing our best, and the boy or girl who does this, and who maintains an intelligent comprehension of the work he is pursuing, will receive the full measure of credits. G. B. M.

MISS FISHER'S NEW BOOK.

It is men who make the state and men who make the university. It is not the public exhibition of superiority in brains or muscle that attracts adherents to a party or students to a college; it is the men, those who do the daily drudgery, endlessly repeating the same old tale that the benefit may be to others. Not their public career nor class-room words are the forces which influence, but their daily life and work as men.

So in our school. Though our building be the finest, our equipment most complete, our courses broad and thorough, is not the unanimous expression of friendship for us. and the constant exhibition of interest in our welfare due to the personality of those who have founded and who constitute our school rather than to any of these other things? Not entirely the reputation of our faculty as teachers, but largely also their lives as men and women and the scholarship which they have evinced by their productions external to the school-room, —here lies the attractive force.

There has appeared recently, from the press of McClurg, a book entitled "A Group of French Critics;" its author, Mary Fisher, is none other then our pains-taking teacher and associate. Despite its title, the book is not one which appeals to a class merely, but its subject matter is so general, and its treatment so attractive, and every page reveals so plainly the well-read scholar and sympathetic lover of literature that there is much to interest every one within its covers.

The author's object has been chiefly to introduce to us a side of French literature and character almost entirely unknown, for "most of us know French literature through the blusterers." "The French are grown used to having the best in them ignored; they are accustomed to hearing themselves called wholly frivolous, and their literature

characterized as of the sewers and gutters. In the consciousness that these are not correct statements, they can quietly ignore them, but we need to know better." The English reader, "knows all the blustering writers,—those who acquire notoriety by affectations and by scandal; but where there is any originality, any native manner of writing that is pleasing to cultivated minds, it escapes him."

We are introduced in this book, then, to five representative critics; by a lively description of their lives, interspersed with frequent apt quotations from their writings, we are led to see them as they actually were. With a few deft touches Miss Fisher pictures each man so that he stands in bold outline before us, almost speaking. Thus, in describing Scherer: "Among the countless thousands who find it easier to adopt their opinions ready-made, here is a man whose opinions are a growth proceeding from his experiences. Here is a man who finds it more respectable to think even at the risk of thinking wrongly than not to think at all." The critic is quoted as saying: "'A poet cannot be a corrupt or frivolous man. The cultivation of art implies a moral life.'" "'A man may have dirty hands and do beautiful work, but the beautiful work is not made with the dirt.'" "'The conception of the beautiful is something pure, and all impurity is an attack upon the æsthetic perfection of a work. The great poet is healthy.'" "'An author's merit is not a question of the number of his readers, but of who the readers are.'"

The next critic studied is Bersot, who was long a teacher and an authority on education. It is a pleasure, then, to read such words as these: "He opposed that requirement in the educational system which forced a child of thirteen to choose between a scientific or a literary subject of study, children of thirteen, not being safe judges of their aptitude or even of their inclination." "'An educated man ought to know something of letters and something of science in order to be interested in all intellectual subjects. He ought not to be a stranger to the charms of literature, and with regard to the marvels of industry, steam, light, electricity, he ought to be able to follow an explanation at least to the point where it is lost in formulas.'"

The next author, Girardin, seems almost to foresee the modern ideal of education when he says that criminal records show such a small percent of scientists that "'this fact warns us, in connection with the education of the young, to avoid a training too exclusively rhetorical. Let science and mathematics have their due share of attention. Encourage young men to take up a trade rather than a profession.'" "'The greatest eulogy that can be pronounced on a man is to say that he knows how to get out of a difficulty,—not by his wit and intelligence alone, but by the skill of his hands if need be.'"

As a simple picture of a true scholar we are given this remark of Bersot: "'We ask but one thing, and but what is right,—respect for our contrary opinions. We do not believe what we like, but what we can; and nobody is responsible but for the pains he has taken to search for the truth.'"

In conclusion, Miss Fisher draws several deductions: perhaps the most attractive one is this: "Art cannot free itself from the obligation to be moral, because it has to do with the beautiful and the normal. In its highest manifestations it addresses the intelligence, not the senses." But the one thought which strikes home to us as truth, especially as age teaches us dispassionate insight is that which she expresses in these words: "Summed up briefly, the teaching of these critics is, that agitation is neither action nor force; that the revolutionary spirit is, for the most part, the spirit of youth and discontent, and not necessarily the kindling of patriotism or of righteous anger at the sight of injustice."

J. C. R.

OUR FIRST PIANO FUND CONCERT.

The first concert given by our school, for the purpose of making a payment upon our new grand piano, occurred on the evening of February 4.

The programme included three excellent choruses from the musical department of the school and many rare numbers from professional musicians out in the city.

Miss Olive B. Wilson, who has charge of the department of music, is to be congratulated upon the success that she has achieved in training 140 young voices in so short a time to render such difficult compositions, with so much expression. The singing of the pupils showed conscientious training and marked progress. Much credit is due Mr. Sill Legg for so gracefully accompanying the choruses and soloists.

The chorus, "*The Image of the Rose*," was enthusiastically received by the audience. The beauty of this number was greatly enhanced by the delightful handling of the "*Obligato*" by Miss Margaret Northrup,—whose clear and well modulated tones could, at all times, be easily distinguished from the volume of sound of the full chorus.

We are delighted to find our efficient teacher of chemistry, Mr. Miller, to be such an artist with the violin, as was proved by his clean, sympathetic rendition of a lovely "*Cradle Song*." In this part of the programme the audience was especially favored, for Mr. Miller and Miss Pet Lyle are among the most gifted young violinists in our city. Miss Lyle executed a most difficult "*Fantasie*" with remarkable skill and won from the captivated audience hearty and persistent applause.

Miss Dorothy Lyle's soprano solo, "*Sing On*," was rendered so pleasingly that she was compelled to respond to an enthusiastic encore.

Miss Olive B. Wilson and her sister Miss Sarah Wilson captured the house with their spirited and artistically rendered duet, "*I Pescatori*." Their voices blended beautifully and the shading of their work indicated careful schooling and refined musical conception.

The novelty of the entire programme was the saxophone playing by Mr. Lee, who showed by his soulful performance of "*The Palms*," that he is devoted to this unique instrument with its organ tones.

Miss Davies' spirited work at the piano proved that she is mistress of that instrument and that we have made no mistake in the selection of the piano for our use.

The audience was charmed with Mr. Wm. Ormsby's tenor solo—"*I'd Rather Be Poor With You.*"

The large and appreciative audience left the auditorium highly pleased with our first concert.

The following is the programme as it was given.

(a) "Awake, My Trembling Lyre"...C. Keeler
(b) "Forth to the Meadows.....Schubert
Chorus.

Piano, "Love's Awakening.....Moszkowski
Miss Nellie Davies.

Violin, "Nocturne".....Field
Armand Miller.

Soprano Solo, "Song On".....Denza
Miss Dorothy Lyle.

"The Image of the Rose".....Reichardt
Chorus, with Obligato by Miss Margaret Northrup.

Saxophone Solo.....
William E. Lee.

Vocal Duet, "I Pescatori".....Gabussi
Miss Wilson and Miss Sarah Wilson.

Violin, "Fantaisie de Solon".....Leonard
Miss Pet Lyle.

Tenor Solo, "I'd Rather Be Poor With You"
.....Lang
Wm. Ormsby.

"Goodnight".....Abt
Chorus.

THE NAUTILUS.

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Address all communications to

THE NAUTILUS,
Manual Training High School,
KANSAS CITY, Mo.

The recent close of a term and its general reckoning up, suggests a thought to us which may be worth while recording. What are we working for,—credits, per cents, averages, a blue ribbon, medal, diploma, or for a definite amount of information and an awakening and development of the intellect? To judge from the solicitude that some of us show for figures merely, we are more concerned about a four or a five than about the real question in the case:—Have I learned something which I didn't know before? Do I feel a keener enjoyment in study? These questions are the only ones that ought to trouble a student who has successfully passed in his work. The most perfect system of marking can never be infallible, so long as a student cannot wear his mind on his sleeve for his teacher's inspection. The best that can be done is only an approximation, which if the teacher has discretion, judgment, sympathy and intuition is in ninety-nine cases out of a hundred right. In the hundredth case, it is the student's own fault if it is not. The thoughtful student soon learns this, and is satisfied with the decision. He soon learns, too, that the world isn't going to ask him what per cent or how many credits or points he got at school, but how much he knows and what use he can make of his knowledge. The sooner we all come to this conclusion, and feel that it is our own mental growth that concerns us and not the teacher's markings, there will be less task-work and mere empty form about our studies, and more genuine enjoyment of them.

The wisdom of the Board of Education in leaving the east end of our building so that it would require another wing to complete the symmetry of the structure has not only been already demonstrated, but the necessity for the

addition has already arrived and the demand urgent. Every available room from basement to Assembly Hall is now occupied, and the large number of new pupils who have just been promoted from the ward schools necessitated such a combining of old classes to form new ones that most of the rooms are crowded. It will be remembered that all of our manual training departments are occupying only temporary quarters in the present building; that the manual training wing proper as shown in the architect's plans was left off until the advance of the first year class to second year work made the addition indispensable, and until another appropriation could be made by a vote of the citizens. The success of our school, not only from an educational standpoint, but as a business advertisement for the city will insure a cheerful response from the voters next spring.

From our Directory it will be noticed that since our last issue another school organization has sprung into existence. This time it is in the musical line. One of these days we shall have the pleasure of listening to the M. T. H. S. Orchestra. Mr. Miller, the director, has done some patient drilling and we await their first appearance with interest. We have no doubt that they will furnish us some entertaining music and prove a success, as do all the undertakings of our school.

The initial number of THE NAUTILUS has received praise from all quarters. The compliments which the business men give it are very encouraging. In the last issue of our contemporary of the Central High School a good word is said and a commendable spirit shown. We wish also to congratulate the Luminary on the improvements noticeable in each of its succeeding numbers.

Since our last issue we have been favored with excellent and varied Monday morning entertainments. In the line of addresses we had Dr. Dannaker's sensible lecture on "How Students Should Take Care of Their Health." Then there were three excellent musical recitals furnished by Mrs. Schultz, Mr. and Mrs. Busch and Prof. P. B. Perry, assisted by their respective associates. The faculty and students manifested the keenest appreciation for these musical performances, which served as a very pleasant and inspiring recreation between periods of study. The program furnished by the Art Club on the 31st of January deserves especial commendation. The leading feature was a series of stereopticon views. The first series, representing the art and architecture of Egypt, was introduced by an admirable essay on the subject written and read by Mr. Earl S. Ridge. Miss Grace Cassel briefly and clearly explained the views. The second and third series were of a humorous character, the second representing the mishaps attending the presence of a mischievous monkey in an artist's studio, while the third series consisted of original sketches illustrating the humorous side of school-life. The program was further enlivened by music and song and when the lights suddenly disappeared, and the heavy curtains used to darken the room quietly ascended under the magic guidance of electricity and the daylight flooded the hall again, it was with something very like regret that we gave up the illusion of travel in a distant country, and went back to the more prosaic duties of the day.

The students have responded generously to requests for contributions to the different departments of our paper, and many good articles have been received. The best of these are published in this

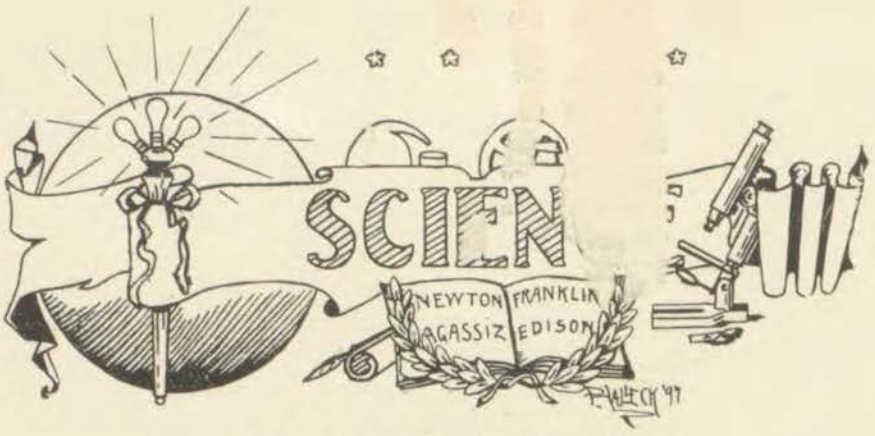
issue. An especially large number of poems were received. Several of the best contributions to the literary department were left in the box or THE NAUTILUS without signatures. The number as well as ability of our artists is every day becoming more and more evident. The drawings which were submitted for this issue show originality and skill. Charles Clayton's cover design was again selected. In our scientific department we intend to publish articles which describe the results of original research of the pupils. The article on butterflies of this issue is an example. All the subject matter is original. The drawings were made by the author from butterflies which he had collected. This article is the first of a series in biology which will run throughout the year.

We hope that the students and all those interested in THE NAUTILUS will patronize our advertisers, and when buying, state that they saw the firm's advertisement in our paper. This will aid the business managers greatly.

In an address before the recent State Teachers' Association at Jefferson City, Dr. C. M. Woodward referred to our School as the best public Manual Training High School in America. The significance of this compliment will be appreciated when it is remembered that Dr. Woodward is the founder of manual training in this country, the author of several books on the subject, director of the Manual Training School of Washington University, late president of the Board of Curators of the State University and at present a member of the Board of Education of the City of St. Louis. The sense of pride which Kansas Citians must feel can well be excused when such an encomium is paid by one whose candor and judgment are above suspicion.

The coming 22nd of February marks the anniversary of an epoch dear to all Americans—that of the birth of George Washington. In studying the life and character of Washington, we find that even in his boyhood his conduct was regulated by those principles of exactness, probity and justice, which governed his entire life. Of his school work we read that nothing was left half done or done in a hurried and slovenly manner. The habit of mind thus cultivated continued throughout life; so that however complicated his tasks and overwhelming his cares, in the arduous and hazardous situations in which he was often placed, he found time to do everything and to do it well. He excelled in athletic and all kinds of manly sports—a superb horseman and bold as a lion in battle. While modest and unassuming Washington was dignified and allowed no one to be familiar. His chief characteristics were good sense and the rare faculty of seeing things as they are without exaggeration; it was this well-balanced character even more than his military prowess which gave Washington his power over men. As time goes on his virtues only shine with a greater lustre, and each succeeding generation holds his name in even greater love and veneration.

We welcome the several hundred new students who recently entered our school and hope that they will at once become imbued with the spirit of unity which everywhere prevails. We hope that they will not only become subscribers to THE NAUTILUS, but that they will contribute to its columns.



STEAM AND ELECTRICITY.

In no department of human knowledge has such great advancement been made during the last decade, as in that of electrical engineering. This being the case, it is not surprising that great numbers of the American youth of today are greatly interested in the study of electricity and other subjects closely connected with it.

While the telegraph and telephone industries occupy prominent places in the field of electrical engineering, still by far the most important department in this field, is the generation of electricity for purposes of electric light and power; and the designing and construction of machinery for these purposes. The prominence of this department of electrical engineering brings the study of electricity into close relationship with the study of the steam engine; as by far the greater part of electrical generators now in use, are operated by means of steam engines.

On this account the study of steam and electricity may well go hand in hand; and the Manual Training High School, desiring to be thoroughly up to date in matters pertaining to the education of our youth, have placed in the course of study, a department of "Steam and Electricity" for those students who possess special talent in the direction of scientific, mathematical and mechanical work, or who may intend to enter the professions of electrical or mechanical engineering. It is not called a course in "Electrical and Mechanical Engineering," as it could not be expected that any such course in a high school could assume to place itself on a par with corresponding work in our modern colleges and universities. However, those students who care to improve their opportunities, in the way of acquiring information in such matters, will find here ample facilities for obtaining a good start along these lines of work.

While the course in "Steam and Electricity" proper is seen in the fourth year of the "Course of Study," as laid out in the catalogue, the pupil must not infer from this that he must wait until that year to begin his work in this line. On the contrary, his work in this direction will begin right from the start; as a thorough training in mathematics, physics and English, are among the essentials in the professions of electrical and mechanical engineering and the study of these subjects is taken up at the beginning.

One very common mistake made by boys who are very much intent upon the study of electrical and mechanical subjects, is the desire to avoid as far as possible, the study of English and kindred subjects, and to give their time wholly

to purely technical br[illegible]ow, in truth, there is nothing [illegible]ss tial to the electrical or mec[illegible]ei neer, than a thorough know[illegible]he proper use of English; and w[illegible]he cannot hope to rise above the[illegible]of med[illegible]rity in his profession [illegible] successful man in these lines of work will find himself called upon daily to prepare specifications for complicated electrical or mechanical work, to write articles upon subjects along these lines, or perhaps, to deliver addresses to societies of which he may be a member, and he cannot hope for success in any of these directions if he fails to make use of the opportunities here offered for the study of English. Neglecting this part of his education, he will, later on in life, find himself outclassed by those who were perhaps inferior to him in purely technical matters, but who did not neglect this valuable part of their education. Our young friend will then realize, too late perhaps, his great mistake.

After having completed the work in physics, mathematics and English, as laid down in the first three years of the course, the student will be prepared to take up the study of "Steam and Electricity" proper, in the fourth year of the course.

Our school is fortunate in that it has been equipped with a thoroughly modern steam and electrical plant, the study of which forms no small part in the course.

The work in the course begins with a general inspection of the plant, starting with the boiler-room. The students are here shown the details of the construction and arrangement of a steam boiler plant, the various appliances supplying the furnaces with fuel and regulating its consumption, in furnishing the boilers with their supply of water and the instruments and appliances in controlling and regulating the generation of the steam.

After having taken notice of all the appliances, etc., in use in the boiler-room, and having had the construction and function of each thoroughly explained to them, the students will pass to the engine-room, in which is located the generating unit, consisting of a fifty kilowatt, Westinghouse direct current generator, direct—coupled to a seventy-five horse-power Ideal engine.

Here they are shown the details of the construction of the engine and generator, the arrangement of the electric wiring and instruments and appliances used in connection with the regulating and testing of the equipment.

From this the class passes to the electric wiring system of the building, the main feeder wires, the cut-outs at the center of distribution, the branch feeders, secondary distributing points, branch wiring, outlets, sockets, etc., are shown and explained. The motors, used to supply power at different points about the building, are also examined, and the arrangements for starting, stopping and regulating each is explained.

The heating and ventilating system is next taken up, and the system of piping, valves, etc., is explained to the class. They are shown the reducing and back pressure valves, risers, return pipes, radiators, air-valves, large indirect heating coils and the plenum and exhaust fans with their accompanying motors; the functions and details of construction of all these parts of the system being carefully explained.

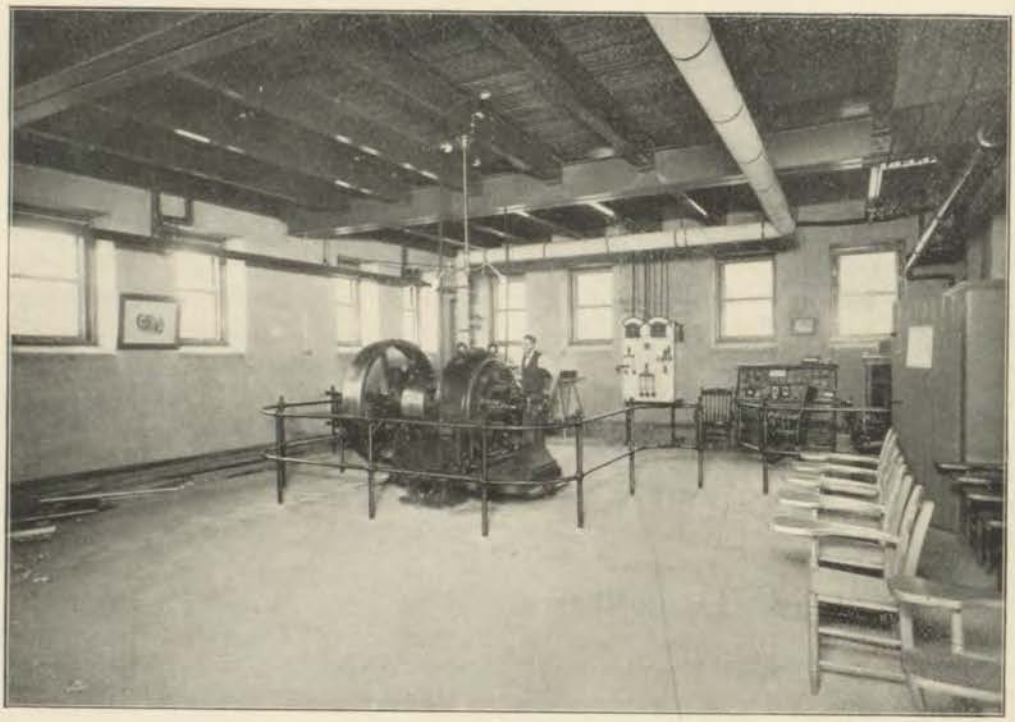
During all the time spent in thus going over the plant, the members of the class are daily questioned upon what has been previously gone over; and failure on the part of any student to thoroughly understand what has been already explained is corrected.

After having completed this part of the work, the class takes up the study of the steam engine, construction and

operation; beginning with the study of the slide-value. The operation of the slide-valve is shown by means of working models, capable of various arrangements and adjustments, and the class is thus enabled to get a clear conception of the operation and adjustment of the engine.

After having mastered the action of the slide-valve, the designing and drawing of valves for engines is taken up, and considerable time is spent upon the subject of valve diagrams, by means of which the proportions of the different parts of the valve are determined. The students themselves draw diagrams and valves under the instruction of the teacher, and are afterwards given problems to solve without assistance. A thorough understanding of the common slide-valve, in its various forms, is of great assistance to the engineer in the study of any and all varieties of valve motions.

Along with the slide valve, the various forms of balanced valves are considered, and the action of the automatic engine governor is taken up; the work in this line being supplemented by taking indicator cards from our own engine while in operation. The students themselves getting, in this way, considerable work with the indicator.



THE ENGINE ROOM.

Following the study of valves, the study of that department of engineering, known as thero-dynamics will be considered. The power of the engine will be traced from the coal pile through the process of fuel combustion, the transfer of the heat of combustion to the water in the boiler, the consequent generation of steam, the passage of the steam to the engine and its expansion in the cylinder of the engine, where the energy stored

up by nature in the coal, is finally changed into energy of motion. All of which will be investigated, the losses incurred in each step of the process determined, and the proportions and arrangements of parts necessary to obtain the highest efficiency worked out.

After completing this part of the subject, the work upon the steam engine will be supplemented with problems in designing steam engines, giving each part the necessary strength and the proper proportion in relation to the other parts of the engine, and making tests to determine the efficiency of the various parts of the steam plant.

The study of electricity will next be taken up. The first work in this line will be a short review of the principles governing the phenomena of electricty and magnetism, which have been previously given to the class during the study of physics. Following this the work will change to the study of the dynamo and electric motor, and details of the construction of these machines in their various forms will be studied, as well as the various systems of connecting up such machines when in service.

The different systems of electric wiring will be studied, and methods of computing the sizes of conductors, testing of various parts of the equipment for defects (both while in the process of construction and while in operation) will be carefully considered. The members of the class will also be given experience in the use of the various instruments used in making such tests.

The recitation room of this class being in the engine-room, the members of the class are brought into direct contact with the machinery, in operation, and on this account, the benefit to be derived from the work is much greater than would be possible in the consideration of the subject in the abstract only.

In the latter part of the course, the work carried on in the school will be supplemented by visits to the large power plants located in this vicinity, and careful examination of the construction and methods of operating will be made by the class.

The school is fortunate in being located, as it is, in the near neighborhood of some of the most thoroughly equipped modern electric power plants, as well as many well equipped, isolated lighting plants and cable power houses.

Having thus briefly outlined the course in "Steam and Electricity," it may be said in conclusion that cheerful assistance will be given the students, in pursuit of information along these lines, outside of regular class hours, even though the information sought may differ somewhat from the regular work being pursued by the class at that time. Every possible facility will be offered pupils who may be pursuing any special line of experiment or research in the field of electrical or mechanical engineering.

K.

Ships For Alaska.

Ship builders who are planning various types of vessels to be sent to Alaska next spring, may profit by studying the geography of the Klondike region. A man standing on the bank of the Yukon 150 miles from its mouth can not see the other bank. The Yukon is twenty miles wide 700 miles from its mouth. With its tributaries it is navigable 2,500 miles. It discharges one-third more water than the Mississippi. The water is fresh fifteen miles from its mouth. Its color is beautifully blue to its junction with the White river, 1,100 miles above its mouth.

THE COMMON BUTTERFLIES AROUND KANSAS CITY.

Undoubtedly the most beautiful, as well as the most often observed by the average individual, of all the insects are the butterflies. Their large size and bright markings have attracted the attention of many of our entomologists, and as a result they are better worked up than any other group of hexapods.

They belong to the order Lepidoptera, characterized by having four membranous wings, covered with overlapping scales which are easily rubbed off. They are distinguished from the moths, the other division of the order by having filiform antennæ, terminating in a knob or hook, and by the fact that they fly in the day time, while most of the moths fly during the evening or night.

All of the butterflies in this locality are contained in the four families, *Papilionidæ*, *Nymphalidæ*, *Lycænidæ* and *Hesperidæ*.

The first of these, *Papilionidæ*, is divided into two sub-families; the one containing large insects commonly called swallow-tails, having the hind margin of the hind wings terminating in a projection or tail; and the other containing medium sized yellow or white butterflies, without a tail on the hind wings.

We have six species of swallow-tails here, all belonging to the genus *Pa-pil-i-o*, the most common of which is *P. a-jax*, (Fig. 1), a large black butterfly with several wide bars of bluish gray on the upper surface of the wings, and very long tails. There are three forms of this species which differ slightly in markings and in the length of the tails. They fly from the beginning of spring until cold weather sets in, chiefly around their food plant, the pawpaw.

Another rather common species is *P. tur-nus* (Fig. 2), a large yellow species marked with black bands on both wings. There is a female form of this species which differs from the usual form by being black instead of yellow, and specimens are sometimes found intermediate between this female and the typical one. The larva feeds on apple, cherry, oak, willow, and a great many other trees.

The most common of the second group of the family is *Pi-e-ris ra-pæ* somewhat over an inch and a half across the wings, with one black spot on the fore wings in the male (Fig 5), and two in the female (Fig. 6). It is commonly known as the European Cabbage Butterfly, and is not a native of this country, but was introduced from Europe about 1863, and has since then spread over nearly the whole of the United States. In many places it has driven out the native Cabbage Butterfly, *P. pro-tod-i-ce*, a white butterfly of about the same size, with several irregular black spots on the fore wings, more in the female (Fig. 4), than in the male (Fig. 3). Both of these species can be found in great numbers around cabbage patches, nasturtium beds, and on the blossoms of the common dock (Arctium lappa).

Two very common species of the genus *Co-li-as* are *C. eu-ryth-e-me* and *C. phi-lod-i-ce*, both of about the same size as the species of *Pieris*, the former with a ground color of orange and the latter of yellow. In each species there is a black outer margin on both wings—which in the female contains yellow patches—a black spot near the center of the fore wings, and a yellow or orange spot on the hind wings. Fig. 7 can represent the male and the Fig. 8 the female of both species. The larva of both feed upon clover, and the imagos can always be found in great numbers about it.

The smallest species of the family is *Na-tha-lis i-o-le*, (Fig. 10) which expands slightly over an inch. It is usually found in dry, clay-covered fields where its food plant seems to thrive.

A species slightly larger than this is *Te-ri-as li-sa*, (Fig. 9), yellow in color, with a black border to the wings. It is often found in company with the above species.

The second family, *Nymphalidæ*, contains as a rule large, brightly colored butterflies, with the fore legs aborted and not fitted for walking.

Probably the most common member of the family is the "milk-weed butterfly," *Dan-a-is ar-chip-pus*, (Fig. 11), a large, reddish brown insect, with prominent black veins in the wings. It has the curious habit of congregating in great numbers in the autumn.

Closely resembling this species, though not closely allied is *Limen-i-tis di-sip-pus*, (Fig. 12) which can be distinguished by a narrow, black, central band on the hind wings, and by the fact that the discal cell, which is a large space near the center of each wing, partly or wholly surrounded by veins, is open on the outer side, while that of the preceding species is closed.

Another common species is *Ar-gyn-nis cyb-e-le*, (Fig, 13), which has rounded wings of a lighter color than the two preceding species, with many irregular black spots on the upper surface, and silver blotches beneath. It is found commonly on the blossoms of milk-weed (Asclepias).

Ap-a-tu-ra cel-tis (Fig. 14), a medium sized, brownish black species, with five eye-like spots on the hind wings and one on the fore wings is commonly found in woods resting upon the trunks of trees.

A species entirely confined to open fields is *Eup-toi-e-ta clau-di-a*, (Fig. 15), which is of a tawny yellow color, and about the same size and shape as the one preceding.

One of our most beautiful species is *Py-ra-me-is a-ta-lan-ta*, (Fig. 16), black in color, with a central band of red on the fore wings, and a margin of the same color on the hind wings. On the under side almost every conceivable color is blended together to form a nondescript pattern, consisting chiefly of wavy lines and eye-like spots.

Next to this comes the genus *Grap-ta*, represented here by two common species, *G. com-ma* and *G. in-ter-ro-ga-ti-o-nis*. (Fig. 17), both of a light reddish color above, marked with black spots, while on the under side of the hind wings the former has a silver mark, shaped like a comma, and the latter, one of the same color, in the form of an interrogation mark. Both of them have a form in which the hind wings are colored black above, instead of red with black spots. They are found through the entire year, but are most common in the autumn, flitting about on the dead leaves in woods.

The third family, *Lycaenidæ*, contains small blue or copper colored butterflies, commonly called "blues," "hair-streaks," and "coppers," often seen flitting in great numbers around pools of water on country roads. The "blues" belong to the genus *Ly-cae-na*, and average slightly smaller than the "hair-streaks," which belong to the genus *The-cla*, (Fig 20), and can be distinguished by short streaks on the under surface of the wings, and often by the presence of slender tails on the hind wings. The "coppers" constitute the genus *Chrys-o-pha-nus* and are represented here by only one or two very rare species.

The fourth family, *Hesperidæ*, includes short, heavy-bodied, quick-flying insects, known as "skippers" from their darting, unsteady flight. They are sup-

posed by some to be intermediate between the other butterflies and the moths. Less is known of them than of any of the other families, on account of the very close resemblance which the species bear to each other; and the difference in the coloration of the sexes of the same species. They are at present very imperfectly worked out in this locality, and would afford a good field for the study of life-histories, as the immature stages of most of them are unknown. Probably our largest species here is *Eu-da-mus tit y-rus*, (Fig. 18), colored dark brown above with a large oblique yellow patch on both sides of the fore wings, and a silver leaf-shaped patch on the under side of the hind wings.

Our smallest species is *Au-cy-lox-y-pha nu-mi-tor*, (Fig. 19), which expands less than an inch, and has the fore wings colored dark brown, and the hind wings yellow with a brown border.

All of the butterflies mentioned are very common, with one or two exceptions, and can be found almost anywhere around Kansas City. Most of my collecting has been done on the north bluffs, between Agnes Avenue and Burge Park, and I have found them all there, but that is an exceptionally favorable locality as woods, open fields and dry, bare tracts, are all represented.

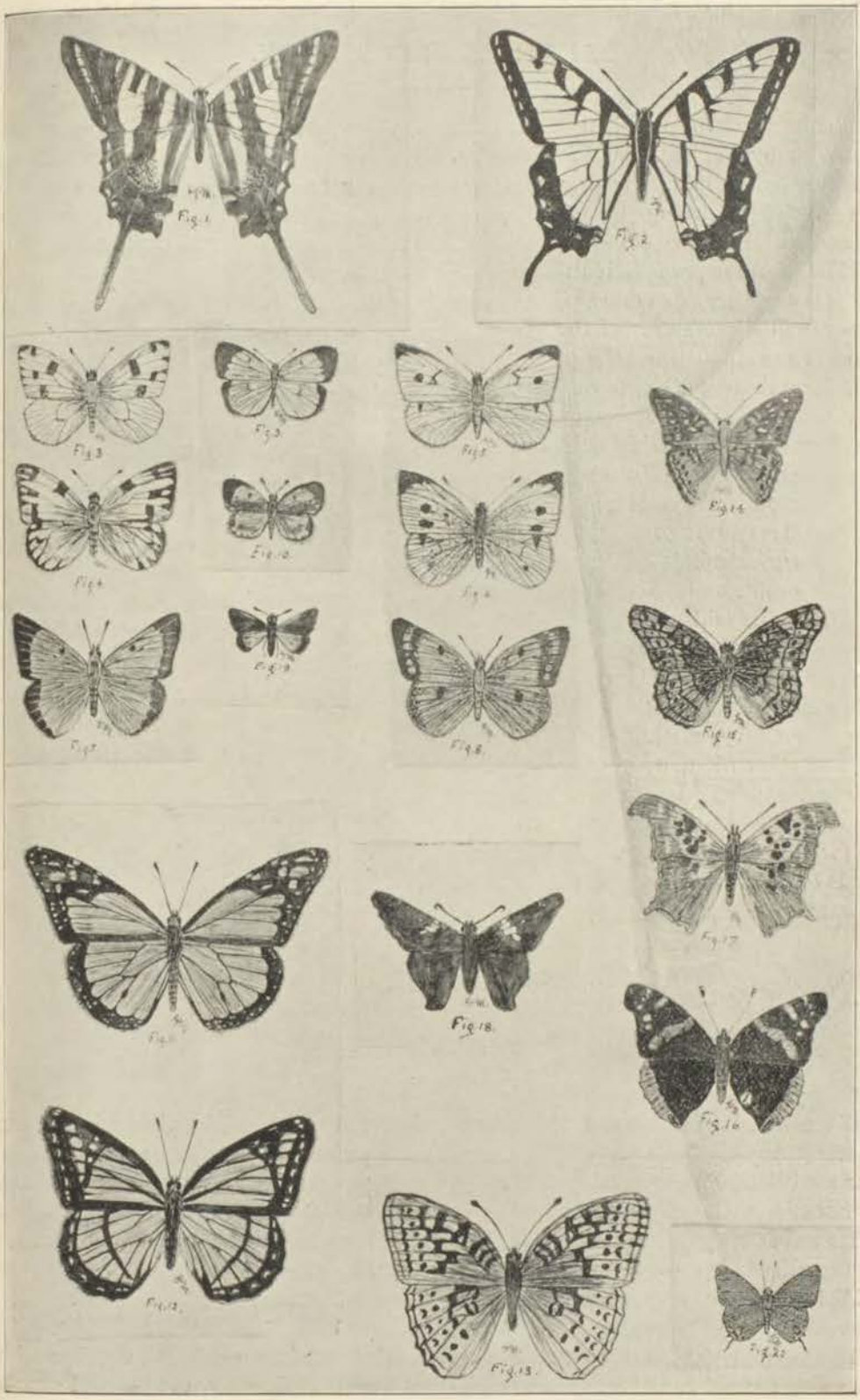
There are in all probably between seventy and eighty species of butterflies here, though it is impossible to state the exact number until the last two families have been thoroughly collected.

GEORGE MACKENZIE.

EXPLANATION TO PLATE.

(FIGURES ONE-HALF NATURAL SIZE.)

Fig. 1. Papilio ajax. (Iphicledes ajax.)
Fig. 2. Papilio turnus.
Fig. 3. Pieris rapae, male.
Fig. 4. Pieris rapae, female.
Fig. 5. Pieris protodice, male.
Fig. 6. Pieris protodice, female.
Fig. 7. Colias eurytheme, male. (Eurymus eurytheme).
Fig. 8. Colias eurytheme, female.
Fig. 9. Terias lisa. (Eurema lisa).
Fig. 10. Nathalis iole.
Fig. 11. Danais archippus. (Anosia plexippus).
Fig. 12. Limenitis disippus. (Basilarchia archippus).
Fig. 13. Argynnis cybele.
Fig. 14. Apatura celtis.
Fig. 15 Euptoieta claudia.
Fig. 16. Pyrameis atalanta. (Vanessa atalanta).
Fig. 17. Grapta interrogationis. (Polygonia interrogationis).
Fig. 18 Eudamus tityrus. (Epargyreus tityrus).
Fig. 19. Aucyloxypha numitor.
Fig. 20. Thecla.
(Names in parentheses are those given in Comstock's Manual).



COMMON BUTTERFLIES OF KANSAS CITY.

BEGINNERS IN GEOMETRY.

There are two principal difficulties met with by the beginner in Geometry. The first is grasping the *new ideas* and the second is seeing the *force* of *the reasoning*.

Now if these two difficulties are attacked together, trouble arises with many pupils. Neither of the giants is slain in the combat.

Before taking up Geometrical theorems the mind should be made somewhat familiar with Geometrical notions. The kindergarten idea is the correct one. The pupils in our school get these fundamental ideas through things. The box of Geometrical solids together with many simple problems to be solved by compass and rule will introduce the first difficulty in a simple way, provided the teacher understands his work. This we might say introduces the pupil at once to the laboratory method of Geometry. The solution of many problems with a few instruments does for the beginner in Geometry what the actual experiments do for him in chemistry. This process tends to unfold the inventive or original powers.

Now after the pupil is somewhat familiar with these first Geometrical notions, then he is ready to take hold of the other main difficulty, viz, the force of the reasoning in demonstrative Geometry.

The progress made by pupils in demonstrative Geometry is very satisfactory after having spent three or four months on inventional work.

They can see clearly why every proof must be traced back to axioms and definitions. Moreover the original exercises are worked out by the pupil according to principles and truths which he has mastered. There is one good test for Geometrical training and that is how does the pupil attack *orginal* problems.

If the pupil can sit down and struggle with a problem for a half hour or an hour without thinking of looking into a text book, he is being trained not only for Geometery, but in correct methods of study for any subject. Habits of self-investigation, self-reliance and greater power are thus attained.

ACETYLENE.

Since the invention of the incandescent lamp by Edison, no illuminant has held the public attention so closely, as has this gas—acetylene.

Its superiority over common coal gas in illuminating power has been duly established, but its explosive nature and cost still impede its progress.

It was first produced by the French Chemist, Berthelot. His method was to pass hydrogen over carbon terminals between which an electric arc kept up an intense heat. But this was only a laboratory method. Moissan discovered the valuable fact that the active of calcium carbide on water was to produce acetylene, thus:—

$$Ca\,C_2 \text{ plus } 2\,H_2\,O = C_2\,H_2 \text{ plus } Ca\,(O\,H)_2$$

The calcium oxide then unites with the excess of water and slacked lime is the result.

As was said, its explosiveness is its greatest drawback. It is easily liquefied but in this condition it is explosive, as is the gas itself under about two atmospheres. Diluted with air, it becomes dangerous when the acetylene is three per cent of the mixture and remains so till the acetylene exceeds eighty-two per cent. On this account, its manufacture has been prohibited in Germany, and some of the Eastern States.

At present, the calcium carbide from which acetylene is made costs $90 a ton. But a Frenchman has calculated that even then we get three times as much light for our money than when we use coal gas. In a common gas burner, acetylene gives ten times as much light as coal gas, and with a Welsbach burner it gives three times as much. Using these figures, Professor Jacobus, of Hoboken, says that calcium carbide would have to come down to $19.50 a ton to compete with coal gas. Whether or not it can be produced at this price is not known, but the existing cost will be considerably diminished when it is manufactured in large quantities.

The cause of its high illuminative powers is its richness in carbon. The luminosity of all flames is due to the fact that the solid particles in the gas are heated to incandescence in the combustion, and it is from them the light issues. In methane, the predominating gas in our coal products, the carbon and hydrogen are in a ratio of 1 to 4, but in acetylene, they are equal, 2 to 2, hence the greater luminosity of acetylene. But acetylene alone, gives a sooty flame, a good deal of the carbon escaping. This is reduced by diluting it with an inert gas, such as nitrogen.

Since Moissan's discovery a host of generators has been invented, the most popular being the smaller portable ones, which are carried around as the kerosene lamp. These give a light far brighter than the ordinary lamp, and last about as long at a filling.

Notwithstanding its impediments, scientists seem to regard it as the coming illuminant, and it has been adopted already on some of the French railroads, where it has met with hearty approval.

Z.

SCIENCE NOTES.

To see a Plant Grow.

To observe plants growing under the microscope, the American Microscopic Journal says: "Procure a little collonia seed. Take one of the seeds and with a razor cut off a very thin slice; place it on a slide under a cover glass and put it under the microscope. The instrument must be in a vertical position, and when well focused and lighted, moisten with a drop of water. The seed will absorb the moisture and throw out a large number of spiral fibres, giving the appearance of veritable germination."

A Note on Aluminium.

While aluminium is well known to be easily attacked by strong alkalies, even strong acids do not injure it in the least. It behaves almost as indifferently as platinum, and may be left in the strongest nitric acid for several days without any effect being visible. This property makes it quite valuable for certain purposes—the writer uses aluminium hooks to take photographic plates from the acid tray. For acid funnels it is also used to advantage.

TECHUISCHE MITTHEILUNGEN.

BOYS' MANUAL TRAINING.

Some of the Uses of Manual Training.

In these busy, work-heaped days, when men are straining every nerve and sinew to outstrip their competitors, whether on the broad, luxurious fields of science, the sunny slopes of literature, or the intricate maze of mercantile life, the necessity of knowing what is going on and what relation we bear to the environment is incalculable. Thousands of lives in the resistless path of Progress through the ringing grooves of science, are crushed and over-ridden because of their ignorance of existing conditions, or the lack of knowledge to cope with them. The race is no longer to the swiftest; it is to him who, knowing that he knows solves the exigent problem and leads onward to the next.

The lawyer who is ignorant of mechanics and drawing, of technical terms and phrases, must seek for gain in the dismal round of the divorce mill, the strife over "All man's right, but one man's own" estates or in the callousing circle of crime. Hundreds of legal cases demand a lawyer who can intelligently instruct a jury on some vital detail of the machine in question or on the presence or absence of a few lines on a mechanical drawing. The habit of accurate thinking and the technical knowledge which is acquired in a course of manual training is the only logical foundation on which the lawyer should build.

The physician who is ignorant of mechanics should not be expected to handle intelligently such delicate instruments as are necessary for the truth-seeking, painstaking physician of today to use. Who can better use his instruments than he who can make them or knows every purpose and process of their manufacture? To the physician, and possibly to the patient, everything depends upon a correct diagnosis of the case. The alertness of the eye, the attitude of the analytical brain, and the cultured, sympathetic, logical mind are the most important instruments of cure which a physician carries on his rounds. Besides restoring to health, a physician must instruct those who will some day take his place. The sense of sight is the most highly developed sense of mankind today; the instructor must make his pupils see and for lack of the original he must represent it, i. e. draw it. Here then is the reason why a course such as manual training, which has for its one end and aim the cunning hand and cultured brain, is of such vital importance to the physician.

It is as unneccessary for me to enumerate in detail the usefulness of a manual training education in all departments

of life, as it is for the mathematician to enumerate the various uses and applications of arithmetic, geometry, or analytics; a few words, however, in reference to it, and its relation to the man of business will not be out of place.

Few of us are born with a golden spoon in our mouths; the vital problem is not in the parlor, is not in the exposition of a misnamed culture, or the enumeration of dates, but how to live. The

THE WOODWORK SHOP

solution of this stern problem is in work, and we must all work, and it is a child's inalienable right to be taught how to work. A business man must not only be able to analyze characters, make friends and economize, but he must work and know, if he is at all successful, the workings of that vast, intricate machine, the mercantile world, of which he is a part. Should he have a knowledge of mechanics? Does he use the telephone, the telegraph, the railroad, the building, the steam engine, the generators, the street cars, the lights, shoes, books or newspapers? His very life and every minute of it depends upon, and is inseparably linked to some production of mechanics. He drinks from a glass which was one of three thousand that were produced by a small machine in an hour; if he knew how it was produced he might apply this knowledge in part toward reducing the cost of production of some article on which his success in business depends.

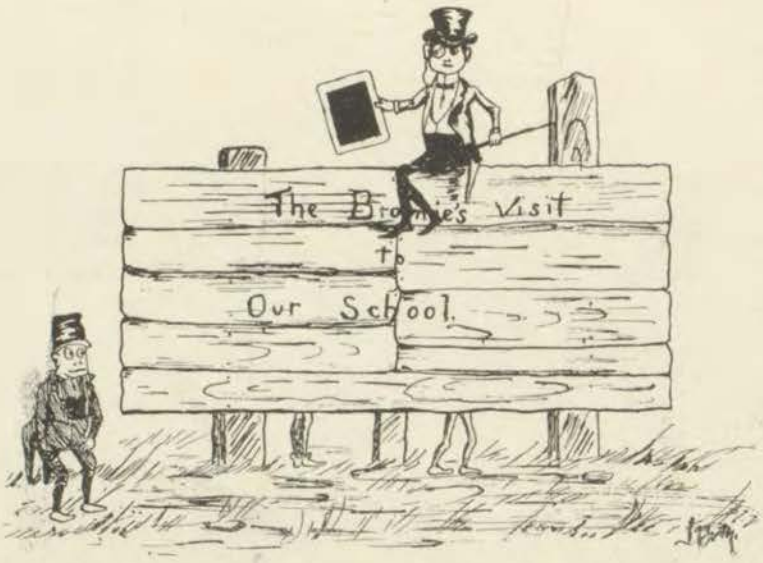
Knowledge is power? It may have been, but now knowledge is life.

Never before was mankind confronted, nay surrounded by the problem of Education and Life; these. the twin children of Science and Necessity will go hand in hand through the coming centuries.

That the Manual Training School

meets the requirements of the age better than all others is clearly seen. The individual in the struggle for existence, uses his hands and body, as well as his brain, and the Manual Training School is the place where the whole child goes to school

S. H. M.



It was a still night; the wind was blowing softly and the moon was hidden behind a bank of fleecy clouds. A number of small, grotesque individuals might have been seen scrambling up the stone steps to the doors on the west side of our school. They were a band of Brownies coming for their first visit to the Manual Training Department of the school.

After knocking and pushing against the doors for some minutes in vain, they were finally admitted by the mallet, who being tired of knocking all day, wished now to rest. With the utmost courtesy they were ushered into the work-shop.

On entering they first beheld the rip-saw who glared most savagely at the intruders, showing his teeth in a defiant manner.

Having noticed the lockers, these inquisitive little Brownies were anxious for a peep at the inside of them, so a key was procured from the key-board and one of the drawers opened; but, in their eagerness to "see it all" the drawer was pulled out too far and fell to the floor. This frightened them very much. One of the number was immediately dispatched to find a rope and tackle with which they could hoist the drawer back to its place.

With a small lantern in one hand, this brave little personage set out into the darkness. He soon found the necessary articles and had started to his companions, who were now on a bench looking

at some tools, when a terrible disaster occurred. In hastening along he ran against and overturned a shellac pot, causing it to roll off onto the floor and spill all the contents. The injuries received, together with the attendant noise so frightened the Brownie that he was stunned for a few moments. In regaining consciousness he attempted to rise but found he could not for he was in the midst of a pool of slimy, sticky stuff, possibly molasses—he did not know. He managed to scream and attract the attention of his companions, who flocked thither to see the cause of the trouble. Much consternation prevailed for a time, when one thoughtful little Brownie suggested that all lend a hand and help to pull the unfortunate brother out of the shellac. This they eagerly assented to, and after many vain efforts they succeeded in extricating him.

A meeting was then held. It was decided to put the unfortunate Brownie under the faucet for a good bath. To this he did not object for the water is hot—in fact everything is hot from the keys up to Mr. Arrowsmith.

After the bath the attention of all was directed to one of the benches, where the back-saw, who had been asleep all this time, had waked up and become involved in a serious dispute with one of the leading Brownies. The try-square tried to square things up but of no avail.

The plane endeavored to make things plain to them, but nothing could stop the quarrel. At last, being much angered, the Brownie was about to hit the big fellow with a dust brush, when the cries of another Brownie attracted the attention of all present.

A scampering towards the south end of the shop was now heard and upon reaching Mr. Moore's bench the little fellow was discovered tightly caught in a vise. He was immediately rescued and all returned to the first bench.

Our friends of the heated discussion ended it quite amicably and began to amuse themselves by making jokes on each other. All became jovial and resumed many of their old-time pranks. The air vibrated with the peals of laughter and joyousness reigned supreme. When the first faint streaks of light shone through the windows, immediately there was a hurried scamper and leave-taking and in the course of five minutes silence shrouded the old "Manual" again. J. B.

Shavings and Chips.

Grind!

Keep your tools sharp.

A fool and his "credits" are soon parted.

Say nothing but saw and plane wood.

Ask Mr. Moore what relation exists between a boys trousers and his character.

If we had a proper place to keep our drawings we might not be requested to visit good Prof. Morrison so often, especially when he is so busy.

How did the passing fellow
Employ each fleeting minute?
He got a move upon himself
And that is why he's "in it."

Nothing is so refreshingly fresh as the freshman who uses a screw driver for a chisel.

Moore, Arrowsmith & Co. want no more boys of the "hold-your-job-Dutchman" sort; some hold-your-job last term boys are still holding their jobs.

Rah! Rah!! Saw!!!
Nail! Nail!! Plane!!!
Look at us
Make a muss
And a man with plenty brain.

Each boy is to make a picture frame for his sweetheart's photograph. Girls are requested to distribute, with no parsimonious frugality, face similar photos; and boys—not embryo carpenters—to accurately measure the same.

Gittin' back to work again from a long time o'dreaming,
Gittin' down to work agin—I likes to saw and plane,
Gittin' back to school agin, my tools are jest a seemin'
Bright and sharp and cleaner than a medder arter rain.

Boom-ing! Everything in this place is booming. Why, even the mallet receives £1000 a year.

She stood beside the dish wash pan
He stood beside the grindstone,
And both besighed the cruel plan
That kept them from a "Rhine-stone."
—M.

GIRLS' MANUAL TRAINING.

THE NEEDLE'S STORY.

I work from morn until evening dark,
  I work through sun and rain;
I am used by those who are happy,
  And used by those in pain.

Sometimes old hands use me in toiling,
  Old hands so trembling and slow—
Every stitch seems a by-gone pleasure,
  As in and out I go.

But sometimes, to a love song,
  I stitch a wedding gown,
On, on, I go so merrily in the
  Hands as soft as down.

Then again in homes of poverty
  I help to earn the bread,
And it's long and hard and fast I work,
  For each mouth must be fed.

Oh, it's often amid tears and moans
  Slowly I make a shroud,
In the homes of the low and needy,
  In the homes of the vainly proud.

And again in soft, dimpled fingers,
  I make a doll dress gay—
In the hand of a little maiden,
  Bright as a flower in May.

I am used in Manual Training,
  Where many learn to sew,
I hear heavy sighs of complaining
  But on, on, on, I go.

'Tis only a brief sketch of my troubles,
  And you see I have but one eye,
So must wait to be unthreaded,
  Before I can possibly cry.—*Pearl Woolery.*

WHAT OUR GIRLS ARE DOING.

"I am not going to the Manual Training High School," said Mary Cruise as she and her friend Aileen Willard talked of the days when they should go to high school.

"Why ar'n't you going?" asked her friend.

"Oh because I don't want to be a kitchen girl or a sewing girl either, and that is all they teach there."

"Well it makes no difference if you don't intend to work you will want to know how to teach your kitchen girl, and you will want to know if your sewing girl is doing things just the right way."

"She is supposed to know how to sew, or the kitchen girl must know her business before she comes to you."

"You can't find any that do all that; but we are not talking servant question, we are talking about high school—my sister goes to the Manual Training High School, and she thinks it is just a glorious place. This idea you have about the pupils only taking the manual training work is entirely wrong, I think."

"What does your sister take, Aileen?"

"I heard her tell some one the other night that she took the same studies that they have at other high schools."

"I never heard that before; here she comes now, she can tell us about it."

While they were waiting for Aileen's sister, the conversation drifted on, but Mary could not be convinced that they taught anything except "manual labor," as she called it.

Aileen stepped to the door and called her sister to come in and meet her friend. She soon came and Aileen explained what they had been talking about.

"Now won't you tell us all about it, sister?"

"Why certainly I will; do you want me to tell about our studies, or the manual training part of the school."

"There Mary, I told you they have studies." Addressing her sister Kate, "Mary has thought they had no studies at all."

"Oh, yes, we do have studies, the very same that are taught in all other high schools, but we have the manual training besides."

"Well, what do you do in sewing; did you make that shirt waist? It is so pretty."

"Oh, my, no! I've scarcely learned to baste yet. We have no machines, but we will have them in a week or so."

"Well, what do you do?" asked Mary again.

"We have been laboring on button holes and every other kind of dress fastening. I wish you could have seen my first button hole; it was grey as a mouse, but we had to make four on our trial piece, and by the time I had made the four on that piece and four on our model they looked quite white and respectable. A lady who was visiting the school the other day said my model was done beautifully, and I am not a beautiful sewer. There are many who do more beautiful work than I. A number of the girls have had sewing at home, but we are not credited on the beauty of the work we do, but on the progress we make."

"What else have you made beside button holes? Haven't you made anything to wear"?

"Oh, no! We started at the very beginning, and learned to use the thimble and needle, to thread the needle, how to make a knot, and then we learned to baste, and step by step we have made more difficult models. Our gusset model was not easy. Now we are patching and next week we will darn."

"I learn to patch and darn," laughed Mary.

"I hope they don't teach you to tear and wear out your clothes."

"Oh, no! No one has to be taught that. Who ever saw a girl wear a dress without at least five or six tears, and always carefully mended by mother; but here we learn to do it ourselves."

"Tell us something about cooking; have you made candy yet?"

"We made candy the week before Christmas, and every one said it was delicious. We have made some excellent puddings and custards, drinks, tea, coffee, chocolate, bouillon, 'prohibition egg-nog' and punch. Lately we have cooked potatoes in several different ways, eggs in more ways than you ever heard of

and now we are cooking fish; everything thus far has been delicious."

"Well, if I can take a course preparatory to any of the great colleges and this sewing and cooking besides, it is not so bad as I thought. I will talk to mamma about it. Did that clock strike five? I must go. I think you will see me at the Manual Training High School next year. Good bye." M. N.

GIRLS' MANUAL TRAINING AS SEEN BY A BOY.

This is a progressive age, but many of us have yet to learn that there is even a right and wrong way to boil water and sew on buttons. Nowhere is this development more evident than in the girl's department of the Manual Training High School. Here is demonstrated the great truth, that in order to attain the possibilities of their sex, girls need first of all to be educated as women.

There are few things more conducive to peace, happiness and contentment than domesticity. There is a charmed atmosphere in a home where mother and daughters know the difference between good and poor bread, where the clothes presses are in order, meals regular, wellcooked and well served, silver bright, dishes clean, linens immaculate, family wearing apparel mended and in order. Such a home leads to thrift and good morals.

The ideal woman is familiar with history, literature, art, etc., can sew, knows the food value of what is served on her table and how to prepare it. Here at the Manual Training High School, we bow to her departments and extol the work of her enchanted fingers.

Good cooking is one of the fine arts, another name for economy, temperance, health and long life. Our energy, happiness and goodness are largely dependent on the condition of the stomach, so what we eat is all important. Man is half animal and even his piety is helped by a good digestion. Few prescriptions will produce the same amount of amiability, kindness and generosity, as a liberal, well-cooked, well-served meal; so if you wish to carry a point or obtain a favor, wait until dinner is over before introducing the subject.

Voltaire said the first cause of that great tragedy, the massacre of St. Bartholomews was the lack of capacity on the part of the King to digest a meal.

"Plain living and high thinking" is a delusion,—there is an intellectual as well as a moral side to good cooking. There is a wide difference between a Newton, who sometimes asked if he had dined, and a Cæsar who devoured at one meal the revenues of several provinces. "The dinners of a people, their coarseness or refinement, their profusion or scantiness, are an unerring index of the national life. There is a whole geological cycle of progress between the clammy dough out of which a statuette might be moulded, and the brittle films that melt on the tongue like flakes of luke-warm snow." "Pope was an epicure." Talleyvand upbraided England because she had one-hundred and fifty different religions and only one sauce-melted butter. A leading magistrate of France insisted that "the discovery of a new dish was greater than that of a new star, because there could not be dishes enough, and there were stars enough already." The elder Kean realized the effect of food upon the mind, so ate pork to play a tyrant, beef to play a murderer, boiled mutton to play a lover. The illustrious Handel was an advocate of good living, and when dining at a tavern, always ordered dinner for three. When told that all was ready as soon as the guests arrived, would say: "Den bring up de dinner pretissimo. I am de company."

About the only good thing Catherine DeMedici ever did for France, was to bring artists from Italy, who introduced scientific cooking into France.

"A fool is known by the multiplicity of his words" and "too much may be said on even the best of subjects," therefore I close by commending all the girls to the Manual Training High School and count our cooking school one of the moral institutions of Kansas City.

WILL L. TODD.

Exchanges.

In starting our exchange column we wish to thank our friends who have thus far encouraged the efforts of the staff of THE NAUTILUS, for it is indeed an encouragent to receive exchanges from so many of those to whom we sent our first issue.

"Who is the belle tonight?" ask she,
As they stood on the ball-room floor;
He looked around the room to see,
And she speaks to him no more.—Ex.

Freshman year—The comedy of errors. Sophomore year — Much ado about nothing. Junior year—As you like it. Senior year—All's well that ends well. —Ex.

A CO-ED.

"Her Greek-shaped head was classic,
Her pose was rythmic, sweet;
I thought her lines were perfect,
Until I scanned her feet."—Ex.

"There are two or three points I still have to touch upon," said the tramp, as he awkwardly scrambled over the barbed wire fence.—N. Y. U. Triangle.

Ein, Zwei, Drei—A German count.—Ex.

The January number of the Mercury, Milwaukee, contains several interesting stories. It is, indeed, a well edited paper.

The Fulcrum, Armour Institute, Chicago, is a credit to the Freshman class.

LATIN ON THE PORK.

Boyibus kissibus
Sweet girliorum;
Girlibus likibus
Wanti sumorum.

Popibus hearibus
Kissi somorum;
Kickibus boyibus
Out of the dorum.

Darkibus nightibus,
No lightiorum;
Climibus gateibus.
Breechibus torum
—Cornell Era.

Amly—"I wonder why the Greeks sang before they went into battle?"

Harcnes—"I guess it was their last chants."—H. S. Recorder.

The Industrialist of Manhattan, Kansas, appears as a monthly magazine beginning with the January number.

FOR GENTLEMEN ONLY.

If there's anything worries a woman,
It's something she ought not to know,
But she's bound to get at it somehow
If she has the least kind of a show.

Now we'll wager two cents to a farthing
This poem she'll always read,
For she's sure to get at it somehow,
If she has to stand on her head.
—Ex.

"I expect to go on the stage when I am older," said the egg.

"No doubt you will make a great hit," said another one.—High School Student.

The Central Collegian contains a strong literary department, good exchanges and is withal a well edited paper.

"How do you know that Cæsar had an Irish sweetheart?"

"Because when he came to the Rhine he proposed to Bridget."—Jabberwock.

"His hand lay on her hair;
Her face so fair,
Upturned to his,
Bespoke the truth;
And he with subtle care,
Her thoughts did share;
A shriek! a whizz!
He had the tooth "—The M. C. I.

The C. M. T. S. Register is among the best manual training papers on our table.

"I fear you are forgetting me,"
She said in tones petite.
"I am indeed, for getting you,
That's why I came tonight."

The Fence is a bright witty paper, but we believe it better to give less space to stories and more to essays and poetry.

"Come in out of the wet," said the shark, as he swallowed the unfortuuate fellow.—High School Student.

A SONG CASE.

I love a girl whose dreamy eyes
Are blue as fairest summer skies;
I love another, too, and she
Has eyes as black as black can be,
And when at me a glance they dart
It smites my very tender heart;
So woe is mine, for 'tween the two
My heart is bruised all black and blue.
—L. A. W. Bulletin.

"EVOLUTION."

"Evolution," quoth the monkey,
"Makes all mankind our kin;
There's no chance at all about it,
Tails we lose, and heads they win."
—Truth.

I struck her coasting down a hill,
My wheel the maid did toss—
She was the very sweetest girl
I ever ran across.—Ex.

They were seated close together,
And to her he softly said:
"I wish a sprig of mistletoe
Were hung above your head."
Then looking up and blushing,
She murmured sweet and low:
"Do you think it necessary
To have the mistletoe."—Ex

THREE LITTLE MAIDS.

She sat impatiently alone; the lamp burned low,
The tall clock ticked and ticked and ticked so slow,
Under the soft dim light so wondrous fair,
A few stray roses caught within her raven hair
—Maid one.

The clock ticked on, at last he came,
And Cupid too—he played the same old game
—Knightly vows, a sparkling solitaire
It caught that pretty maiden, so wondrously fair,
—Maid won.

The organ rolled and pealed—a wedding march,
The happy couple stood beneath the floral arch.
The music ceased, the Reverend standing there
Pronounced a solemn blessing upon that bridal pair,
—Made one.—H. S. Recorder

ALAS, POOR WILLIE.

A William goat, with low-bowed head
Rushed wildly forth, to butt—
A moment later he lay dead
With a shattered cocoanut!
The fellow that he'd sought to crush—
The victor in the fray—
Turned out to be the center rush,
Who met the goat half way.
—Catlesburg Democrat.

Others of our best exchanges are the Normal Magazine, Potsdam, N. Y.; Howard-Payne Exponent, Fayette, Mo.; High School Recorder, Brooklyn; High School Student, Bridgeport, Conn.; The Student, Liberty, Mo.; Recorder, Springfield, Mo.; Steele Review, Dayton, Ohio; Academy, Troy, N. Y.; The Ægis, Houston, Texas; Normal Review, Warrensburg, Mo.; Public School Review, Dallas, Texas; The Western School News, Kansas City, Kan.; The Central Luminary, Kansas City, Mo.; The Vidette, Wells, Minn.; S. A. C. Lookout, Storrs, Conn.; The Vermont Academy Life, Saxton's River, Vermont.

There is only one page to be studied in Physics.

Oh, those button-holes!

Miss Perkins entertained the "Art Club" Jan. 21.

Hurrah for the boys' cooking class!

Is Martha Miller Miss Murphy's assistant?

Glad to meet you, Freshman; shake hands.

Dancing taught correctly at Duncan's.

The girls are soon to have sewing-machines.

The most popular department of the school—Moore-Bachellers.

Hurrah for the Art Club—long may she live and prosper.

Miss Griffith is welcomed by all the girls.

The only art critic of the age—Martha Miller.

All the Chemistry pupils are asking, "Is'nt Mr. Miller good?"

Who beat in the sawing race, Nell or Pauline?

Who was the girl who received the card of introduction?

Two of the teachers were observed to converse during Miss Pepper's piano solo. They don't practice what they preach.

Some of the girls think they will ask for a wood-working class.

Oh, don't think the sixth grade from school have come down. They are Freshman.

Boys, when you want a nice hair-cut go to Rechner's Heist Building, 723 Delaware street.

Those pictures that Will and Paul drew for the Art Club were quite original.

If you have books to buy, sell or exchange you will consult your best interests by going to Glick's, 710 Main street.

Boys, the girls have learned to patch and darn. Old coats mended free of charge.

Mr. Swan, arising for the twentieth time to make remarks, said: "Mr. Chairman, I am very remarkable today."

"The mill never grinds with the water that is passed" was quoted by one of our teachers lately as "A cow can't drink the water that has already run by."

Miss Fisher says that boys must not walk around the halls with girls; it takes their minds from their lessons.

Why doesn't Mr. Page eat that pie that hangs on his wall? We are sure he needs it.

Is Mr. Litchfield very old? If so he doesn't act so.

Miss Fisher:—"Who were the Lollards?" Freshman:—"They were the followers of witchcraft."

Mr. Peters:—"Mr. Reed you are like the little boy who did not know what space was but who had it in his head."

Miss Frazer is known to carry a curl in her book.

Dr. Dannaker said we are hungry for the Manual Training course; so we are—in the cooking class.

"Our acts like our shadows will follow us still."

What attraction is there for Juliet and Alice on the Fifteenth street line?

Who is the young lady Mr. Shroeder is so much interested in?

"Jack is another boy who is slower than bread rising without yeast," said Mr. Arrowsmith.

Mr. M——, (to orchestra), "When I rap for order just all speak at once, please."

Miss Fisher's pupils say: "Das kalte Herz;" the name of this new story means "The cold hearts."

Who is the sweet Senior boy whose hands get "just like ice" when called upon to recite?

Why did Mr. Peak ask a certain young lady in the cooking class if she had made him those cookies yet?

Willie Osgood:—"Mr. Arrowsmith, please start the grind organ going; I want to grind my chisels."

Mr. Page:—"Of course if you were as brilliant as John Miller is in Physics, you need never study your lesson."

Who is the young man teacher who loses his head when the fair girls speak to him?

Aimee had to mop up the floor after she had spilled all of her macaroni.

All canines are positively prohibited from sticking their noses in the butter.

Lucile, playing cards:—"Well, I guess I'll have to throw up now."

How the pupils straightened up when Dr. Dannaker spoke about round shoulders.

One teacher feels quite sensitive if you mention the word collar.

Freshmen, Freshmen you be good, Mr. Morrison will feed you Mellen's food.

The orchestra is practicing diligently under our able leader, Mr. Miller. We hope to hear it before long.

Room 15 would have been very popular the day after that heavy snow, had not Mr. Morrison been overly occupied with the Fresmen.

Mr. Richardson:—"Give me a verb and its past participle." Pupil:—"Sweet, sweeten." Mr. R. "Another." Mr. Walker:—"Would, wooden," (laughter.). Mr. R.:—"Oh! Oh! You give me one, Miss Schwartz." Miss Schwartz:—"Led, leaden! (Wild burst of applause.)

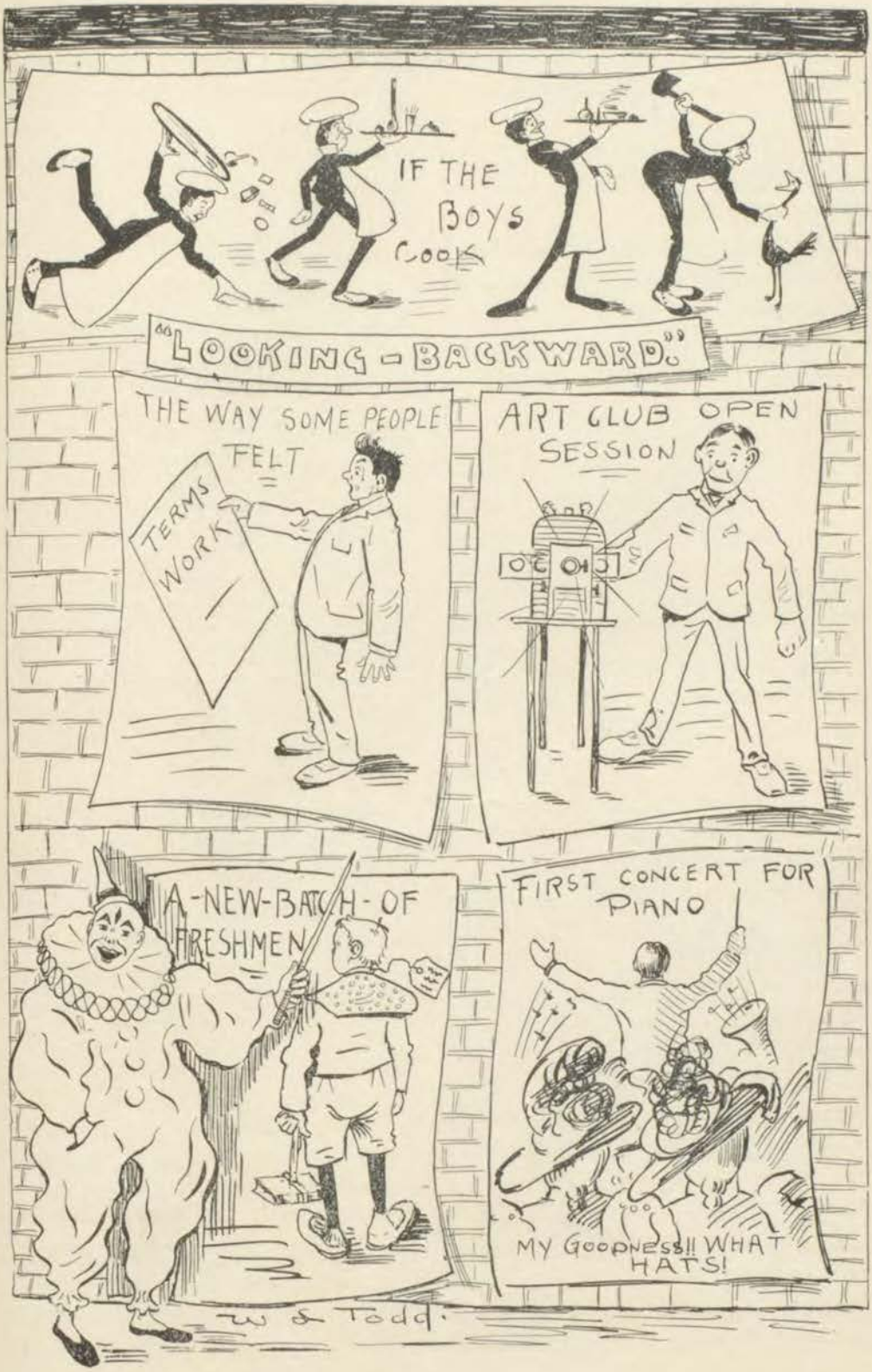
Mr. M.:—"Mr. Hewett, if you had as good a memory as you have a forgetery you would make a great man."

In Physics (subject refrigeration.) Teacher:—"What is the object of mixing salt with ice?" Pupil:—"To make ice-cream."

Miss Miller to a friend:—"Where do you put your lunch?"

Why are our locals like feathers? Because they are light? No, because they tickle the people.

If your razor needs fixing up, take it to Rechner's, Heist building, 723 Delaware.


IF THE BOYS COOK
"LOOKING - BACKWARD."
THE WAY SOME PEOPLE FELT
TERMS WORK
ART CLUB OPEN SESSION
A-NEW-BATCH-OF FRESHMEN
FIRST CONCERT FOR PIANO
MY GOODNESS!! WHAT HATS!
W. S. Todd.

Poor Chaucer! If he could hear the descriptions of his ghost in English Literature class he would arise in disguise and revise his demise.

The city assessor actually asked Miss Sadie Kinly what her husband's name and occupation was.

Miss Laidlaw:—"In making bread you put the yeast in the middle on top, don't you, Mr. Merrill?"

Miss Miller thinks it strange that a young man in her Zoology class doesn't talk more. How is it possible when she is around?

Some persons, even teachers, seem to forget that "what is sause for the goose is sause for the gander."

Mr. Henderson, you will be sent to the office if you don't stop injuring the machinery by bumping your head against it.

Margaret said she broke the U-tube "just looking at it."

One of Miss Daisy Moore's admirers seemed to be dropped behind the rest. Who is it.

Who said John Miller went to sleep in the back part of the assembly hall?

The opera chairs with which the Thos. Kane Co., of Racine, Wis , seated our auditorium, have given general satisfaction.

Mr. Moore, will you not have your boys make a foot-stool for Miss Gilday to use on Mondays?

Freshman (translating from Grimm):—"And he must run after himself."

Mr. Dodd, (to boys at the board):—"Boys, keep your shalk charp!"

Enthusiasm has turned from foot-ball and base-ball to fish-ball.

Mr. Miller said that the noise in the hall was only a few Freshmen who had broken loose.

If you want your pass book written up free of charge, you will do well by calling on Miss Ingram. Room 13.

Miss Bacheller:—"You don't come to see me so much in the afternoon anymore, do you Karl?"

Miss Van Meter:—"Mr. Richardson never comes into my class but what he has something 'ridiculous' to tell me."

Mr. Miller:—"What kind of a rope has no end?" Fifth-hour Freshman:—"An endless rope."

Mr. Miller:—"If you please, Miss Northrup, we'll have no syndicate recitations. Let Miss Dewey recite for herself.

Mr Swan in Chemistry class the other day announced, after making a large amount of "laughing gas," that it was a howling success.

"What kind of pie did Miss Berry make?" "Which one, there are two Miss Berrys?" "The older one." "Why, elder-berry pie, of course."

German pupils have a Grimm lesson every day.

Pupils will oblige our paper greatly by patronizing those who advertise with us, when wishing anything in their lines. Also please mention seeing the advertisement in THE NAUTILUS.

Mr. Swan is very much worried for fear the young ladies in the cooking class will make their hands rough washing dishes. We wonder why?

A pupil translating "Nur ein Fass Beer," endeavored to say "one casket of —— "
When the teacher exclaimed: "Oh! no, girls see here,
You don't mean to say one casket of beer.
Of course it is true, a connection is plain,
But you've turned it quite over, now try it again.
Beer is not in a casket, that wouldn't be sane.
The casket is placed on the bier, that's plain."

Flossie R. said she would like to have her brains pulled in order that she might get an idea into her head.

Seward Hosp said that when one lever arm is longer than the other there is a deformity.

Miss Fisher—"If chickens were born in an oven would they be biscuits"

BOAZ SOFTMORE.

Straight Talks to Boys—Answers to Inquiries.

Reader:—No, there is no limit to the age of the Freshmen. They usually walk readily though they have little control of their feet. If conditions are right they sometimes reach a ripe old age.

Maybury—The German word "bis" means til or until and has no connection whatever with biscuit as Mr. Richardson suggested.

Student:—No, Fred Graff did not break his arm playing the mandolin. His accident befell him in the "Gym".

In the woodworking room. Arthur:—"Sterling, what kind of a fit did you get on your last exercise?" Merritt:—"Twasn't a fit, it was a spasm."

A girl's recipe for potato-balls. Issue invitations to the ball at least three weeks in advance of the date, mash boiled potatoes, add milk and salt, roll into balls and fry in hot fat. Serve.

"Attention girls," said Miss Murphy. "What will keep Mr. Simpson and Mr. Tooly from talking so much about their drawings?"

Wonder why the Junior girls in the advanced French class were so fascinated with the first name of Monsieur Dosroches?

Mr. Peters:—"Now Miss Cohagen, was Mr. Reid's statement true?" Mr. Reid (waking from a reverie):—"Well, now if you write the way ——" Mr. Peters:—"You may change some one elses name some day, but hardly your own." You should have seen poor Burton blush.

Little Jack Horner sat in a corner,
Eating some cooking-room quince.
He bit on a lump, his jaw had a bump,
And he hasn't eaten anything since.

First man:—"Is it not strange my wife and I were born on the same day?" Second man:—"That's nothing, my wife and I were married on the same day."

Punch, Miss Osgood, punch in a whirl,
All in the presence of the tardy girl;
Excuse pending, room and date;
Hurry up for she is late;
Say your speech 'bout room 15—
Never mind if she thinks you're mean,
Punch away, the entire day.
Punch, Miss Osgood, punch.

Some things Central don't have:
A Bacheller Page.
A bachelor Page.
A Bachelor page.

On a bill seen in the cooking-room:—"Bought by the Board of Education, of J. R. Miller, eight pound sliced cat, $1." We wish the girls success, and will take pleasure in furnishing cats free of all cost, except ammunition. This is not at all "fishy."

Mr. Connell:—"Now, Miss ———, please explain the difference between the lines A-J, C-J, and E-J." Pupil:—"I don't see any difference. All jays look alike to me."

A bright young lady gives this recipe as a great success. "Kisses:—Here is something really sweet. The necessary adjuncts are a pretty girl, a good looking young man, and a golden opportunity."

The dance with Mr. Morrison as fiddler was delightful.

Since when has Mr. Graff become a member of the Chemical Laboratory?

Mr. Kent's crawling days are not yet over.

OUR NEW BOOKS FOR FEBRUARY.

"A Successful Yolly or How to Stand in With the Teachers and Assistants."—A tale of experience by Karl Zimmerschied.

"Effect of Late Study on Eyes." In one Vol.—Todd.

"The Science of Domestic Art." A pamphlet.—Marie Uebelmesser.

"Tobacco: Its Uses, Abuses, and Substitutes."—Mr. Richardson.

"What I Don't Know About Chemistry." In 10 Vols.—Sadie Kinley.

PEOPLE WHOM WE CAN'T ROAST.

Mr. Black, because he is Editor-in-Chief.

Miss Miller and Mr. Tood, because they're local editors.

Miss Osgood, because she has so much influence.

Miss DeWolff, because of the lack of material.

Mr. Page, because there is not enough to roast.

Mr. Zimmerschied, because we haven't room.

When one of the new Freshmen entered the shop for the first time, he possessed the desire to show his young playmates his superior knowledge of carpentering. He picked up a mallet and screw-driver and began to chisel a hole into a piece of stock, but he was not the only pebble on the beach, for a comrade said: "Look what's trying to chisel with a screw-driver!" He replied: "Bet you it ain't. Look at the edge on it."

"Our Manual Training High School teaches the manipulation of everything from lightning to dough, from X-rays to raising biscuits. It teaches plane trigonometry and planing a board. It's a great school."—Browning-King's Monthly.

A TRAGEDY IN TWO ACTS:—

1.
Man,
Pier,
Wine,
Beer.
2.
Sea,
Wave,
His—,
Grave.

Why do so many girls refuse to eat onions. Is some one coming tonight?

Ask Mr. Swan why he always answers "Present" to the exclamation, "Oh, dear!"

When will Miss DeWolff take her degree as a physician? She serves hot lemonade to sick teachers Has she a grudge against them?

Pupil—"Is this word singular or plural?" Teacher—"Plural; but you are very singular."

Cliff,
Tiff,
Biff,
Stiff.

Pupil—"Are you in Mr. Phillips' English class?" Friend—"No; Miss Fisher gives us fillups enough."

Miss Purnell's escorts hereafter profit by the last "Social Session" and start home in time to catch the last car.

Who left those cakes in Miss Drake's top drawer? Was it intended that she eat them?

Ask Mr. Wells why he is in such a hurry to get to his English room before the other class has gone.

Why does a certain young lady in Miss Fisher's class always have the toothache at class time?

I wonder if Daisy Moore is the happy girl who sings at the desk in Room 13, the fourth hour, thinking that she is in Room 21.

Deere Bicycles

MAY BE HAD IN KANSAS CITY DURING THE SEASON OF 1898 WITHOUT THE RIDER BEING COMPELLED TO PAY A

..Profit to the Bicycle Dealer or Agent..

WE HAVE NO AGENT IN KANSAS CITY

But propose to handle this business ourselves.

...It will, therefore, be within the power of every bicycle rider in Kansas City to obtain one of the most popular high grade bicycles in the west at a very low price. We expect to sell only for cash at wholesale prices.

We have no cheap lots to force upon you. All our bicycles are new and in fine condition, and we have a thousand in our warehouse to select from.

John Deere Plow Company,

THIRTEENTH AND HICKORY.

CHAS. E. BROWN PRINTING CO., KANSAS CITY.

THE NAUTILUS.

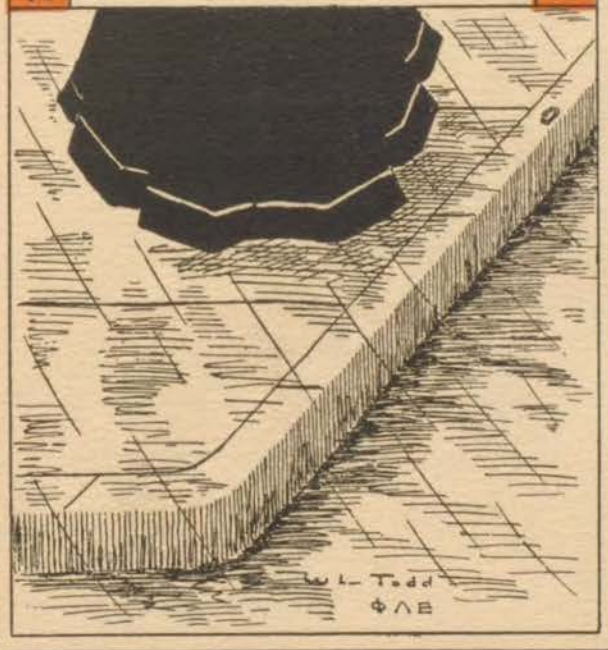
FOR APRIL '98.

MANUAL TRAINING HIGH SCHOOL.
KANSAS CITY, MO.

VOL. ONE. NO. THREE.

Build thee more stately mansions, O my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast.
Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea!

—*Oliver Wendell Holmes.*



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JAMES N. RUSSELL ..... Mcwtadjræcsmd
VAL THOMAS ..... Sergeant-at-Arms
WALTER HIDDEN ..... Critic

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JOHN MILLER ..... Second Lieutenant

The Orchestra.

A. R. MILLER, Director.

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GEORGE CONKEY.
LETA ROGERS.
NINA FRASER
ANNA JAMESON.

MANDOLINS.
FRANK RUCKEL.
WILLIE MITCHELL.
JOSEPHINE LOWEN.

'CELLO.
LOU ROGERS.

PIANO.
CLARA LINDSLY

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LITERARY DEPARTMENT.

A HOOSIER APRIL FOOL.

Only the fertile soil of the Hoosier state could grow such people, and only the entrancing environment of Clifty Falls could invigorate them with the buoyant spirits and pleasure-loving nature that fostered the storied "Quilting Bee." The "Kentucky Corn-cracker" in his wildest flights, cannot imagine a "Bee"—it is so different from his horse-races; and to no greater extent can his "Buckeye" brother or "Yankee" cousin appreciate its pleasures. It is so informal and yet so innocent; so genial and though particularly peculiar to Indiana and the Hoosiers, so general in its fame.

The Mantor home near Clifty Falls, was the largest and finest for miles around, and a "Quilting Bee" there assured the best kind of a time. In the distance, the roar of the falls could be heard as the water tumbled over the precipice one hundred feet high, in its course to the mighty Ohio river. Set well back and surrounded by innumerable trees and shrubs, the house could scarcely be seen from the road, except for the large drive-way that led to the side entrance. Within, it was comfortably furnished, and the spacious rooms afforded ample opportunity for entertaining a large number of guests. Maria, the only daughter of the household, and her very personality indicated the fact, was to be married in May; and since a goodly supply of quilts was considered as essential a factor in the success of the new departure as a wedding-dress and a minister, a quilting bee had been appointed for the first day of April to which Maria's immediate friends alone were invited. As Maria well knew from experience that very little would be accomplished and perhaps that little unsatisfactory, the "Bee" was virtually nothing less than a "tea" for the bridal party. Early in the afternoon, the large Mantor farm wagon which had been sent for the girls, returned, and Maria, actually discarding some of her accustomed dignity, greeted them affectionately as they "piled out." Standing in the large door-way, Maria presented a picture; very tall and very thin, she was awkward and not altogether an admirable figure. Her black hair, parted in the middle and plastered down till it

fairly shone, was devoid of any curl except two "pet locks," one on either temple and a "beau catcher" at each ear with which she would not have parted for the honor of the family name. Her black eyes, a distinctly Grecian nose, high cheek bones, and a mouth with no suggestion of a "rose-bud curl" completed a face whose expression belied its twenty-one years of comparative leisure. Maria looked as if the "world was her's" with all its responsibilities, and when she smiled, it was a peculiarly forced one. Nevertheless, she and her mother possessed the happy faculty of entertaining royally and their guests always felt at home. She was attired in a brown poplin, ruffled from hem to waist; a sash of black silk and a neck-kerchief of white net completed and somewhat enlivened her otherwise sombre costume.

"SHE ANSWERED THE CALL."

Soon the busy hands were at work, kept pace by busier tongues, for Oh! the gossip at a "Bee!" Everybody finds out about everybody else, so much more than either party knows. The moments passed quickly on to hours, and while very little was accomplished,

the afternoon was not entirely wasted. The age of intellectual feasting had not yet dawned, and the supper, to which the escorts had been invited, was the principal part of the "Bee." As they arrived, the quilts were drawn up to the ceiling and all signs of work laid aside.

"April Fool's Day" thought Sam Watters, a veritable clown, as he sounded the knocker, "and what a chance to have some fun." Maria prided herself on her presence of mind on such occasions, and defied even Sam Watters. She answered the call, and Sam shambled in. His feet, the principal part of him, were incased in new shoes much too large; in fact they always were, for Sam believed in getting all he could for his money. A rim of white socks could be seen under his brown trousers which, either from shrinkage or misfit, were too short; he wore a real white shirt, gray vest, and a very rusty black coat, the sleeves of which were long for Sam's arms, as he had rolled them several times to have free use of his hands; his attire was completed by a brilliant red tie and a white collar. His hair was of that soiled cream color, his eyes brown and just twinkling with fun, and his cheeks the ruddy hue of a healthy farmer boy. But he was "just as good a boy as ever lived," so Mrs. Mantor said; and if anyone should know, it was she, for Sam was almost one of the Mantor family.

The new minister had been invited that he might become acquainted with the crowd; then there was the groom-elect; Luke Tabb, the rural poet, was not forgotten; none the less Tom Blake, the aspiring magician, Will Muggs and several others.

Shortly before supper, the genial snuff-box was passed, and imagine Maria's horror and utter distress to find that her friends had been served with pepper instead of snuff; and no one to blame unless it could have so happened under Tom Blake's magic powers. Ben, the obliging small brother, who had served as bearer, was placed on a high chair to answer the charge of the trick, but pleaded such sincere innocence, that, while not acquitted, he was released on conditions. He had got the box off the shelf, just where Maria had put it, and the change was a mystery.

Mrs. Mantor soon announced supper, hoping to relieve the distress of her guests, and as the company marched into the dining room and seated themselves at the table laden with delicious viands, Maria proceeded to light the candles on the mantle. Match after match she struck, and the candles would not burn. Pinching the wicks to ascertain the cause, Maria discovered that they were charcoal finely cut, and she fairly trembled in anger. Here was another mystery—no one knew where they came from. Good ones were substituted, and there was now more light on the subject. This difficulty settled, the minister arose for the blessing, and had reached the words, "we thank Thee for—" when the alarm in the old wooden clock chimed in and rang for fully three minutes. Little Ben was so amused that he burst out in wild laughter, and one by one the guests joined in till all were enjoying the joke at Maria's expense. Again little Ben was accused and again he denied it. Maria was confused, but the rest were heartily appreciating the fun and none the less the delicious supper.

The "host saw the mantling bliss go 'round," and also saw it stop suddenly at Sam Watters' place, for Sam's face was mantled in agony. Suddenly he exclaimed, "Oh, Mrs. Mantor, what is the matter with this delicious smelling coffee? Bring me some water, or I'll die!" The other guests soon began to

look distressed and Mrs. Mantor was speechless in surprise.

"Why mother," gasped Maria, "you have passed us salt instead of sugar—you are evidently trying to fool us." This covered Mrs. Mantor with confusion and completed her mortification.

"Indeed I have not, Maria. Ben, did you do that? I wonder if the grocer could have fooled me." And she rushed frantically into the pantry, soon returning with the can from which she had taken the sugar. Put to the test, its contents were as sweet as any sugar ever was, and the mystery was only deepened. By no means overcome, Mrs. Mantor made more coffee and fortified against any change by passing the sugar herself. The supper was finished without further embarassment but with no little suspicion on the part of the guests.

Supper over and all assembled in the parlor, Maria announced that she had something to show them, and ran upstairs to get a wedding present just received from "the city." She tripped merrily into her room and turned to the dresser behind the door to find her treasure, when—she discovered a man!

"THE ALARM IN THE OLD WOODEN CLOCK RANG FOR FULLY THREE MINUTES."

For a moment she stood speechless in fright, and then suddenly regaining her power of speech, she screamed, "Help! Help! Oh come quick. Here's a man! Oh, help!!" Her terrified guests rushed to the stairs, joining in her piercing shrieks, and as Maria stumbled awkwardly down the stairs and fell in a fainting heap at the bottom—the thief rushed out? No; that inevitable Sam

Watters appeared at the top dangling a life-sized dummy and chanting "April Fool, April Fool."

However, he did not stand there long, for the sight of Maria, limp in her faint, frightened him, and he quickly descended to assist in reviving her.

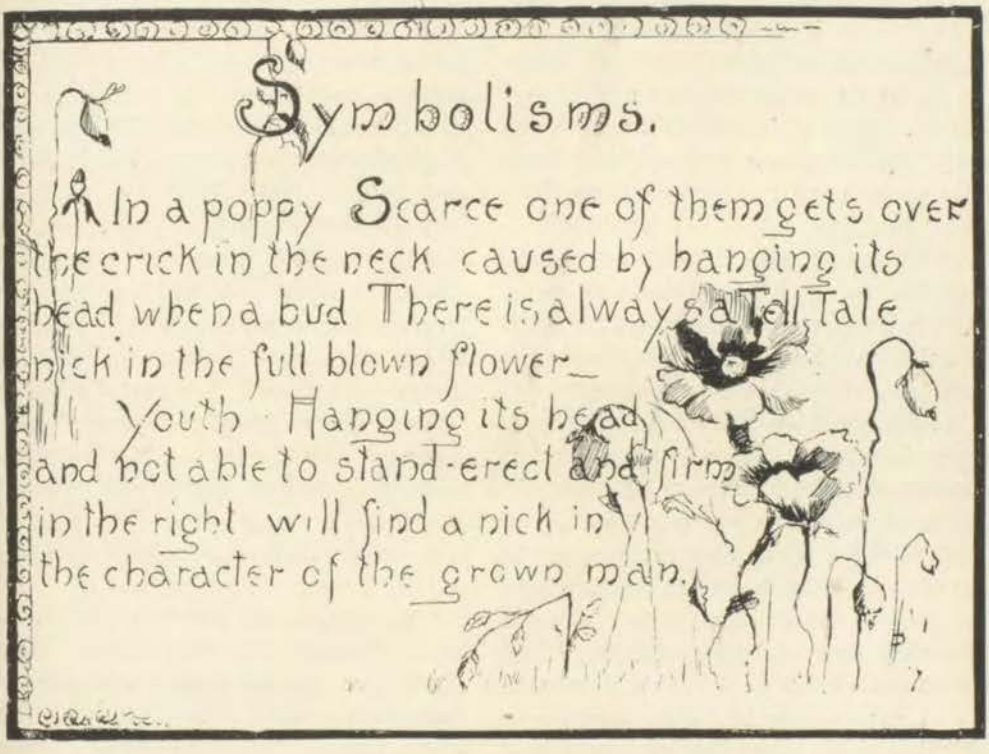
Roused to her senses, Maria asked: "Did you catch him? Where is the villain?"

"Right here," and the penitent Sam lugged the dummy to her side. "It was only a dummy, Maria, and I put it there; I'm awful sorry—I didn't think as how you'd faint."

"Oh, you wretch!" shouted Maria. "And it was you that substituted pepper for snuff, and salt for sugar, and put charcoal in the candles, and set the alarm. Oh, you are so awful!"

The house fairly shook with laughter as Sam confessed it all; yet forced Maria to acknowledge her first April Fool.

J.



A BIT OF HEATHER.

The sun had scarcely sunk to rest; indeed the golden aftermath still lingered, filling the air with a warmer and softer radiance than its glorious predecessor. The mellow haze added a painter's touch to a scene by no means uncommon in Scotland.

It was only a great Scottish moor with its vastness broken here and there by great clumps of boulders. On one of these was seated a young woman, evidently resting before the homeward trip; while around her, on all sides, even in her lap lay great bunches of heather. A young man leaning on a rock near by was the only other occupant of the scene.

At last he broke the silence by that rugged Scottish speech, so soft when heard, so impossible to imitate: "Sing, Cathie. Sing 'Maid o' Dundee.' For truly you mind me o' how she maun have looked and it has been long sin I heard you sing."

Thus urged, the damsel began the beautiful song. Deeper and sweeter grew her voice, sadder and sadder until in a despairing wail came the words "Oh Father in Heaven, let me go too!"

As the last note died away, the singer burst into a passion of tears. "Ah, Robbie, Robbie! I canna, canna sing it. It minds me o'mooch o' our Bessie, poor bairn; an' her so far awa'! Here out in the glen an' the heather I mind me o' her shut in the greet town wi' ne'er a bit o' her loved heather near her. An the song that she used to sing sa mooch! Na' I canna sing it! Poor bairn, poor bairn! I wish sa sair she had een a sma' wee piece o' her bonnie heather. Only a sma' piece to mind her o' her bonnie home *an' our true Scottish hearts.*"

Again it is evening, but what a different evening! Here there is no vastness, no wildness, no glory such as we beheld in the heaths of Glenelg. The sinking sun adds only a deeper gloom to the surrounding dampness; the people in the rapidly thinning streets scowl at each other angrily; the buildings shake their tall heads and frown.

Among the travelers on this rainy night is a woman scarcely more than a girl. Her wet garments cling to the slender figure, the rain pours incessantly but she hurries steadily on, pressing closer to her the numerous bundles which late as it is, she is carrying. The rays of a passing street lamp give us a glimpse of a sweet modest face lit up by a pair of deep violet eyes. She is not beautiful, this heroine of ours, by no means. Hers is the beauty of nobleness and strength of character rather than physical proportions. She is so tired, so lonely and it is so late. Will she never be home? Involuntarily she quickens her footsteps as she thinks of Jeannie, all alone, lying there waiting for her; Jeannie her small invalid sister who is all the world to her A sob rises in her throat as she recalls the doctor's words: "Your sister requires nourishment, dainties. And she seems to have a great longing for something; if you can give her that she may recover." And the busy doctor had passed on, never knowing the despair he left behind.

"Nourishment, dainties, when we have not enough to keep up life. How can I ever take her back to Scotland?" thought the girl. But now she only clasped tighter the packages. "Pray God," murmured she, "they may not come too late."

Ah, the bitterness of it! To see one whose life is dearer to us than our own, to see them slowly, surely fading away.

To know that a few pence would perhaps keep them with us, to feel this, and yet see them die. It is such a time as this that makes women desperate and men criminals.

The girl had long since left the fashionable and business parts and now turned into a rattley, tumble-down tenement. Stair after stair she climbed until she reached the top. Here she paused a moment to listen; not a sound from within.

Hastily pushing open the door and entering she was greeted by a glad, though feeble voice, "Ah, Bessie, I was wondering where you were. I was afraid something had happened. What has kept you? I've been so, so lonely."

Quickly laying down the bundles, lighting a candle and laying aside her damp clothes, Bessie approached the bed. She lifted the child in her strong arms and caressed her while she spoke. "What, lassie, hast missed me so much? No dearest, nothing has happened only I was late. But I have good news for you dearest, I have a place, so now rejoice. We'll soon have you well again and then a journey back to merry Scotland. What has my little Jeannie been doing all day? Not crying for home, dear? Ah, Jeannie, Jeannie I would both were at home in bonnie Scotland. But mind not dearest; wait until I have lighted a fire and given you a wee sup o' broth and I will tell you a piece o' good news. Only you must promise to eat and get well "

And with a sigh she laid down the wasted body of her sister, growing thinner and feebler day by day. "Thank God," thought she, "that I have the money. What was a little suffering to myself as long as I did it for her. Another day might have been too late."

The supper was cleared away and the room put to rights. Jeannie had eaten eagerly for her. She was all excitement to know what Bessie had for her. She felt sure it was news from Glenelg. Ah, if she could only be back among the rocks and the smell of the heather she felt sure she would be well again. She wondered what Bessie was doing—her eyes close wearily. What was that? A breath from her own heaths? Her eyes are wide open now. No. Yes. It was only a little piece of dried Scottish heather, but it was more to her than all the world. She clasped it eagerly; it was all she needed.

"Sing to me Bessie," said she. "Sing to me, "The Maid o' Dundee" just as you used to do. Then I will dream I am back again in the heaths of Glenelg." And Bessie sang low the sweet old words. Jeannie's weary eyes close again—the stuffy attic room with its bare floor, crumbling walls, broken panes, the smoky air, the stifling hum, even Bessie's voice fades away. And the little one smiles as she dreams she is again playing among the heather with Bessie beside her.

That night in Bessie's long letter to Cathie she told her of all their misfortunes in America. She told of her father's death and then her mother's; of their sudden poverty and her struggle against it, and finally of Jeannie's long illness. Then she spoke of the heather. "You say," wrote she, "that it is only a bit of Scotch heather, yet it has saved Jeannie's life. She was wearing her heart out for her Scottish home and her bonnie heather, but now she is sleeping and the doctor says she will recover. Your heather brought us luck and when Jeannie is able to travel, we will return to Glenelg."

This much she wrote, but she did not tell them how literally true it was that the heather had saved Jeannie's life. She did not tell of the suffering she had undergone when she had tried to sell this Scotch heather in the streets of

New York. Nor did they know that the money thus obtained, bought the food and medicine.

This was long ago, and Bessie and Jeannie have long since been home at Glenelg where they have whole moors of heather at their disposal. But Bessie still treasures as sacred a little piece of dried up withered grass! "It is just a wee bit of Scottish heather."

A WHEELING ADVENTURE.

Wheeling stories are numerous. Scarcely a week passes that one does not hear several. Nevertheless such stories are remarkably popular, considering their abundance, probably because many readers have themselves experienced the pleasure of a five mile walk with a broken wheel, and a head in similar condition; or, have, while riding, bowed gracefully to a lady acquaintance and then turned several very ungraceful somer-saults without a net to catch the fall. This is my excuse for writing a bicycle story.

Several years ago, when the modern safety bicycle was yet a novelty, and a thirty pound wheel was thought dangerously light, I became the proud possessor of a "light roadster" that weighed only forty pounds. At that time I resided in the hilliest portion of Illinois, in a region where a certain twenty mile and return ride was regarded as the attainment that raised a youthful rider from the ranks of the novices to eligibility to club membership. Boylike, I was soon filled with a great longing to attempt that ride.

It required all my persuasive powers to gain the parental consent, and several times my father intimated that if I did not give up the project, he would try the efficacy of apple-twig moral suasion. But I braved the danger and sang my song at all times and places until, to gain a relief, my parents gave their consent.

So, one June morning, contrary to my custom, I arose early, gave my wheel a final examination and gaily rode away. The first five miles passed quickly, and I was much elated at my progress. At the end of the second five, I began to think, that after all, country riding was not so fine as reported, and at the end of the third five miles, I would have taken a train at a nearby station if I had not thought of the teasing I would receive on my return, so I wheeled on.

Then I lost the route. I also lost a portion of my trousers through the efforts of a bull-dog at a house where I stopped to inquire my way. The hungry, disappointed look in that dog's eyes when he found that he had only pants, haunted me for some time after, and I mentally resolved to carry a regular arsenal the next time I went wheeling. After some time I found the road and went on for a mile or two, and, as it was up grade all the way, I rightly concluded that the river was near, and took new courage in anticipation of the coast down the bluffs to the valley. Slowly I pedaled over the knolls and out on the long, last up-grade that stretched out ahead for a quarter of a mile—hot, dusty, quivering in the June sunlight.

Looking up, after some time, I saw a small herd of cattle emerge from a lane half way up the grade. As I was a novice at country riding this seemed nothing worth watching, so I lowered my eyes, bent over the handle bars and toiled on, nearly to the lane. Then, on looking up to see if the cattle were in the way, I felt a peculiar sensation near the heart, for there ahead was a large, aggressive looking bull standing by the road, eyeing me as earnestly as I was him. I had always felt a wholesome regard for bull's feelings, and had studiously avoided ruffling their tempers unless there was a good fence between us, so I determined to watch this bull closely, and to avoid any personal misunderstandings with him.

He was evidently but little acquainted and less pleased with wheelmen, for the nearer I approached, the more he pawed the ground and shook his head. We were both undecided as to what we should do, but the bull, to make a show of doing something, moved out near the fence, as if inviting me to pass. I accepted the invitation, and, forgetting my fatigue, increased the speed and passed in safety, but had gone but a few yards when a hoarse bellow made me shrink as from a blow, push hard on the pedals and then look around.

His bovine majesty had made up his mind and was coming after me at a pace that seemed impossible for one of his build. There was wrath in his voice and murder in his eye, and with every bellow I pumped harder, soon gaining a speed I had never reached before. But my strength did not hold out, and at the end of the first hundred yards of the race with two hundred yards between me and safety, I was gasping for breath, and my knees felt like they were breaking, but my opponent's capacity seemed great as ever and he was fast closing up my twenty yard head-start. I saw that it was a race to a finish, and with a last look at the bull, I set my gaze on the crest of the hill, mustered all my remaining strength and judged by the bull's progress only by the sound of his heavy hoof-beats. I was soon so exhausted that I felt sick. I seemed to just crawl along, and the bull's bellow sounded frightfully loud and near. The road seemed to rise and hit the pedals, and the dust was choking, but with one last, desperate effort I shot over the hill, and rapidly acquiring speed, soon left the bull far behind.

At the bottom of the hill I tumbled off my wheel and lay exhausted for an hour before I was able to ride the remaining two miles to my destination. While resting at the foot of the hill, I looked back at the bull. He had stopped fifty or sixty yards down the hill and was apparently pondering on the amazing way I covered ground. After a while he turned, and with a last far away bellow, walked mournfully out of sight over the hill. In his departure I found relief and much satisfaction.

Of course I did not ride my wheel home, but I was not teased, for while visiting, a heavy rain made the roads impassable for a wheel, and gave me a good excuse. I did not soon try another overland ride, and when I did, I rode a light wheel, carried a revolver for the benefit of hungry bull-dogs, and kept an eye out for speedy bovine enemies.

LITTLE JOHNNIE BROWN.

There were three persons on the car, a merchant, deep in the income tax list of the "Traveler," and old woman with two bandboxes, and a man in the corner with his hat pulled down over his eyes. Johnnie opened the door, peeped in, hesitated, looked into another car, and came back, gave his little fiddle a shove on his shoulder and walked in.

"Hi! Little Johnnie Brown plays for his supper," shouted the young fop, lounging on the platform.

"O! kids, you're there, are you? Well, I'd rather play for it than loaf for it, I had," said Johnnie stoutly. The merchant shot a glance carelessly over the top of his paper at Johnnie's approach, the old woman smiled that quaint old smile, but the man in the corner neither looked nor smiled.

Nobody would have thought to look at this man in the corner, that he was deserting a wife and five children. Yet that was his aim.

Neither a villian nor a brute, but merely a weak, unfortunate, discouraged, selfish man, who wanted to rid himself of his troubles by avoiding them His black and gold sign, "F. Green, Photographer," had swung now for nearly a year and he had received the patronage of six women and five babies. He had drifted to the theatre in the evening; he did not care now to

remember how many times the fellows asked him, and it made him forget his troubles. The next morning his empty purse would gap at him, and Annie's mouth would quiver. A man must have his glass, too, on Sunday morning, and well, perhaps, a little oftener. He had not always been fit to go to work after it. Well, then the children had been sick—measles, whooping cough, scarlatina, mumps; he was sure he did not know what not—every one of them from the baby up. Medicine, doctor's bills, sitting up at night had harrassed him.

Annie had a cough and her shoulders had grown round, her breathing came short and she was generally run down. He hated the whole dreary, dragging home. Once fairly rid of him, his scolding, his drinking, his wasting and fretting, Annie would send the children to work and find some way to live. He would make a golden fortune some day and come back to her with silks and servants. So here he was, bound for Colorado, sitting with his hat over his eyes.

"Hm-me, asleep. Guess I will wake him up," said Johnnie. He laid his cheek down on his little fiddle, and struck up a gay, rollicking tune—"I care for nobody and nobody cares for me." The man in the corner sat quite still. When it was over he shrugged his houlders.

"When folks are asleep they don't hist their shoulders, and I'll try another."

"We've lived and loved together, through many changing years." This was a new tune and needed practice.

"We've lived and loved together," played Johnnie in a plaintive little wail.

"Confound the boy!" Green pushed his hat up with a jerk, and looked out of the window. The night was coming on.

"Through many longing years," it was a nuisance—this music. What did the child mean by playing that? What was that boy about now?

Home, sweet home! Yes, she! —ah, she had it all to find out yet. There in the lighted home out upon the flats, that had drifted by forever, she sat waiting now. The children would eat their supper, the table would stand untouched, with his chair in its place; still she would go to the window and stand watching, watching. Oh the long night that she must stand watching, and the days and the years!

"Sweet, sweet home."

Green was awake in every nerve and listening to each sound that fell from the fiddle. The sweet, loyal passions of music — it would take worse playing than Johnnie's to drive the sweet, loyal sentiment out of Annie Laurie as the tones grew strong above the din of the train!

"It was there that Annie Laurie gave me her promise true."

She used to sing that the man was thinking—that other Annie—of his own.

"Never mind, Fred, I can stand it as long as I have you."

He wondered if it were too late in the day for a fellow to make a man of himself.

"Done," said Johnnie. "Well I guess I have woke you up, sir, which was about what I wanted to do." "Yes, that is it," said Green very distinctly, pushing up his hat and emptying the contents of his purse into Johnnie's cup. And when he returned to his Annie he said, "My dear, it was just business, business that detained me. I was thinking of a little boy who did a job for me to-night, that's all." And that is all many know to this day about the man who was sitting in the corner, with his hat over his eyes, bound for Colorado.

"TOP."

THE NAUTILUS.

Entered at the Kansas City postoffice as second class matter.

THE NAUTILUS is published once every two months in the general interest of the Manual Training High School, at Kansas City, Mo.

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Contributions are requested from all members of the school.

Address all communications to

THE NAUTILUS,
Manual Training High School.
KANSAS CITY, MO.

The extensive military and naval preparations being carried on by the Government and the appropriation of $50,000,000 by Congress may indicate only the desire to be ready for any emergency, or may be taken to mean the possibility of a clash when demand is made that the horrors in Cuba shall come to an end. It is clear that the only safe and economical course is being pursued, and the public is not likely to complain of it, though hope will be strong that through such a policy the calamity of war may be averted. However pacific a nation may be, there are times when the value of its moral influence, if not its own safety, depend on the possession and exercise of material force. Washington declared that preparation for war was the most effectual means of preserving the peace. War is largely a question of money; and although poverty does not always prevent it, possession of a long purse by one power generally acts as a powerful deterrent to reckless action on the part of the poorer nation. The value of diplomacy in the settlement of disputes is likely to be more clearly recognized because a nation is prepared for war, and if it is not, then these measures are all the more needed.

The interest of the public in our school is shown by the large number of visitors we have daily. To these are extended every courtesy by our principal. They are escorted through the various departments and made acquainted with their working and appliances, the methods of study, and what the pupils are endeavoring to accomplish. These visitors are not confined merely to the residents of our city but come from every part of our own and other states.

Recently we were honored by a visit from a committee of the Commercial Club. In its report to the Club the following is said: "It is the unanimous opinion of the committee that this school

is thoroughly demonstrating the practicability of the manual training system of education, and we feel that at the earliest day possible the east wing should be erected in order to relieve the crowded condition even now existing, and also to afford room for working in metals, thus completing the design of the system." One of the committee, J. H. North, spoke briefly of the school. He said: "Of all the investments that Kansas City has made, none will pay as big a dividend as the Manual Training School, and if the people could see what was being done they would readily vote the needed money for the completion of the building." At the present election the people of Kansas City are asked to appropriate $300,000 to public institutions; $50,000 will probably be needed to finish the east wing and equip the building. We look forward with confidence to having this much needed addition ready for occupancy by the opening of the next school year.

We have been enjoying a series of varied and delightful Monday morning entertainments in our auditorium. The first of these was a very able lecture by Mr. Wells on Roman Society. It is to be regretted that parts of the lecture could not be distinctly heard, for Mr. Wells brought out clearly some points which are not generally dwelt upon. He portrayed in a very striking way the wretchedness and blood-thirsty character of the times, serving to remind us of the great growth and progress of civilization which has taken place since that dark period.

* * *

February 28, Ex-Governor Crittenden gave us an interesting talk on Mexico. Mr. Crittenden's voice is strong and expressive, such as one delights to hear. His whole bearing shows him to be a man accustomed to public speaking. Under the Cleveland administration he was for four years America's representative to the Mexican capital. Besides entertaining us with a vivid description of Mexico, it's people and their customs, Mr. Crittenden spoke of the government, the educational institutions and the president. He considers President Diaz one of the foremost men of the age.

* * *

We are indebted to the musicians of the city for a number of our entertainments. February 14, we were favored by the Appy family; one of the best numbers was Miss Appy's 'cello solo. February 21, Mr. Rudolph Richter very pleasingly entertained us, and March 7, the Western Conservatory of Music with a grand ensemble of pianos.

* * *

March 8th, we were again called into the auditorium to hear a lecture by Mr. Hogeland, the man who instituted the curfew in this country. Mr. Hogeland has a very original way of talking, interspersing his remarks with short, pointed stories. He complimented our school very highly, when he said "This school has given the best evidence of culture and refinement that I have witnessed in any school." We should certainly feel proud that our conduct would call forth a statement like this from a man of Mr. Hogeland's standing and observation.

* * *

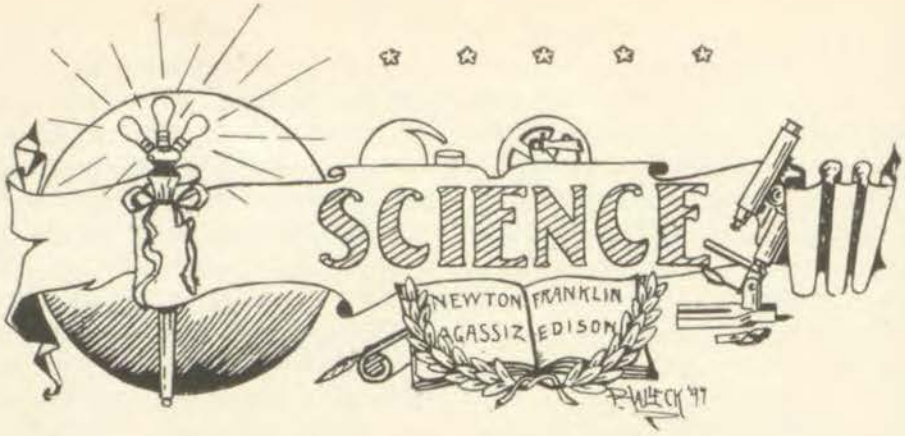
On March 14, Mr. Vernon, of Independence, entertained us with stereopticon views of a trip through Europe, Egypt and Palestine. Miss Beth Boright performed exceptionally well on the 'cello.

The pupils and visitors in the Assembly Hall on March 21, were very agreeably surprised by a delightful musical entertainment from the orchestra of the M. T. H. S. Considering the short time that the orchestra has been in existence,

we were ready to be lenient toward any short comings on the part of the performers, but there was no occasion for the exercise of any such leniency. The entertainment was more than creditable, it was excellent, and we hope that the orchestra will soon favor us again. The Misses Miller, Lindsly and Fraser responded to a hearty encore. By special request, Mr. Miller, the director, concluded the program with a violin solo. That his selection, Schumann's Slumber Song, was exquisitely rendered needs no assurance to all who have had the pleasure of listening to Mr. Miller. We congratulate the orchestra on its success and ourselves on the honor that it reflects upon the school.

At a recent meeting of some of the boys, a society by the name of the M. T. H. S. Cycle Club was organized. The purpose of the new society is the promotion of cycling and the pleasure of all the members, both honorary and active. The club starts out with the brightest of prospects. The runs are arranged in a series of half and whole day trips which are to take place every Saturday. A moonlight run once a month will also be one of the features. The officers of the new society are given in the Directory.

As the end of the school year approaches, the thoughts of the Seniors naturally turn to the work of the closing weeks which will terminate their High School career. The question of graduation exercises presents itself for solution. The character of these exercises is usually determined by the locality, by the aims and purposes of the school, by the wishes of the pupils, and by the faculty. The old-fashioned commencement usually consisted of memorized essays delivered as orations. These efforts with their accompanying preparations and rehearsals commonly occupied the best part of the last six weeks of school. The value of this form of graduation, counting the time spent, and estimating the true worth of the productions is being questioned in recent years, and many of the best schools have modified or abandoned it altogether The chief plea for it has been that it served to attract attention to the school, and to call out the patrons and friends of education. This is hardly complimentary to the legitimate work of an institution, which must depend upon such means for appreciation and support. Of course there is no harm in occasionally playing the orator for entertainment or amusement. But every one knows, or should know, that true oratory comes only as a natural result arising from the simultaneous occurrence of the man and the occasion. It hardly seems necessary or appropriate to close the school life with an exhibition of something it has had least to do with. It is well enough for a "school of oratory" or elocution to "speak some pieces" but it is not equally appropriate for all schools. The graduation exercises in so far as they are furnished by the members of the class might be some natural product of their work, such as theses on special investigations during the course, manual training, scientific or other work. Should there not be enough of these to occupy the time, there is no better way to spend it than in listening to the words of some speaker of age and experience selected for the occasion. In so far as we have been able to ascertain this seems to be the consensus of opinion of the present class which consists of pupils who passed three years of their course in the Central School and will have had one year in the Manual Training School, graduating as the pioneer class of the first public Manual Training High School in this State.



CHEMISTRY IN THE HIGH SCHOOL.

When a student is contemplating the study of some subject, he is very likely to ask himself, "Of what use will it be to me."

In seeking for the answer to this very pertinent question, he is likely to err in looking for too immediate results. He must remember the object of the high school. It is not intended for specialization to any extent. Its aim is to awaken and exercise the faculties in many directions, thus enabling the student to find out his adaptability to some particular line of work. This particular line he must then pursue farther in some higher institution of learning, or in the great school of experience. If the high school does nothing more than show him this and engender in him the habit of careful and intelligent and discriminating reading, it has accomplsihed a great deal. What if he finds that he has forgotten three-fourths of all he had learned? Need he be discouraged? No, indeed. For, if he has done his duty, he has learned *how* to study; he is now able to read, intelligently and interestedly, articles on all subjects of general information. And how he is to be congratulated! For, with this splendid beginning, he still has a lifetime before him.

Now let us turn our attention to the particular subject, chemistry; for it might be a little difficult for one to see how that could be of any use except in a technical way.

When the student thinks of chemistry, before having entered upon the study of the subject, he is quite likely to have in his mind a misty picture of bottles and glasses and crooked tubes and retorts, associated with the mysterious production of pretty colors and vile smells and explosions. But let us see whether it does not teach us something that everyone with a good general education must know. Let us consider now its value to those who will probably not study the subject beyond a high school course. We will look about us and see whether we are not in a big chemical laboratory, where reactions are constantly taking place.

Here stands a lamp, which is burning, as we say, and giving light. What is burning? Why, the oil, of course; we know that, because we have to refill the reservoir occasionally, or the lamp will go out. But what has become of the oil? Has it been annihilated? Can *something* be changed to *nothing* by burning it? It certainly looks like it, for we keep on adding oil, that we know is matter, and yet with none of the five senses can we detect anything in the nature of matter leaving it.

Chemistry tells us, and it is not a very difficult matter to prove it, that we can neither annihilate nor create matter. That when it disappears in one form, it reappears in another, though this may be in a form—the gaseous—in which it is difficult, and sometimes almost impossible, to recognize it as we ordinarily recognize matter—by the senses of sight and touch. We learn that coal-oil is a mixture of several liquid compounds of hydrogen and carbon. Doesn't it seem strange that hydrogen, which is a gas, and carbon, which is a solid, should combine and form a liquid? But they do, under some conditions. We learn further that, whenever a substance burns in the air, it unites with the oxygen of the air, the same part of the air that our lungs need to purify the blood. So when oil burns, the carbon of it unites with some of the oxygen of the air and forms carbonic acid gas, as it is commonly, though not very correctly called. This carbonic acid gas is the same as the gas we exhale from the lungs. The hydrogen of the oil unites with oxygen from the air and forms water. What? Can water be made of two gases, that are invisible and tasteless and odorless? Yes, we can easily prove this ourselves in the chemical laboratory. Didn't you ever notice, when you first lighted the lamp, that a thin coating of moisture condenses on the inside of the lamp-chimney for an instant, and then disappears as soon as the chimney gets warm? Try it tonight if you have never noticed it. That is some of the water that is formed by the burning of the oil, and it deposits on the chimney as long as it is cold, just like drops of water form on the sides of a pitcher of cold water in the summer.

THE CHEMICAL LABORATORY.

The supply of oxygen is furnished by virtue of a strong draft, which you can easily notice by holding a fine thread a foot above a lighted lamp. If we close some of the holes at the bottom of the lamp, so that we do not have enough draft, the lamp begins to smoke. Why? Because there is not enough oxygen to unite with the carbon of the oil and form the invisible, odorless carbonic acid gas, so the carbon comes out of the chimney in the form of a black solid, which we call soot and which is quite plentiful in the atmosphere of our city. So much for the chemistry lesson of the lamp. Let us merely mention a few of the other teachings of chemistry.

It tells us that a chunk of coal and a diamond are different forms of this same substance, carbon, that we have just mentioned. That the phosphorus used in the manufacture of matches is made from bones. That the soda our mothers use in cooking is made from ordinary salt. That what we call "soda water" has no soda in it at all, but is simply a solution of carbonic acid gas in water, under pressure. That iron and most of the metals are not found in nature in that form, but in combination with other substances in what you should probably call dirt or rocks, and how the metals are obtained from this "dirt." It explains to us how bleaching is accomplished. It tells us how soap is made from fat, and that glycerine is produced at the same time. What gun powder is, and how it gets the power to send a bullet with such a tremendous velocity. How sugar can be changed to alcohol. How both paper and vinegar can be made from wood. It explains the principles of photography; how the plates are made and how the light affects them.

And so we might go on and fill this whole paper, telling the many things all of which a person of good education wants to know and into which we get an insight by the study of elementary chemistry. Is it of any use to us? M.

EXPLOSIVES.

It would be impossible in an article of limited length to exhaust the subject of explosives. However, a few facts concerning the chemistry of some of the principal explosives that figure so greatly in modern warfare may be interesting at this time.

In general, explosives are those bodies which possess the property, when raised to a certain temperature, either by the direct application of heat or by percussion, of being converted into gases in an extremely short space of time. In the case of low explosives or mechanical mixtures, such as common gun powder, the explosion proceeds progressively by combustion and the gases gradually accumulate until the resistance to them gives way. Explosives which are chemical compounds, act differently. Their explosion does not take place by progressive combustion, but by instantaneous decomposition into products all or part of which are gases. These gases are expanded by the heat generated to many times their volume at the normal temperature. Only those explosives which are chemical compounds, will be treated here.

Nitro-glycerine, the best representative of the high explosives, is formed by the action of nitric and sulphuric acids on glycerine. The reaction takes place thus:

$C_3 H_5 (O H)_3$ plus $3\ H N O_3$ =
Glycerine Nitric Acid
$C_3 H_5 (O N O_2)_3$ plus $H_2 O$
Tri-nitro-glycerine Water

It can readily be seen that each of three atoms of hydrogen of the glycerine have been replaced by the group $N O_2$.

The explosive properties of nitro-glycerine lie in the unstable chemical equilibrium caused by the $N O_2$ group.

On explosion, nitrogen, carbon dioxide, carbon monoxide, and water vapor are formed.

Nitro-glycerine explodes at 306 F and burns at a much lower temperature, hence it may burn up without exploding. The cause of its sensitiveness to blows or quick strong pressures lies not in the concussions themselves but in the heat that they produce. If nitro-glycerine is kept at a low temperature, an ordinary blow will not produce enough heat to explode it.

Dynamite is nitro-glycerine held in a state of absorption. The absorbent may be either chemically inactive or chemically active. Infusiorial earth, or guhr is the best example of the former. It is a silicious limestone composed of small shells, in which the nitro-glycerine lodges. The latter is composed of potassium nitrate, soda, rosin and wood fibre, mixed with guhr or kiesel guhr as it is commonly called.

The form of dynamite which has chemically inactive absorbent, acts exactly the same as nitro-glycerine. It has the advantage, however, of not being so easily exploded, for the reason that the particles of kiesel guhr form a sort of cushion to the nitro-glycerine thus protecting it from ordinary blows. Another advantage is that when a sufficient force is exerted upon it by the exploder, the kiesel guhr conveys the vibration to all parts of the mass so that complete detonation is insured.

Dynamite containing no other absorbent than infusorial earth may contain as high as eighty per cent of nitro-glycerine but if it contains less than forty per cent, it will not explode. To obtain a low grade of dynamite, that is, dynamite containing only a small amount of nitro-glycerine, chemically active absorbents must be used to cause the detonation of the oil. Though the salts, like potassium nitrate, which are used for this purpose, are slower in exploding than nitro-glycerine, they nevertheless increase the force of the explosion.

What glycerine is to the nitro-glycerine compounds, cellulose is to the nitro-cellulose compounds. Cellulose forms the frame work of all plants. Cotton, hemp, linen, and white paper consist almost entirely of cellulose. Like many other organic compounds it contains carbon, hydrogen, and oxygen.

When cellulose in the form of cotton is treated with sulphuric and nitric acids, four nitro-compounds are obtained, whose composition and properties differ according to the quantity of the acids used, the quality of cellulose employed, the time the acids act, and the height of temperature of the acid mixture. Penta nitro-cellulose, the highest of the nitro compounds of cellulose is gun cotton, and is distinguished from the others by its insolubility in alcoholic ether.

The unstable properties of gun cotton are due to the same cause spoken of under nitro-glycerine. The gases formed by explosion are of a poisonous character, hence one of its disadvantages. Being stiff and hard after compression it cannot be adapted to irregular cavities like dynamite and is not so serviceable under water. However, it has the advantage of never freezing and is more powerful than nitro-glycerine. C. K.

THE COMMON BEETLES ABOUT KANSAS CITY.

Among the first insects noticed by the young collector are the beetles. They form the immense order Col-e-op'-te-ra.

These insects have a pair of heavy wing-covers called elytra which fold over and protect another pair of membraneous wings beneath. This latter pair are the sole organs of flight, hence are much longer than the elytra, and when the insect is at rest are neatly folded beneath these horny sheaths. The jaws of all beetles are fitted for biting. Their larvæ are commonly called grub-worms and pass through a complete metamorphosis before becoming the adult beetle.

The Coleoptera about Kansas City represent probably as many as fifty families. Those most commonly met with, however, fall into about fifteen families.

One of the largest and most common families is the Ca-rab'-i-dæ; containing a great many species, all of which are provided with long legs; extruded and powerful jaws, and thread-like antennæ. They are all carnivorous, hence are a positive benefit to mankind since they catch and devour the vegetable feeding species, with which the farmer usually divides his crops about equally.

Numerous species of these beetles are to be found about our electric lights, among the most common of which is Har'-pa-lus ca-lig-i-no'-sus, (Fig. 1). The beetle is a solid, dead-black color. A smaller species of the same shape but with light-yellow legs is H. pennsylvanicus. This species often times occurs in veritable swarms about the arc-lights. Another and larger species known as Cal-o-so'-ma scru-ta'-tor, (Fig. 2), always attracts attention by its gorgeous, metallic, bronze-green color and handsome form, and returns the attentions by emitting the most nauseus odor known to man. Belonging to this same genus are several rarer species; C. ex-ter'-num, of a more slender form and a black color with violet margins on the elytra, (Fig. 3); C. sayii, black, with no violet border; C. cal'-i-dum, black with sunken, metallic spots on the elytra.

Others of this same family are never seen about electric lights, but only beneath logs and stones. One of these is Pas-i-mach'-us e-lon-gat'-us (Fig. 4), color, dull-black with deep-blue borders. Another smaller but more highly colored species is Di-coe'-lus splen-did'-us, (Fig. 5), the wing covers of which are bronze-green, the thorax bluish. Others of the same genus are solid black. Another beetle, (Fig. 6), which we find very common under stones is Gal-e-ri'-ta jan'-us. The species has a black head, yellow pro-thorax, blue wing-covers and yellow legs. Others of a similar appearance but of smaller size are remarkable for the fact that when disturbed, they emit a fluid which vaporizes so suddenly on contact with the atmosphere as to produce an audible explosion. These beetles are members of the genus Bra-chi'-nus.

Another family closely related to the former is composed of beetles having long, fragile legs; thin, sickle-shaped jaws and emitting, when captured, a pleasant odor resembling verbenas. They appear very early in the Spring, and may be found basking on the sunny sides of clay banks and in dusty roads. Their flight is exceedingly quick. All our common species belong to the genus Ci-cin-de'-la, (Fig. 7).

Another group of predaceous species spend their larval and much of their adult lives in the water. These beetles are oval in shape, black with, usually, yellow markings; and have thread-like antennæ. They form the family Dy-tis'ci-dæ. Our largest species belong to the genus Dy-tis'cus.

All boys are familiar with those little flat, black beetles which spin and twirl about over the surface of ponds, and are known as "lucky-bugs." Well, they form a family known as the Gy-rin'i-dæ and our common species belong to the genus Gy-rin'us.

Another large water-beetle which, early in the season, comes to the lights in large numbers is Hy-droph'i-lus tri-an-gu-la'ris, (Fig. 8). This species represents the family Hyd-ro-phil'i-dæ.

We often in our rambles in the woods find a dead bird or mammal. If you are a wise "bug hunter" you will examine these defunct carcasses for beetles. Probably you will find a big fellow with two big, rectangular spots of red on his wing-covers, trying to dig a grave for

the departed. This is our largest representative of the family Sil'phi-dæ and is known as Ne-croph'-o-rus Americana.

Other very flat beetles will also be found. They belong to the genus Silpha.

Representatives of other families are also at the feast. Strange and fierce looking insects may be running about with their tails up over their backs. These belong to the family Staph-y-lin'i-dæ. Two of our largest and most frequently seen species are: Staph-y-li'nus mac-u-lo'-sus (Fig. 9), a velvety brown species; and Cre-oph'i-lus vil-lo'sus, about the same size but black with a band of grey across the elytra and across the abdomen.

On close inspection of the dried skin and bones of dead animals you will often find little dust-colored, almost hemispherical beetles belonging to the genus Trox, of the family Scar-a-bæ'i-dæ. They are also found about arc-lights and very promptly play "possum" when picked up. This family contains many species of beetles varying greatly in size, form and habits. All, however, are more or less robust, have legs fitted for digging, and short antennæ, with the knob at the end formed of several fan-shaped pieces which can be expanded or closed at the will of the insect. Our common species fall into two divisions: those which live in animal excreta, as the tumble bugs; and those which live upon the leaves of plants.

Our well known tumble-bug, (Fig. 10), is Can'-thon læ'vis. It is dull black in color. A very beautiful species, Pha-n'æ-us car'ni-fex, is sometimes found here. It is readily recognized by its brilliant green elytra.

Another genus is represented by the large Co'pris car-o-li'na, (Fig. 11).

Boring in the earth beneath excreta may be found the common Ge-o-tru'pes splen-did'-us, (Fig. 12), a beetle of bluish-green, metallic reflections.

Passing now to the so-called leaf-chafers we have the common June-bug. Figure 13 illustrates the typical genus Lach-nos-ter'-na. These beetles swarm about arc-lights in June. Their larvæ are the common grub-worms. These species are all dull-brownish, or light-yellow. We next examine some light-colored ones. The gold-smith's beetle, Co-tal'pa la-nig'e-ra, (Fig. 14), is very beautiful in its dress of old-ivory and gold. A commoner species, Pel-id-no'-ta punc-ta'-ta, is more modestly dressed in snuff-yellow with four black dots along the sides.

We always find about the lights, in company with the June bugs some heavier coated, black, or brown beetles, with little punctures and ridges on the elytra. These belong to the genus Lig'y-rus. Figure 16 is L. re-lic'-tus. L. ru'-gi-ceps is smaller and reddish-brown.

On the first warm days one may find about trees where sap is exuding, many specimens of Eu-pho'ri-a in'-da, (Fig. 17). A smaller species of a darker color is E. mel-an-chol'i-ca. Occasionally a species of the same general shape is found whose color is irridescent green, this is Al-lo-rhi'-na nit'i-da. These beetles are known as the flower beetles because they feed upon the pollen and sweets of plants.

Of all the Coleoptera the longicorns or Cer-am-byc'i-dæ are the most graceful and interesting. They spend their larval period in wood and hence are known as borers. They may be collected at the arc-light, on flowers, and under loose bark. Figure 18 illustrates a common species, Rom-a-le'-um a-to-ma'-rium. Notice the long, slender antennæ; the distinguishing feature of the family. Another genus, Tet-ra-o'-pes, is represented by one or two species which occur on the leaves of milk-weed, (Fig. 19.) We have many cotton-wood trees along our water courses and they are generally infested with the cotton-wood borer, (Fig. 20), a most beautiful beetle with white and black ornamentation. It is technically known as Plec-tro-de'-ra sca-la'-tor. There are many other beauties in this interesting family.

Closely allied to the preceding but of different appearance are the leaf-beetles, or Chrys-o-mel'i-dæ. They are short, oval beetles, with short antennæ. We find many species feeding upon the leaves of various plants. The dog-bane is the food plant of a very beautiful species which is shown in Figure 21. It is very convex in shape and of a brilliant green color. It is Chry-so'-chus au-ra'-tus.

All boys know the big, brown pinch-bugs. They form the family Lu-can'i-

dæ. Of the typical genus we have Lu-can'us da'-ma (Fig. 22), and L. plac'i-dus. The former is mahogany brown, with well curved mandibles and a head as wide as the pro-thorax; the latter is darker in color, head not so wide as the pro-thorax and mandibles not so strongly curved. The females do not have such strong jaws. L. ela'-phus is quite rare and has mandibles resembling the antlers of a stag. All these species are found at arc-lights.

Hastening over many small families we notice the Lam-py'-ri-dæ, a group of leathery winged beetles of which the common lightening-bug is an example. Figure 25 displays our common species, Pho'-tin-us py-ra'-lis. Other species are very numerous on golden-rod and belong to the genus Chaul-i-og'na-thus.

We have all watched with interest the efforts of snapping-beetles to regain their feet when placed on their backs. These belong to the family El-a-ter'i-dæ. Most of them are small and brown in color. Our largest species is A'-laus oc-u-la'tus (Fig. 24).

On potato vines we find the blister-beetles, or family Me-lo'i-dæ. Our common species belong to the genus Ep-i-cau'ta. E. pennsylvanica is uniform black; E. cin-e-rea, uniform ash colored; E. vit-ta'-ta, longitudinally striped with yellow. Figure 26 displays a rare species, Py-ro'-ta in-glab-o'-nia, which is yellow with black spots.

We will mention but one more great division of the Coleoptera. This is the sub-order Rhyn-coph'o-ra, or snout beetles. The largest of the families of this sub-order is the Cur-cu-li-on'i-dæ. These insects have the fore part of their heads drawn out into a long more or less curved snout. The small mouth parts are situated at the end of this snout. The antennæ are elbowed. The illustration, (Fig. 27), shows a representative of the genus Ba-lan'i-nus, or acorn-weevils.

Finally, when you have, with much pride, secured in boxes all these many beetles, you are amazed to find on your return, from, possibly a trip to the mountains, that these several families have been reduced to naked pins and the one family Der-mes'-ti-dæ. This is the price you pay unless your specimens are in tight boxes and are protected by many moth-balls.

The Dermestids are small, plump beetles whose larvæ, little brown hairy villains, eat up everything which looks like a specimen.

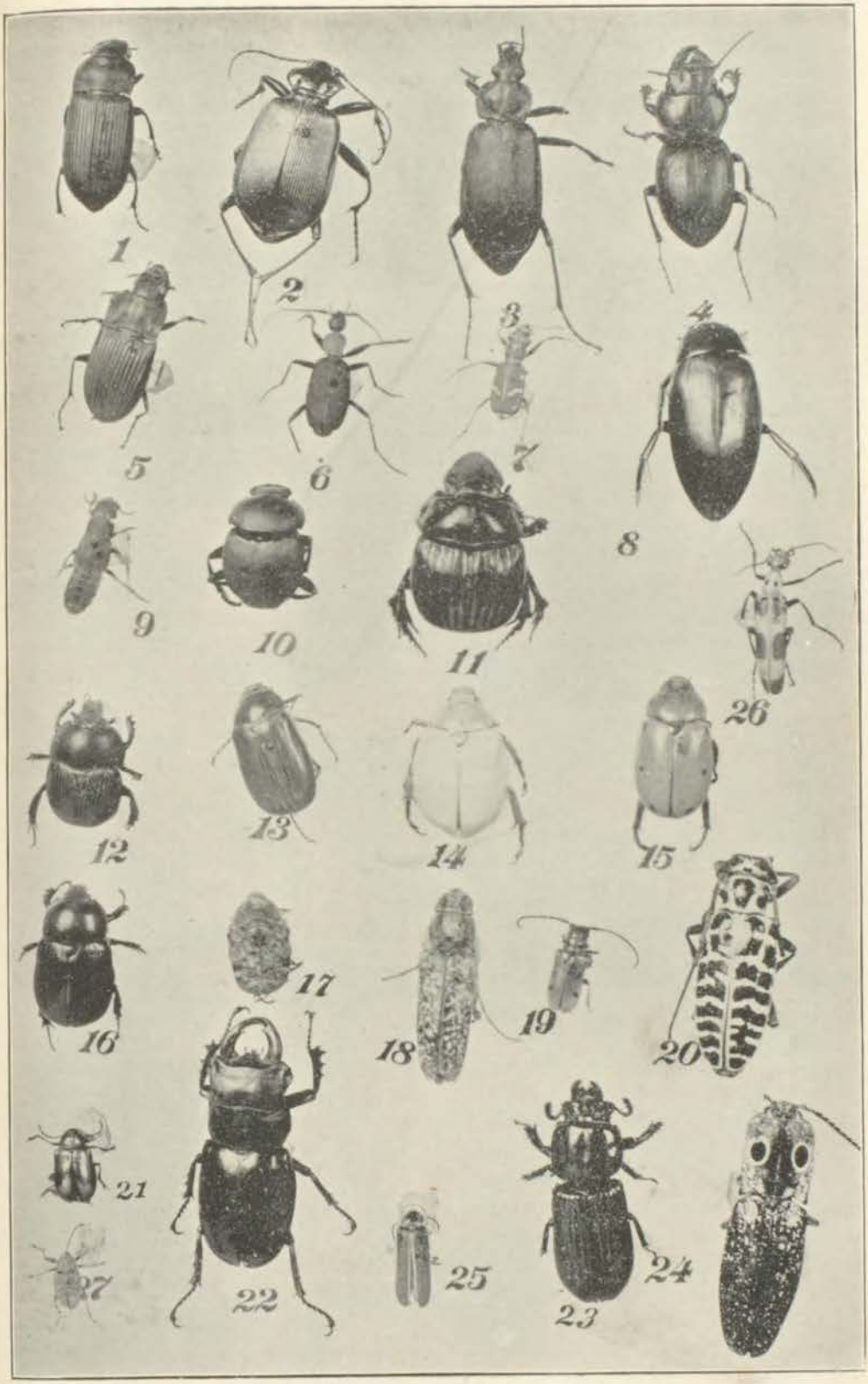
The object of this sketch is to get some of the boys and girls in our schools interested in Nature. To give to your Sunday stroll in the woods, or to your after dinner bicycle ride, an intelligent object. Materials are on every hand. All you need to begin with are a few hundred insect pins and some cigar boxes with bits of cork glued to the bottom. Let the pin be thrust vertically through the middle of the right wing-cover. Place on the pin beneath the specimen a very small square of paper bearing the date and situation of capture. Have your specimens the same height on the pin, about two-thirds up from the point is the proper distance.

To kill beetles humanely two methods may be used. Provide yourself with a quinine bottle into which have the druggist drop a few pieces of the cyanide of potassium and cover them with plaster-of-paris. When the plaster is thoroughly set, wipe the bottle dry before using it. The deadly fumes of this poison very promply kill. Another and very efficacious method is to merely drop a small quantity of gasoline upon the insect.

A little interest and patience will soon earn for you a great deal of the most enjoyable knowledge of the living creatures with whom we are forced to share this world.

EXPLANATION TO PLATE.

Fig. 1. Harpalus caliginosus.
Fig. 2. Calosoma scrutator.
Fig. 3. Calosoma externum.
Fig. 4. Pasimachus elongatus.
Fig. 5. Dicoelus splendidus.
Fig. 6. Galerita janus.
Fig. 7. Cicindela Sp.
Fig. 8. Hydrophilus triangularis.
Fig. 9. Staphylinus maculosus.
Fig. 10. Canthon lœvis.
Fig. 11. Copris carolina.
Fig. 12. Geotrupes splendidus.
Fig. 13. Lachnosterna Sp.
Fig. 14. Cotalpa lanigera.
Fig. 15. Pelidnota punctata.
Fig. 16. Ligyrus relictus.
Fig. 17. Euphoria inda.
Fig. 18. Romaleum atomarium.
Fig. 19. Tetraopes Sp.
Fig. 20. Plectrodera scalator.
Fig. 21. Chrysochus auratus.
Fig. 22. Lucanus dama.
Fig. 23. Passalus cornutus.
Fig. 24. Alaus oculatus.
Fig. 25. Photinus pyralis.
Fig. 26. Pyrota inglabonia.
Fig. 27. Balaninus Sp. F. J. H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THE PRACTICAL SIDE OF AN EDUCATION.

Very few of us really decide upon a life work before leaving High School; therefore during these preparatory years the more knowledge we can acquire, the greater our ability to touch life and the world's works at all points, the better chance we have for success.

Here lies one of the great benefits of the Manual Training High School. You may have precisely the same studies that you would have in any other High School with the addition of manual training. This practical knowledge, or in other words, "applied knowledge," is worth much now, and I believe it is an investment that will pay a big dividend every year of your life. Some one has said, "thought is easy, action is difficult," and we often find this out,—sometimes from cowardice or timidity we just think, but oftener we keep on thinking because we lack practical application.

The world has decided it matters not how highly a girl may be educated in languages, literature and mathematics; yet ignorance of scientific cooking, neat sewing, nursing the sick and keeping the home orderly, robs her of much that makes the perfect, womanly woman. So it should be with a boy; to know how to saw a straight line, use common tools, understand mechanics and other practical things taught in this school is necessary to the education of a perfect, manly man.

This practical knowledge being acquired with other learning, creates a symmetrical and stronger character. To know that we can do something adds dignity and strength. We need feet as well as wings, for this is an intensely practical world, and knowledge that can be made use of is always desirable. Manual training is worth much in that it teaches us the value of time, money and labor,—a very necessary lesson.

There are some that think manual training a kind of degredation and that knowledge of this kind will cause them to lose caste and position, so, "there are fools and fools, some for the want of sense."

"Old-fashioned economists," says the eloquent Wirt, "will tell you never to pass an old nail, old horseshoe, buckle, or even a pin without picking it up; because although you may not want it now, you will find a use for it sometime or other." I say the same thing to you with regard to knowledge. However useless it may appear to you at the moment, seize upon all that is fairly within your reach. For there is not a fact within the whole circle of human observation that will not come into play some time or other.

TODD.

AN EXPERIENCE IN COOKING.

"School's out," cried a merry crowd of girls, as they ran down the steps of the new Manual.

"And I'm not sorry," said one quite pretty girl, "for I leave tomorrow for a month's visit to my sister, who has only been married a month. She doesn't know a thing about cooking, and I am going to teach her some of the things I have learned here at the Manual."

Maud, the young girl who had been talking, left her friends at the next corner, and hurried home to prepare for her visit.

She had not been at her sister's but a few hours when she wanted to help in the kitchen. "No," said Mrs. Farrar, Maud's sister, "I want you to have a perfect rest, and I know you must be sick of cooking, having taken it a whole year."

"Sick of it!" said Maud, "no indeed, I just love to cook, and I'll wager I can teach you a good deal about cooking."

"Nonsense, you teach me. Haven't I done the cooking at home for a year, off and on?"

"Yes, but you didn't cook things the right way."

"What do you call the right way, may I ask?"

"The way it is taught at the Manual."

"Yes, I thought so," said Mrs. Farrar, "but housekeepers don't have time to fool away their time in cooking the way you do."

"Fool away their time," retorted Maud, "maybe you wouldn't be sick so much, if you would cook *our* way."

"Oh well, I am as healthy as you, and it doesn't take me half the time to get breakfast as it does you."

"No, because you eat your cereal raw. Now, Lou, please let me cook that cereal this morning and see if it isn't better?"

After some persuasion, Mrs. Farrar submitted to the younger sister, and Maud set to work with an air of great importance.

She got out the cereal and before beginning to cook it, she asked her sister for a glass jar with a tight cover, in which she put the cereal, so the dirt would not get in it. Mrs. Farrar sighed, and said something about her whole house being turned up side down now that Maud had come with her Manual ideas.

"Now, I will show you how to cook cereal."

She got out the double boiler, and another sauce pan.

In the sauce pan she put one and three-fourths cups of water with a teaspoon of salt and put it on to boil. Then she measured one cup of oats and when the water was boiling she poured it over the cereal and put it on the flame to cook five minutes, then put it in the lower part of the boiler and cooked it twenty-five minutes longer.

After it was on, Maud sat down to watch it, and said, "Now, that's the way to cook cereal. Of course some cereals takes longer than others to cook. For instance, rice should cook from forty-five to sixty minutes, hominy one hour, Indian meal three hours. You ought to have a cook book that will tell you all those things, for the cooking of cereals is very important."

Poor Mr. Farrar had to wait for his breakfast that morning, but after eating Maud's cereal, he said it was worth the waiting.

Maud made many things while she

visited her sister, and Mrs. Farrar soon came to the conclusion that Maud could teach her some things, and that the girls did not fool away all their time at the Manual.

One day, Maude offered to make bread for her sister.

At first Mrs. Farrar refused to let her, but it was finally decided that Maud should make just one loaf, and if it was a success, she should make more soon after. Maud was a little nervous, for she had not made it but twice before, and she knew what fun they would make of her if it was not a success. Mrs. Farrar watched her very closely and learned a good deal.

First, Maud took her cake of compressed yeast, and putting it in a teacup poured three tablespoons of cold water over it, and left it to dissolve. Then she put one cup of cold milk, and three-fourths cup of warm water in a bowl. "You'll have to try the temperature of this," said Maud, as she put her finger in. "It must be just tepid."

After letting it cool a little, she put in one teaspoon of salt.

"Now I will stir this yeast up, so it will dissolve, and then put it in the water and milk."

After it was all stirred in with a wooden spoon, Maud began putting in sifted flour, until it was stiff enough to knead.

"One thing you must be careful about is not to get too much flour in it. Just have enough to prevent its sticking to your hands," said Maud, as she scraped all the dough out of the bowl.

"Now Maud, do teach me how to knead." Maud smiled and commenced.

"You must not put your fingers in the dough; hold them up and knead with the palm of your hand. If you put your fingers in, they will leave marks, and your bread will never be smooth."

After kneading the bread until all the lumps were out and it was perfectly smooth, she put it in a greased bowl, and greased the top with butter.

Covering it, and putting it in a moderately warm place, she left it to raise for three hours.

At the end of this time, she put it on her floured bread board and kneaded it ten minutes, then shaped it to fit her pan, being careful that it was the same thickness all the length of the loaf. She then covered it over and left it to raise another hour, after which it was ready for the oven.

"Now Lou, the baking is very important, you must remember. I think we will have to light up the oven about fifteen minutes before we put the bread in."

So the oven was all ready for the bread, and it was put in on the top shelf.

"The bread should continue rising for the first fifteen minutes and then begin to brown, and continue browning for ten or fifteen minutes, after which you can turn your light down a little."

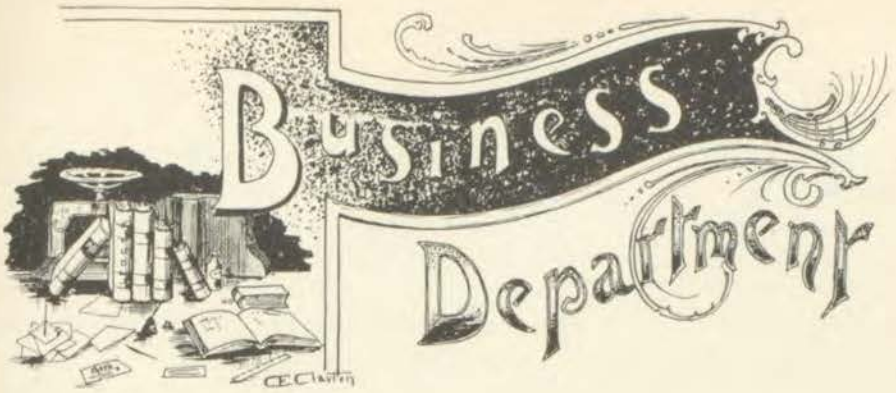
"How long do you bake your bread, Maud?"

"Well, that depends on the stove, but you can tell by looking at the sides of the loaf. If it does not stick to the sides of the pan it is done."

When the bread came out, all pronounced it a perfect success.

A few days after, Lou tried making bread under Maud's directions, and it was very good, but not like Maud's.

Before Maud's visit was over, her sister came to the conclusion that the Manual was a good thing, and wished she had gone there, and just between you and me, I think her husband wished so, too.



OUR BUSINESS COURSE.

The addition of a commercial course of study to the curriculum of high schools and colleges is of recent origin; and the advancement in methods of presenting the different subjects, incidental thereto, have undergone marked changes. Considering the progress of this intensely practical age, and the importance of the subject, it is not to be wondered that such rapid strides have been made in this direction. Men and nations are vying with each other for supremacy. The watchword is push and energy. Labor-saving methods and devices are demanded. Accurate, careful, and rapid recording of all business transactions, is not only of the utmost benefit, but also of absolute necessity.

The subject of commercial training is receiving careful consideration everywhere. Foreign countries are establishing special schools to educate their youth in this direction. The Principal of the University Extension of a prominent Western university has been devoting time and energy to the encouragement of adding properly equipped commercial departments to our higher institutions of learning. As a result, a leading university of California has lately added such a course to her list of studies.

The Manual Training High School's business course comprises, this year, instruction in bookkeeping, stenography, and typewriting. Next year classes will be formed in commercial law and commercial arithmetic. The course is not outlined to compete with private institutions that make a specialty of such teaching, but rather to give a comprehensive view of the fundamental ideas of business principles and ethics; or, to transact business in an intelligent, conscientious, and progressive manner, giving, at the same time, the acquisition in the technical ability to keep books with accuracy and dispatch.

The plan followed is in harmony with the main purpose of the school: to present the subject of bookkeeping concretely rather than abstractly. To require the pupils to act, rather than to read mechanically about something which they do not understand, except in a general way—for the subject is new to most of them—is a leading feature of the work. The results achieved prove the correctness of the method. The discovery of new truths are their own compensation. They are, therefore, at once brought in contact with representative business forms, vouchers and commercial papers, thereby dealing with the actual thing itself. An important fact impressed at the beginning is that the pupil is about to become a book-

keeper, keeping not only book of general accounts, but also those of a business. While business cannot be done in the school room, the pupil can be subjected to the same general directions and confronted by the same conditions and problems that confront the bookkeeper and business man. The position of the teacher is similar to that of a general manager of an office force, who guides, directs, assists and controls.

All records are made direct from actual business papers. Authority is given by a Power of Attorney to act in behalf of the head of the business—to sign his name, collect money due, pay debts, either by cash, check or note—and to look after all other details incidental to the correct management of the concern. After this blank has been filled out properly and placed on file, the money to be invested in the business is arranged for, counted, and disposed of according to directions, and the proper record is made.

Merchandise of various kinds is bought and sold for cash, on account, for notes, and other forms of security. Office books and supplies are purchased: the rent and office help paid, the pupils meantime being required to verify each transaction in every detail as to form and correctness. All business papers and vouchers issued must be, not only neat and in a business-like condition, but also absolutely accurate.

An account is opened at the bank and all money is thereafter deposited, payments being made by check. Notes and other commercial paper are also settled by this medium. The cash book is treated as one of the important books of original entry, as well as part of the ledger. It is balanced at stated intervals, a check thus being kept on the bank account.

Original invoices are preserved in an invoice book designed for that purpose; while copies are made in an impression book, by the use of a letter press, of all bills sold on account. All letters written are also copied in the same way and saved for future reference, thus making a continuous and complete history of the entire business. As the work progresses, and forms, vouchers, and business terms become familiar, other shortening methods and labor-saving devices are introduced and utilized.

The business prospering under the diligent attention of the one having it in charge, he is invited to become a partner in the management of the business and to share in its profits and losses, thereby coming into closer touch and sympathy with its affairs. To add variety, as well as to enlarge the usefulness, another member is added to the firm; and the business again increased, other features incident thereto, being brought into active operation. The neglect of oversight in a failure to protect the property by not insuring it is emphasized in the loss supposed to have been sustained by a fire, which causes new and complicated conditions that result in an entire change in the policy of the management. The winding up and settlement of the complex partnership affairs, and the engaging in other business requiring other forms, rulings, and kinds of books, is then considered.

As will be observed from the foregoing, a moral principle predominates the underlying features of the work as arranged. A spirit of self-reliance is insisted upon; habits of industry and economy are inculcated. The keeping of personal accounts in a proper and methodical manner is thus encouraged, and the adaptation of the different occupations of life, achieved.

During the progress of the work up to this time there has been handled or made in some form or other, and the proper disposition made of such busi-

ness papers as a Power of Attorney, invoices, receipts, notes, checks, orders, drafts—bank and personal—bills of sale, telegrams, letters, bills of lading, freight bills, bonds, stock-certificates, leases, certified checks and certificates of deposit, statements—daily, weekly and monthly—abstract sales, articles of copartnership, cash tickets, consignments, notices of dissolution, sales' tickets and many others.

To those who wish to broaden their knowledge in the finer points of a business education, and to make themselves more thoroughly qualified as successful business men, opportunity will be afforded in the study of Commercial Law and Arithmetic. The instruction in law will not be with a view of giving an extended survey of the whole subject, but will relate particularly to every day necessities, such as contracts and the elements that enter therein; who may contract and who may not; kinds, parties, consideration, assent, and written and unwritten, receiving attention. Agents, how appointed, their duties, responsibility and liabilities. Negotiable paper —its characteristics, form of endorsement, presentation of bill at proper time and place, tender, payment, and discharge. Shipping, common carriers and partnerships are some of the sujects that are considered in regular order.

Stenography, entering so completely into the practical affairs of modern business life, is a part of the course, and is taken up in the junior year. The development of a ready and accurate hand as well as of quick thinking are harmonized into a reality. In the acquirement of a knowledge of shorthand, not only is a theroetical knowledge of its many principles of educational value—such as correct spelling, proper pronunciation, the application of geometrical forms and lines—but the practical side is also developed, and the ability to take notes at a high rate of speed, and to transcribe them with ease and accuracy, sought after.

In connection with bookkeeping and shorthand, opportunity is afforded in the mastery of typewriting. The typewriter is one of the most useful of modern conveniences of the present time. Probably nine-tenths of all business correspondence is done on this machine. After an elementary knowledge of the mechanism of the machine is acquired, a systematic drill on a series of exercises intended to develop a precise and accurate method of fingering is considered in detail and at length. Correct fingering is an essential element of success in typewriting; and the practice is continued until the habit of holding the hands in the proper position and striking the right key is attained and firmly fixed.

To get the best results from typewriting it is necessary to be able not only to execute the work correctly and rapidly, but also to arrange it artistically. Various forms of business papers are, therefore, copied with a view to getting the best effect suited to the purpose for which the use of the form is designed..

In addition to making transcripts, in advanced work, manifolding by the use of carbon paper and preparation of wax sheets for the mimeograph are each treated in turn. P. B. S. P.

THE ART DEPARTMENT.

Most every one, no matter what his vocation may be, takes some interest in art. Especially is this true at our school. A mistaken idea is that the art department of our school has for its aim the production of artists. Miss Murphy put it clearly when she said, "We teach art here to enable you to appreciate the beauties about you." "Art is cosmopolitan; artists are local." This ancient expression is as true now as it ever has been. Though a very small portion of the students may ever become artists, they will learn in some degree to see shadows and distinguish proportion. The chief purpose of our art department is to form creative, not imitative powers and any attempt to copy is discouraged. Not to discourage those interested in mathematics, but to show the value of art, Mr. W. M. Hunt, an eminent lecturer and artist, said, "Talk about mathematics! They don't develop a person like painting."

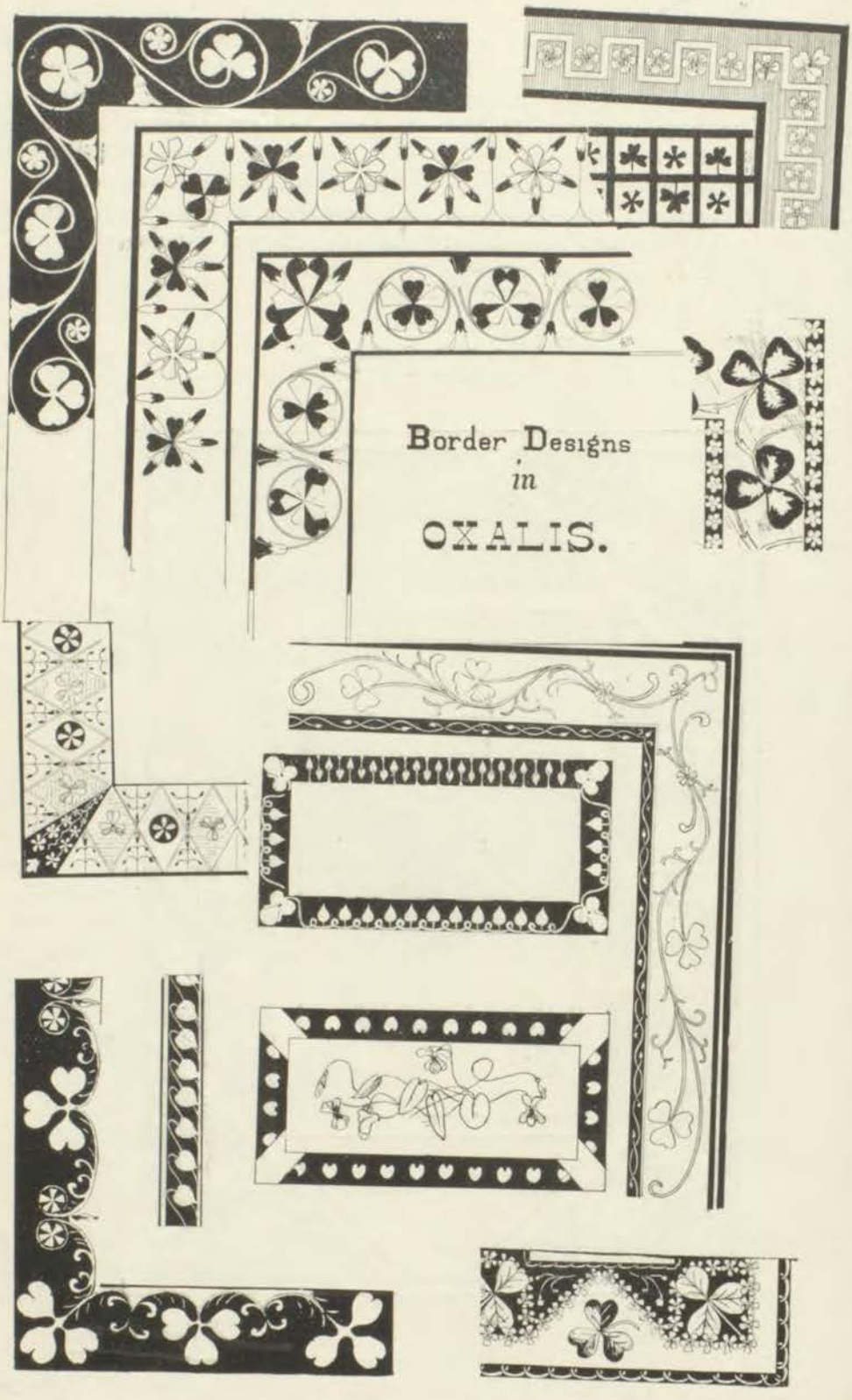
Miss Murphy's pupils have so far used but two mediums, pen and ink, and charcoal. All the classes in drawing, with the exception of the designing class, use charcoal. The objects from which the pupils draw are plaster casts, nearly all of which represent ancient pieces of sculpture. The enrollment in all the classes is large and every one takes an interest in his work. This is especially true of some of those ambitious to become illustrators. Some of the talented ones have succeeded in drawing the smaller casts very well and have been allowed to draw from busts and other larger casts. A majority of the students taking this branch of drawing are girls, but considering the number of boys enrolled, they make a very good showing. All should see the drawings on exhibition in the art room.

A departure from the charcoal work is seen in the designing. This class has been formed but a short time, and the result of its two months' work assures a bright future. Miss Murphy, ever since her connection with the school, has been desirous of forming a class in this work. Each student in the designing class is required to make a drawing of the natural flower or article which he is to use in his design. Prints, artistic jewelry, services of silver, scrolls and patterns in whatever shape they may be are the result of hard, patient labor with pen or brush. A chief feature of designing is conventionalizing. To conventionalize a flower it is not necessary to use a natural drawing but that which is sanctioned by usage. Therefore in a design one may not even so much as recognize the flower from which the design was made. After having made the drawing of the natural flower the student is required to conventionalize the flower according to his own taste. It may be seen in the accompanying drawing that in the various designs shown, an effort has been made to secure the fundamental elements of design, namely—symmetry, contrast and harmony, although no two of them are alike. But two flowers have been used so far, the violet and the oxalis.

The class hopes to be able to use water

colors in a short time. Color is a very great aid to designing, and gives the student a better opportunity to show his power to harmonize. Later in the spring the studies will be more easily obtained and the class will be able to make better progress. Doubtless most every one in the class has been asked what text book is being used. The text-book used is "Out of Doors." We get our designs from nature. Not only is there a diversity of form and arrangement in the designs, but it will be noticed that an entirely different effect is produced when the drawing is on a black back-ground, and when the back-ground is white with black figures.

M. S.


Border Designs
in
OXALIS.

Exchanges.

The Crescent has two interesting articles, "A Trip to the Cilician Gates" and "Some Interesting Events of the Day." Both are very well written. We notice that the material for your paper is written almost wholly by the girls; it would make the paper a little stronger to have some production of the masculine mind. Increase your staff by adding to it some of the young ladies who write so well.

According to Darwin it takes a monkey thousands of years to make a man of himself. But a man can make a monkey of himself in a minute.—Ex.

The Journal of School Geography is the only paper of its kind in the world. It is devoted to the scientific study of geography and its staff is composed of able men of Europe and America.

"Do you take him for better or worse?" the minister asked of the bride. "I will take him for better," she said, "for he could not be worse if he tried."

Unto a little nigger,
A swimming in the Nile,
Appeared most unexpectedly
A hungry crocodile,
Who with cold politeness
That makes the warm blood freeze
Remarked, "I take some dark meat
Without dressing, if you please."

The Whims is one of the best papers on our table this month.

T'WAS EVER THUS:

The rain falls upon the just
And on the unjust fellows;
But more upon the just because
The u just have the justs umbrella's.

The Central Collegian is too good a paper to be defaced by such a production as "The Freshman Mule."

TRUE HAPPINESS.

We'll, said Weary Wraggles,
I wish I were a frog;
A loafin' in the sunshine
Upon a floatin' log.
Then I would be mos' happy,
And spend the bloomin' day,
A thinkin' of my greenback,
An' the bank across the way.

The February number of the High School Recorder contains an excellent story entitled "Prince Karl."

A MODERN VERSION.

Willie Van Cortland
Called on a girl,
Pulled out his pen-knife
And cut off a curl.

Now all the king's horses,
And all the king's men,
Couldn't get Willie
To do it again.—Ex.

"I see your son has turned out an artist, Mr. Gibbs. How did that happen?"

"I dunno, sir; his mother thinks he was left that way with the measles."

We are glad to mention the Apropos to our table.

"GEOMETRY."

Watchman, tell us of the night,
Why in troubled dreams do we
All behold from eve to light,
"Visions of Geometry?"

Watchman, will it last for aye?
Can we joy or hope foretell?
Will there be a brighter day
For that book we LOVE so well!

Watchman, tell us of the end;
Will our recompense e'er be—
"Juniors, ye good time did spend,
Pass ye from Geometry?"

Watchman, then we'll see the dawn,
Doubt and terror then will cease,
For our wandering minds will be
With Geometry at peace —Ex.

The S. A. C. Lookout would be improved greatly by a literary department.

A LABORATORY TALE.

Only a lordly sophmore,
Wilful and full of sin.
Only some nitric acid,
Mixed with some glycerine.

Only a match that's lighted,
Only a muffled roar,—
But why particularize further?
Heaven holds one cherub more.

—Recorder.

"We were extremely glad to welcome THE NAUTILUS among our exchanges this month. We do not hesitate to say that although this is only the second issue of this magazine it easily ranks with the very best of amateur school papers, both in its size and in the quality of its contents. This month THE NAUTILUS contains a number of interesting body articles, illustrations and well-conducted departments."—Crescent.

THE ART PRESERVATIVE.

"May I print a kiss on your cheek," I asked,
She nodded sweet permission.
So we went to press, and I rather guess
I printed a large edition.—Ex.

Prime Minister—"The martyr has just observed that the people are making light of him."—Yale Record.

Lives of poor men oft remind us
Honest toil don't stand a chance,
More we work we leave behind us
Bigger patches on our pants,
On our pants once new and glossy,
Now patched up of different hue,
All because subscribers linger
And won't pay us what is due.
Then let all be up and doing;
Send your mite, however small,
Or when the snows of winter strike us
We shall have no pants at all!"
(After Longfellow—a long ways after.)

—Ex.

Mamma (to Willie who is sliding down the cellar door)—"Willie, what are you doing?"

Willie—"Makin' a pair o' pants for a poor orphan boy."—Ex.

DELIGHTS OF FOOT BALL.

His head was jammed into the sand,
His arms were broke in twain,
Three ribs were snapped, four teeth were gone,
He ne'er would walk again.

His lips moved slow, I stooped to hear
The whisper he let fall;
His voice was weak, but this I heard,
"Old man, who got the ball?"—Ex.

As a maid so nice,
With steps so precise,
Tripped o'er the ice,
She slipped; her care in vain,
And at the fall,
With usual gall,
The school-boy's call,
"First down—two feet to gain "—Ex.

"Young man," said the professor, as he grabbed a frisky freshie by the shoulder, "I believe Satan has got hold of you."

"I believe he has," was the reply.—Ex.

I thought I knew I knew it all.
But now, I must confess,
The more I know I know I know,
I know I know the less.—Tattler.

"Cast thy bread upon the waters."
Sighed the student with a frown;
"Add a little salt and pepper,
Call it soup, and gulp it down."—Ex.

Tommy (studying lesson)—"I say, pa, where does the Thames rise, and into what sea does it empty?"

Pa (reading)—"I don't know, my son."

Tommy—"You don't know, eh? And tomorrow the teacher will lick me on account of your ignorance."—Ex.

I noticed she was pretty,
I thought she smiled at me;
And after I had passed her,
I turned my head to see.

A piece of banana peel
My careless heel beguiled.
I cracked a curbstone with my head,
And then I knew she smiled.—Ex.

We don't want to buy your dry goods,
We don't like you any more,
You'll be sorry when you see us
Trading at some other store.

We won't come to you for shirt-waists,
Four-in-hands and other fads,
We don't want to trade at your store
If you won't give us your ads.—Ex.

COOKING ACCORDING TO SCIENCE.

Give me a spoon of oleo, ma,
And the sodium alkali,
For I'm going to bake a pie, mamma,
I'm going to bake a pie.
For John will be hungry and tired, ma,
And his tissues will decompose;
So give me a gramme of phosphate,
And the carbon and cellulose.

Now give me a chunk of caseine, ma,
To shorten the thermic fat;
And hand me the oxygen bottle, ma,
And look at the thermostat;
And if the electric oven's cold
Just turn on half an ohm,
For I want to have supper ready
As soon as John comes home.

Now pass me the neutral drops, mamma,
And rotate the mixing machine,
But give me the sterilized water first,
And the oleomargarine,
And the phosphate, too, for now I think,
The new typewriter's quit,
And John will need more phosphate food
To help his brain a bit.—N. E. Magazine.

"The college men are very slow,
They seem to take their ease:
For even when they graduate
They do it by degrees."—Ex.

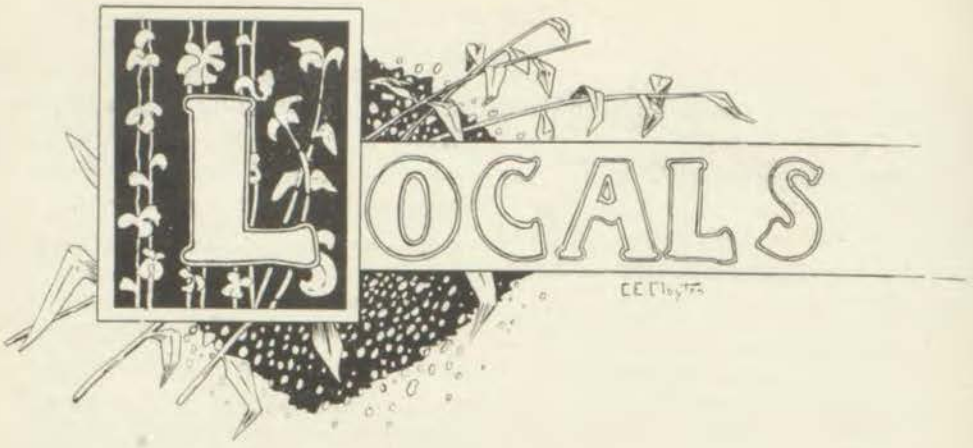
The following is a sign upon an academy for teaching in one of the far Western states: Freeman and Huggs, school teachers. Freeman teaches the boys, and Huggs the girls.—Ex.

She sat on the steps at the evening tide
Enjoying the balmy air;
He came and asked, "May I sit by your side?"
And she gave him a vacant stair.—Ex.

CARDS.

They played at cards on the yellow sand,
When the fields and the trees were green;
She thought that the trump was in her hand,
He thought that he held the queen,
But winter has come and they both have strayed
Away from the throbbing wave—
He finds 'twas only the deuce she played,
She finds that he played the knave.
—Columbia Verse 1892-1897.

Exchanges received this month: The Public School Review, Dallas, Texas; C. M. T. S. Register, Cambridge, Mass.; The Oak, Lily and Ivy, Milford, Mass.; The Industrialist, Manhattan, Kansas; The William Jewell Student, Liberty, Mo.; The Herald, Holyoke, Mass.; The Local, San Francisco, Cal.; The Voice, Chicago, Ill.; The Peddie Chronicle, Hights-town, N. J.; The Fence, New Haven, Conn.; The Woodland, Independence, Mo.; The Record, Sioux City, Ia.; The Tack, Storm Lake, Ia.; The Vermont Academy Life, Saxton's River, Vt.; The Beach Grove Circle, Pittsfield, Mass.; The Pingry Record, Elizabeth, N. J.; The School Advocate, Independence, Mo.; The Tabula, Oak Park, Ill.; The Jabberwock, Girls' Latin School, Boston; The High School News, Chateaugay, N. Y.; High School Leader, Butte, Montana; Normal Review, Warrensburg, Mo.; The Tatler, West Des Moines, Ia.; The Fulcrum, Chicago; The Ægis, Houston, Texas; The Academy Student, Rome, N. Y.; The High School Student, Bridgeport, Conn.; The High School Opinion, Ottawa, Kan.; The Mercury, Milwaukee; The Steele Review, Dayton, Ohio.



Have you seen the gymnastics class? They have made a fine beginning.

Good advice—"Don't talk in auditorium while some one has the platform."

Take courage, girls; Mr. Litchfield said in German class that living was loving.

The missing link in the orchestra—Fred Graff. Can't we get him a drum?

How old is Mr. Richardson? He said he was just old enough to be scared in 1881.

Does Mr. Hancock sing "My Pearl's a Belles Lettres girl?"

Credits are received for singing—not talking, Flossie.

He—"I'm going to call Graff 'feathers' now."
She—"Why?"
He—"I'm tired of calling him 'down.'"

Some of the girls wear fresh paint signs.

Found—Blond wig in a dish of salad.

Be careful or you will be put on the front seat.

Who called Mr. Shide "Mr. Snide?"

Girls, how do you like making bread?

All the girls are getting quite businesslike, buying their own clothes.

What is the matter with Allen?

Exclusive Agency Hanan Shoes. Holland Shoe Co., 1021 Main St.

How much did you learn of Mexico, pupils?

Has Miss Lieberman asked you for your monogram yet?

Can't you hear the buzz of the machines in sewing?

What's the matter with the M. T. H. S. orchestra?

"The man entered moving his eyes," said a young lady translating from the French. She should have said "winking" his eyes.

Orchestra colors are pretty, arn't they?

Mr. Richardson says that it spoils his French when he corrects the papers of the advanced French class. Is it so easily spoilt?

Who said Florence Lieberman's brother was a peach?

Mr. Phillips says the English literature class are the hardest workers he ever saw.

Pupils wishing to take penmanship call on Mr. Peters. He teaches longhand that is faster than shorthand.

Miss Gilday says that Merrit's mind has been partaking of the female mind. Who is it, Merrit?

A TRAGEDY IN A NUT-SHELL.

Canto I.
Back street
Banana peel
Canto II.
Fat man
Virginia reel.

Oh that poor boy who had to sew on those apron strings before that class of girls!

Glad to see you back, Mr. Page, say all of his pupils.

You can get the best hair-cut for twenty-five cents at George Herold's Shaving Parlor, 322 Ridge Building.

James, it's always better to see if a window is locked before you try to open it.

Some of the Freshmen are so fond of music that they follow the organ-grinder and the monkey, instead of coming to school.

"Puellæ in magnam silvam properabant" was translated as "They hastened into the great forest after their girls." What's the matter with that boy's mind?

Mr. Page says he has the stage fright when he turns on the electricity in the assembly hall.

We wonder who Mr. Page meant when he said "You act like Hobos."

Mr. Arrowsmith said of one of the boys' work, "That looks like it was sent for and couldn't come."

"We are cutting up crabs in zoology now."

McG.—"Crab-apples this time of year?"

Where is Mr. Miller during the noon-hour? He is doing nothing, but sawing wood.

Ask Mr. Arrowsmith how long he has had those old overalls.

Mr. C.—"How do you make the point on the slant height of a triangle to a given height?"

Mr. R. (smart boy)—"With a piece of chalk."

Earl Sloan, are you still riding stick-horses?

Stella, you did nobly. Did what?

Miss Fisher—"I am going to be real cross." Class applaud.

Our Royal $3.50 Shoes are regular $5.00 values. Holland Shoe Co., 1021 Main St.

Miss McG.—"We won't meet again until the next meeting."

What did a certain young gentleman mean when he told Miss Jones that he was glad Mr. Connell was back?

Mr. Dodd said—A B—a straight line. Now is that straight goods?

"What ever is, is right?"

Mr. Richardson is said to laugh whenever he calls upon Miss Lieberman to recite. We wonder why?

The latest news is that Mr. Page is a very fine vocalist. We must have him sing for us some Monday morning.

Light headed—a match.

"Was Rome founded by Romeo," asked a student.

"No, my boy, Juliet was found dead by Romeo."

If you have books to buy, sell or exchange, you will consult your best interest by going to Glick's, 710 Main street.

Teacher (to the pupil who did not get the problem) "Go and find the principle."

Pupil—"Yes–Yes sir."

Teacher—"What makes you so slow?"

Pupil—"I am thinking if Mr. Morrison is in the office."

The editor of the *Oskaloosa Globe* recently made a visit to the Manual Training High School. We quote the following from his interesting article on our school: "A rather amusing incident happened during our visit. Principal Morrison was very kindly showing us through the building with other visitors, and on entering one room the English class were reciting. The professor in charge, just as we entered, read out the sentence, 'Fools rush in where angels fear to tread.' The smiles, on our part, were somewhat audible, and the professor, suddenly appreciating the situation, duly apologized, with the explanation that nothing personal was intended—it was in the lesson."

On any bright afternoon between three and four o'clock you may see Mr. Clayton sitting on a porch on Tracy playing mumble-the peg.

"Out on a fly," said the trout as he got hooked on an artificial bait.

Miss Murphy was heard to say to Mr. Halleck some time since, "You are such a designing fellow, Paul." "That is what I try to be," he said.

Mr. Richardson's second hour German class say they are having a hard time with their new story.

Why does Corinne turn around so much in room 24?

Prof. Dodd is quite affectionate; every one is "son or daughter."

Why does Ben hang his picture in the work-shop?

All noises heard in the halls are being attributed to the Seniors.

Who are those two old maids who are always giving away tea?

How success will change a person's disposition. Mr. Russell is getting so speedy that Mr. Arrowsmith has to hold him back.

"Mr. Hertz, this is not recess, this is a class."

Ask Madge what "emphisticate" means.

Mr. Morrison and Mr. Phillips were so enthusiastic over the M. T. H. S. orchestra that they indulged in beating time for them on the platform.

I wonder what was the matter that Miss Van Metre forgot to remark on Mr. Hall's composition.

Manual Training is hard on the eyes. Where is Mr. Moore and his glasses?

Soon the sign will be changed from Moore, Arrowsmith & Co , to Miller, Bacheller Mfg. Co.

Miss Bacheller is learning to use the hammer and saw. Watch out, girls.

A Freshman seeing the chemical formula for water, H_2O, said: "That means H squared O; but why do they put the square below the line?"

Why did that teacher excuse the class as soon as Miss R— brought down the salad from the cooking room?

Dwight says that the English seized Sabine Pass the other day.

Visitor—"Is this the botany room?"

Miss Casey—"Yes! this is my rose bud garden of girls."

Dwight and Edwin can't wait until the door is opened. They climb through the transom.

Mr. Moore would like to know "Have all you boys your gouges on?"

What caused Miss Frazer to say to Mr. Shroeder, "I'll take both the ring and the boy."

Mr. A.—"I hear that Fred Graff has joined Company 'K' and is going to war."

Miss B.—"I hope they will dispose of him before they get there."

Prof. Merrill—"What is a fibro vascular bundle?"

Annie W.—"One that contain fibres and threads."

Mr. Merrill—"No, you use threads in sewing, not in botany."

A conversation heard by three small boys on Fifteenth street. They were talking of the box in the window of Mr. Merrill's room:

"I wonder what is in that box up there, squirrels or 'possum?' "

Second boy—"Neither—it's snakes."

Rusty has captured the art of refusal. His majestic, "Go away from me" is becoming to him.

Young lady—"Are you a local?"

Mr. Page—"No, I'm a fixture."

Pupil—"I want a pen, Miss Murphy."

Miss M.—"What do you want with a pen; have you a pig to put in it?"

Pupil—"No, I don't want a pig-pen, I'm not going to write hog 'latin.' "

"Oh, Miss Fisher turn me loose; I've got no essay, but a good excuse."

Miss Berry, you talk so fast I can't hear you.

We local editors can't see the point about the chicken and the biscuits. Please inform us.

Who said that Mr. Vernon was going to talk on Europe?

Mr. Page says he is getting fat. Doesn't it look so?

Miss Castle wonders who else she belongs to.

Miss Frasier, will you please keep still a little while?

Teacher—"Did you ever live on a large body of water."

Pupil—"No, but I lived on milk part of my life."

Some of the pupils address the local editors as gentlemen.

Mr. Merrill—"Did you ever see a crystal."

Freshman—"Yes, I saw one in a watch."

The latest—"Why is Karl justly considered a pillar of society?"

"Because he is working in a drug-store."

Necessity is the mother of invention.

Mr. Page eats baked beans with a chisel.

James pronouncing "fortissime" in Latin, "For-to-see-me."

Miss Drake—"You must think yourself good looking."

Mr. Russell—"! ! ! ! (Blush)."

Physics room will soon be a good dancing hall; it has a fine floor (paraffine.)

Miss Daisy, have you your ad mit?

First fresh child—"Say, what's that rubber sleeve on the grindstone for?"

Second fresh child—"That's to keep an electric bolt from running up your arm."

The Senior class is organized with Mr. Swan as president.

We are sorry to hear our foot ball captain is ill.

Poor Mr. Hurd has to come to school to eat oranges and strike matches.

Mr. Phillips (to girl after reading an essay on breadmaking) "Well, how long does it take to make a batch of bread?"

Pupil—"Why that depends on how much you knead (need) it. If you *need* it very much you don't need to knead."

Your photo on a button will be lovely if made by Pomeroy, 900 Main. Fifty-six photos, fourteen styles, 50 cents.

Miss Gilday says she can't see how the United States can get along without some of our boys as statesmen.

NEW BOOKS FOR MARCH.

"Why Distance Lends Enchantment"—Dewey.

"A Blank Page from the Diary of"—Page.

"Things as We did Them in St. Louis"—Arrowsmith.

"The Daily Register"—Ethel Osgood.

"Advertisements — Their Attractiveness. How to Successfully Collect, Study and Care For"—Richardson.

Mr. Richardson wishes that the girls in the advanced French class would get to work.

It is enough to make one have fits to wear shirts with one-fourth size shirt bands; sold only by Harry B. Woolf, 1119 Main street.

Speaking of earthquakes, a severe shock was felt in the neighborhood of Burge Park last Thursday. Strange to say the cause is known—Miss Kinley stubbed her toe.

No, Bud, the local editor will hear your song some other time.

Be sure and go to "David, the Shepherd Boy."

Teacher—"What was Sir Isaac Newton's great discovery?"

Freshman—"He discovered the circulation of the body."

"Who was Ben Franklin?"

"He was the man who invented electricity with a kite."

No, John, you must not smoke anymore.

"May girls join the cycle club? Let's form one of our own, girls."

Poor girls who lose credits in cooking. They have to scrub tables.

If you want to learn about Spain and the United States, go to the American History classes.

WHAT IT MAY BE.

Pupils will please call at the office for the following lost articles: One shoestring, one quill tooth pick, two hair pins, one set of false teeth, one pair of broken spectacles, one silver watch bearing the name of Sterling, three gold rings and a ten dollar bill.

Boys, are you ready for war? Johnny get your gun.

Miss Christman is improving.

Mr. M. to Mr. R.—"Which is correct, Girls is or Girls are?"

Mr. R.—"Don't you know? Girls are, of course."

Mr. M.—"All right, 'Girls, are my hat on straight?' "

Mr. Anything. "Please don't call me soft."

Did something drop? Only a waffle iron.

"What was the noise in the kitchen?" "O, nothing, only Miss Bacheller was shaking a spoon."

Don't "Chase" us so hard.

Don—"Miss Fisher, isn't an optimist a person who doctors eyes?"

"Miss Murphy, will you please come and correct my ears?"

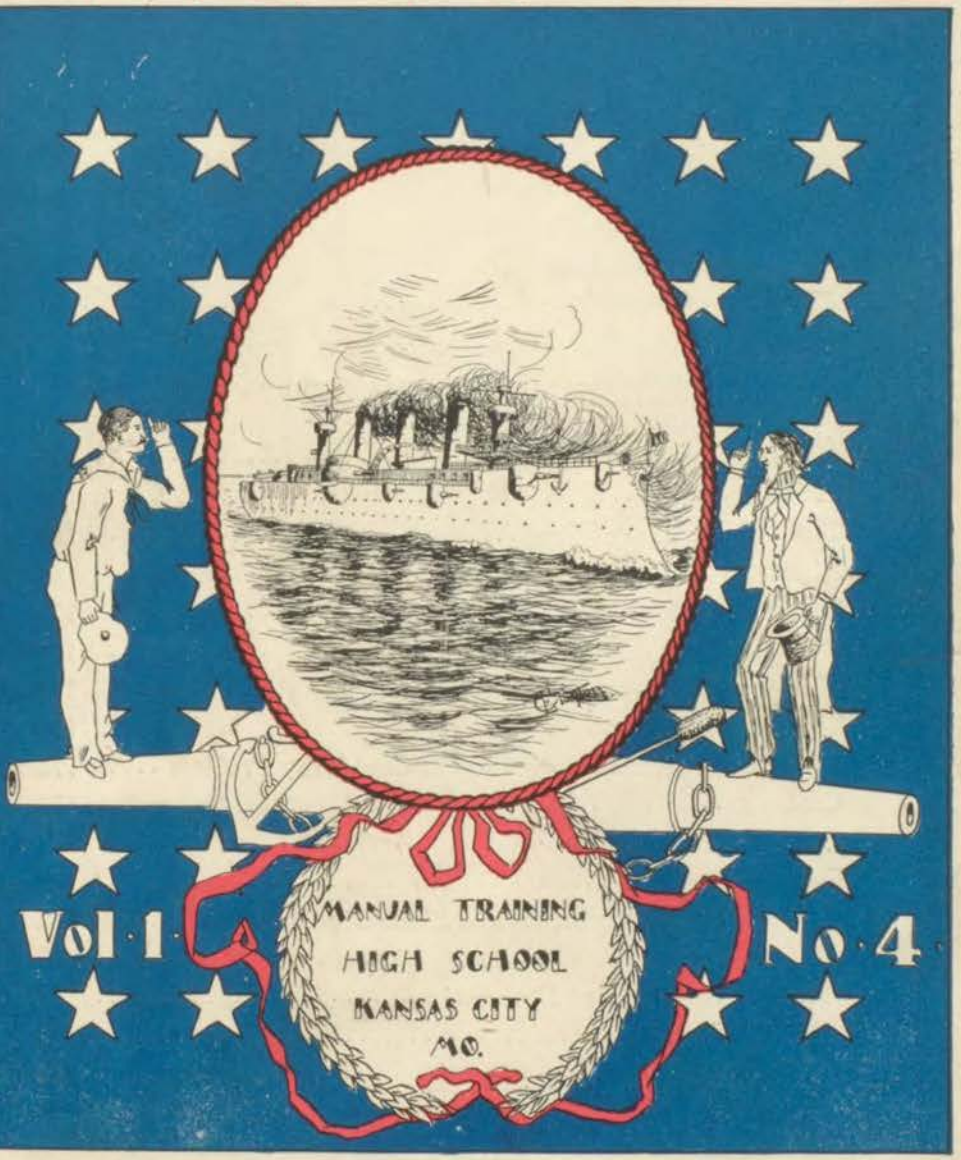
Kansas City girls are pretty,
Iridescent dreams;
Set me winking, of them thinking,
Strawberries and creams;
Every girl, quite so swell, lovely sight;
Six initials, what they spell, wish I might.

Why did that little boy hesitate when Miss Fisher held the spoonful of salad before him?

Dainty maid with golden tress,
Studies Latin, such a stress,
Learning disco, awful mess,
So irreg'lar, great distress,
Wishes help, just more or less:
Pouting lips invite caress;
Didicissem?—well, I guess.

THE NAUTILUS.

JUNE '98.



Vol. 1. No. 4.

MANUAL TRAINING
HIGH SCHOOL
KANSAS CITY
MO.

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LETA ROGERS.
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PIANO.
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FIRST COMMENCEMENT

OF THE

MANUAL TRAINING HIGH SCHOOL

IN THE

M. T. H. S. ASSEMBLY HALL,

Thursday Evening, May 26, 1898.

Program.

Opening Remarks, ... PROF. G. B. MORRISON

Music, Medley of Patriotic Airs, . . . M. T. H. S. ORCHESTRA

A Word of Welcome, ... EDITH HINES

A New Dynamo, ... CLARENCE ROWE

Music, Waltz, ... *R. A. de Saxy*

M. T. H. S. ORCHESTRA.

Domestic Science, ... SADIE KINLEY

A Case of Books, ... LOUIS SWAN

Music, Duet, "Onverturen," . . . . *Franz V. Suppe*

RILLA SMITH, assisted by LULA COHOE.

ADDRESS TO THE GRADUATES, DR. CALVIN M. WOODWARD, St. Louis, Mo.

Presentation of Diplomas, HON. R. L. YEAGER, Pres. Board of Education

Music, March, ... *Henkel*

M. T. H. S. ORCHESTRA.

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EARL CHAPMAN.
ROY FILKIN.
HOWARD GIBSON.
EDWARD GINSBERG.
MINNIE GUION.
CLYDE HAWKINS.
EDITH HINES.
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SENIOR CLASS, '98

TO THE CLASS OF '98.

Oh! now has come the joyous day
When glad you lay your books aside,
When troubles all are brushed away,
And all the things you bravely tried.

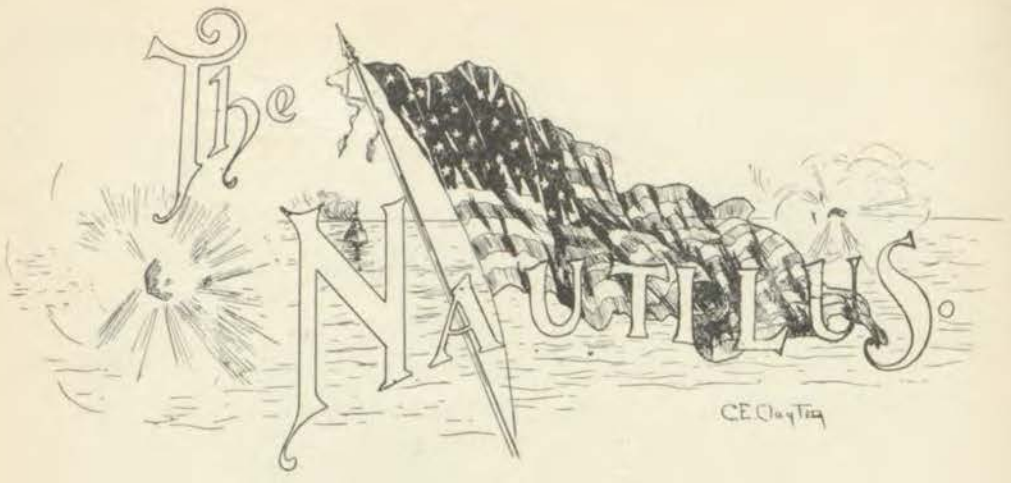
Arm'd you stand for battles' life;
Queen Science now shall crown you straight
To struggle, for life's bitter strife.
Go forth! Oh class of '98!

Be strong and conquer in your might;
Let "Victory" always be your cry;
Let not false hope nor power blight,
But reach your goal before you die.

Bright youth is fleeting, fleeting fast,
And all your care may come too late,
Time o'er you may dark shadows cast;
Be strong, Oh class of '98.

But O! may such ne'er be your lot,
We ask, we humbly meekly pray.
May clouds around you gather not;
But sunshine bright illume your way,

And tender memories carry home
The friends who bid you now "farewell,"
Who hope where'er in life you roam
The fame of '98 will swell.



Vol. I. KANSAS CITY, MO., MAY, 1898. No. 4.

LITERARY DEPARTMENT.

THE STORY OF A HOUSE WARMING.

They had been at work on Col. Harris' new house, and now it was finished.

All the neighbors were invited to attend an informal, or as Uncle Cæsar, the old negro who delivered the message said, "an infernal house warming, sah."

The guests arrived at the appointed hour and exclamations of delight were heard on all sides, and wide-spread admiration of the beauty of the new house was freely expressed.

Of all the men in that part of Virginia, Col. Harris was undoubtedly the most popular. He was a wealthy bachelor of middle age, and although not a Virginian by birth he was a most agreeable gentleman. His native town was Bloomfield, Iowa, and while all the population in that little southern town were opposed by principle to a northerner, immediately there sprung up a feeling of brotherly love for the "Yankee," as they called him; and when they discovered that he had purchased General Marsden's old house, which had for many years been unoccupied, this affection was increased doubly.

This evening they found just cause to admire the man both for his taste and good judgment; and as a lively southern girl exclaimed:

"Col. Harris, your house is a Paradise of beauty."

The Colonel bowed low and answered:

"And your presence completes the Paradise, for without an angel Paradise would amount to little."

The young people danced until late and then adjourned to the library where their parents were, listening to the music of a famous violinist.

"Tonight," whispered a little lady to her escort, "has seemed to me a step into fairy-land."

As the strains of the music died away, most of the young people went back to the dance, but a few of more serious mind remained in the library to chat with Colonel Harris.

The late civil war was being discussed and a gentleman had been telling of a

dear friend, who instead of going to war for the southern flag had staid at home with his old, blind mother, and for the rest of his life he was branded as a coward for this act of heroism.

"Col. Harris," said a young lady who had been listening, "surely you can tell us of some interesting incident that occurred during your war times. How you far away northern men fought, and of the struggles that they had to contend with.

"Yes, yes," came in a chorus from the friends.

"Ah, my friends, it is not so interesting as you believe. We entered the army, as did you, with the firm conviction that we were right and that right would win.

"My twin brother and I, with the enthusiasm of youth, enlisted in company B of the third regiment of the Iowa cavalry. We were twenty-one, and Robert was the idol of our mother's heart. Mother was grieved almost unto death when she heard that her bright, sunny-haired, blue-eyed Robert was going to war, but our mother was, as all mothers are, willing to sacrifice all her personal feelings that her sons might not be looked upon as faint hearted, and so she bade us farewell, one sunny August morning and we rode away. I can see mother now, standing in the door of our vine-clad cottage, bravely waving her hand to us, but as Robert wheeled back to embrace her again, her face became ashen gray and he carried her in the house and left her with our faithful cousin Mabel, trying to comfort her.

"Our army life was as that of all soldiers; we first were sent to a camp of instruction, and there we were sent out, sometimes as scouts, and sometimes to support a weak battery or regiment. My brother won friends on all sides by his merry, winning ways, but I have always been more quiet and reserved, and I did not make friends so readily.

"Robert had proved himself to be of the true blue, more than once, and he was always reckless of his own life, generous to others, and brave as a son of our mother should be. 'His death,' said the Colonel, sighing and with tears

"ROBERT HAD SNATCHED THE COLORS."

rising in his eyes, 'his death was as brave as his life.'

"On the sixth of July, 1862, we were camped in Arkansas near the Bayou De Cache. About 11 A. M. we heard distant cannonading, and just after noon we were ordered 'to horse,' to support Colonel Horey, of the third Illinois, who was fighting a few miles in advance with an overwhelming force of the enemy, and according to stragglers was being whipped; we hurried on and arrived in the heat of the battle, and just in time to support a battery on the left. I had become separated from Robert by the confusion that ensued, and he was well up toward the front.

"Our flag bearer was wounded toward the first of the engagement and although severely injured was bravely bearing our colors high in the air. A Confederate, amid the general confusion darted through our ranks and brutally snatched the colors from the brave boy and started back trailing the flag in the dust. All this Robert saw, and as the man started back brother rushed forward, his eyes blazing with anger and his hair flying wildly. He fired at the man in gray, and before any of us could get to him, Robert had snatched the colors and was flying back bearing them high, high above his head, when, oh, my brother! the Confederate fired, struck him and down to the dust they went, my brave, brave brother and the flag, Old Glory, together, and thus we buried them.

"No braver death nor more honored a burial could a man have than to die fighting for his country and to be buried with the flag of his country about him.

"Our mother, when she heard of Robert's death, did not weep. This she said, 'My boy died as a brave lad should!

"He saved his flag and died the death of a hero and patriot. I shall soon be with him.'

"And she was, for within a few months she had faded away and now lies beside her son, my brother Robert."

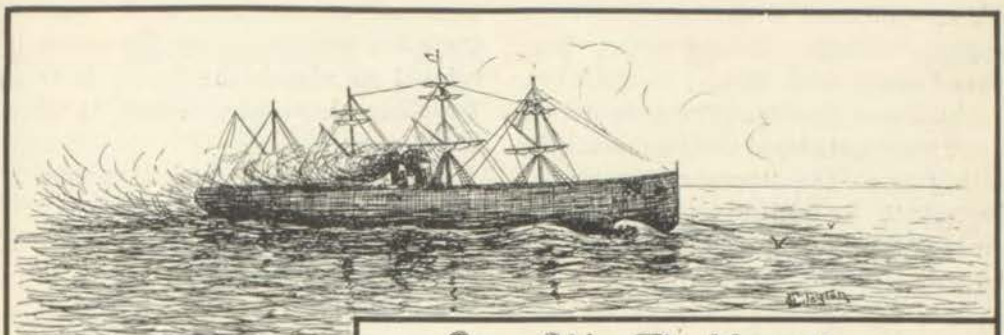
The Colonel looked about him. The dancers had come quietly into the library, and this brave northerner was surrounded by equally as brave southerners, all listening attentively to the story of the brave man's sorrow.

"But I fear my story has been too long. I have always grieved that I had not been killed instead of my brother Robert, for then my mother would not have grieved her life away."

"But now," said the Colonel, recovering himself, "Ladies and gentlemen, let us thank God that united we stand, the Blue and the Gray forever."

When the Colonel's guests adjourned they felt that they had among them a neighbor who could feel and sympathize with all, in any trouble they might have.

S. K.



Our Ship-The Manual.

Right from the launch
We proved her staunch,
Our bonny ship, the School;
With unfurled sail,
We, through each gale,
The boisterous billows rule;

So may-you-all
The Manual,
Ye admirals to be;
Our ship and crew
Are staunch and true,
And true and staunch are we!

From commodore
To middy, o'er
The ship with hope we thrill;
Our victory
More great shall be,
Our conquests, grander still:

So may-you-all
The Manual,
Ye admirals to be;
Our ship and crew
And staunch and true,
And true and staunch are we!

A.M.R.

A DEFENSE OF SHYLOCK.

The character of Shylock has never been a favorite; it has never been looked upon with mercy; it has never received even justice. The early notices of the play prejudiced their audiences by setting forth the "extreme cruelty of Shylock." Indeed an author, as near our own time as Pope, has exclaimed in derision,—

> "This is the Jew
> That Shakespeare drew."

It is certainly the Jew that Shakespeare drew, but I doubt if Shakespeare's Jew is the one that many critics have made of it.

The reasons for his unpopularity are not difficult to discover; the traits of avarice and revenge are so boldly emblazoned on his character, so suddenly and fiercely thrust upon us at every turn, so far overlap and enshroud every other feeling, that too many turn aside in disgust, seeking neither for any good quality, nor to account for or mitigate the evil ones.

The first characteristic of Shylock that impresses us is that he is a Jew. Every thread and fibre of his nature is Jewish; every thought and action gush from the well-spring of Hebrew birth; his persecutions are caused by his Jewish origin; his very revenge is actuated by Jewish motives.

The Hebrew people have, from the beginning of time, held themselves as a race set apart and superior to the rest of mankind. Now, when their temples are overthrown, their power destroyed, their people scattered and wanderers on the face of the earth, think you their pride and exclusion has abated one jot? No Jew, no matter how lowly his birth, how poor his circumstances, but has the innate feeling of superiority over every other people. It is this consciousness which to this day keeps them a distinct and separate people. It is not the Christian and Caucasian race which has refused to absorb the Jews; it is the Israelites which have refused to mingle with them.

There is a sting and a soreness, a humiliation to every one who has fallen from a high estate. How must this feeling be intensified in a nation which has lost its glory. Shylock appears as a personification and concentration of all his race. Napoleon as he mourned for his lost power at Saint Helena; Mary of Scotland as she planned her escape from an English prison; William Wallace as he struggled and plotted for Scottish freedom, might have understood and sympathized with Shylock when he heard the taunts and jeers cast at his country and his people. Yet to each of these there was hope; while for him, he must endure the insults, the injuries, the injustice, without response, without the hope of seeing his race and his religion vindicated.

That Shylock is revengeful we grant, but do we wonder at it when we consider him in this light alone? That he is avaricious, too, is granted. But he was not alone in this; it is Gratians who replies to Jessica's speech, "I will gild myself with some more ducats," by the words, "Now, by my hood, a Gentile and no Jew." Surely this speech would show that the Christians were not wholly unmindful of the Jewish ducats.

When we consider that the Jew's life was unbearable without this wealth, dangerous with it, when even the highest nobles of the state set the example for plundering and torturing the Hebrews to obtain this fancied hoard, when we consider these circumstances in which Shylock lived, and add to them the natural love of trading and money that his people had acquired in their wanderings, do we find no ex-

cuse for this man in his love for his ducats?

We are too apt to think of Shylock as a person separate and apart from ourselves. We know that he is human, we know that he has feelings, but we do not enter into these feelings, we do not sympathize with his emotions, we do not think with his thoughts.

If it is possible, let us overleap for an instant the barriers of racial prejudice. Let us consider Shylock as one of us, or better still ourselves as Shylock. Let us say with him, "I am a Jew. Hath not a Jew eyes? Hath not a Jew hands, organs, dimensions, senses, affections, passions? Fed with the same food, hurt with the same weapons, subject to the same diseases, healed by the same means as a Christian is? If you prick us do we not bleed? If you poison us do we not die? And if you wrong us shall we not revenge? If we are like you in the rest, we shall resemble you in that. If a Jew wrong a Christian, what is his humility? Revenge. If a Christian wrong a Jew, what should his sufferance be by Christian example? Why, revenge."

Let us remember that we are no longer Christians, no longer in the broad tolerant nineteenth century, no longer free citizens of a free republic; but rather we belong to a persecuted race, we are subjects of bigoted, intolerant, yet justice giving Venice—it is the sixteenth century.

It is we who complain to Antonio—

"You call me misbeliever, cut-throat, dog,
And spit upon my Jewish gaberdine."

We hear Antonio's insulting answer—

"I am as like to call thee so again,
To spit on thee again, to spurn thee too."

Ah, we are in arms at once. Who of us would brook for an instant such an insult? Where is there one who would not cry with Shylock, revenge?

Again, we have a friend, bound to us by ties of love and kindred, only one person whom we can trust amidst strangers and enemies. And this one person deserts us, robs us, flies from us with one of our enemies. We are outraged in every kinder feeling. What are our feelings now? What were Shylock's when he heard the taunts and jeers of his enemies, when his daughter fled, robbed him, renounced not only her father but her mother, embraced that religion which had caused him and his race all their sufferings?

But let us hasten on to the trial scene. It is here that Shylock stands forth in all his strength, all his bitterness, all his cruelty. It is here that we shrink from the man as he eagerly whets his knife for Antonio's blood. But even here Shylock stands forth as the most intellectual of all Shakespearian characters. Single handed and alone he beats down all opposition, he overcomes all objections, he compels all to acknowledge the justice of his bond. From the standpoint of law and equity his answers are admirable. What could be finer or more full of justice than to the Duke's speech: "How shalt thou hope for mercy rendering none?" This reply:—

"What judgment shall I dread doing no wrong?
You have among you many a purchased slave,
Which, like your asses and your dogs and mules
You use in abject and in slavish parts
Because you bought them; shall I say to you,
Let them be free, marry them to your heirs?
Why sweat they under burdens? You will answer:
The slaves are ours; so do I answer you:
The pound of flesh is mine"

Finally, by a mere legal quibble Antonio is freed, the bond declared void. Also the life of Shylock is declared forfeit for having plotted against the life of a Venitian citizen.

Here is the chance for the Christians to show that mercy which their religion teaches. Do they show it to Shylock? They confiscate one-half of his property, leaving him the use of the other half during his life-time, on his death this half to go to Jessica and Lorenzo. This is generosity? But listen to the rest, this is to be done only on condition that Shylock become a Christian. And this is Christian mercy against Jewish revenge.

What have we found in the character of Shylock? We have discovered much that may be pardoned in his avaricious and revengeful spirit. We have found him intensely patriotic to his people. We have seen ample excuse for his cruelty. We have found a deep, intense magnificent nature, a man of the highest intellect, the most intense feeling, but warped, distorted, spoiled by the times in which he lived, by the people with whom he was thrown.

Which is the better, the Christians who forgot the meaning of their creed, betrayed the very essence of their belief, or the Jew who lived up to the very letter of his, though he carried to extreme, to us, the barbarous law, "an eye for an eye and a tooth for a tooth?"

L. M.

WHERE IS THE GREEVENIC*?

Night was approaching; the sun has set in the western horizon. We find Pavlus Cruschlevitz seated on his hard bench still stitching away. In the most progressive countries, the workmen have long since had their evening repast, and were congregating in some of their club houses to discuss the topics of the day. But not such is the case with our Warsaw workman. Wages being low, and having a family to support he works over hours without a murmur.

His pale face was covered with perspiration; his shirt was wet; and he was tired. Suddenly, he raised up his head from the machine, exclaiming in an angry tone, "What's the matter with Ivan? Why has he not brought the kerosene?" It's dark already!—Pavlus proceeds with his work, and the darkness in the close room increases. "Give me a lamp! Where is Ivan with the kerosene?"

He looks out from the window, and sees Ivan strolling along slowly with the kesosene can in his hand. Beckoning to Ivan, Pavlus, his father, cries out in an angry voice, "Where have you been so long? Where is the kerosene?"

Ivan, having remained silent a moment, finally said with a trembling voice, "Papa, don't punish me, I have lost the greevenic."

"What? You have lost the greevenic? —the whole sum of money which I possessed until I deliver my work. Where is the greevenic? Where is the greevenic?" repeated Pavlus, after having punished Ivan severely. "Go and look for the greevenic. Don't you dare to come home without it? Do you hear?"

II.

The darkness in the house becomes intense; the father sits at the machine tired and angry. His good wife took the can and went to the grocer's in a rather hesitating manner not being sure that credit will be extended to her for the kerosene, (for the credit of poor people

* A greevenic is a Russian or Polish silver coin; it has the value of ten cents.

in that country is not good, even though they are honest). The grocer probably understood the situation and gave her the kerosene.

And Ivan, not being able to find the greevenic, walks slowly along the street, stops occasionally, stares at every passer-by with a scared look, and goes on. First, he walked through streets known to him, peeping in at every public place that offers any attraction. Finally, he drifts into unknown streets. The rush lessens; the crowds on the sidewalks are fast disappearing. Ivan walks on. He passes a private house which has some trees in front

It seemed to him an inviting spot to take rest from his long walk. He goes on the porch; lies down, hearing the quiet rustle of the leaves. At last, he enters dreamland, forgetting all about himself and his troubles.

III

"And where is our Vanuschka?" said the mother in a touching way, when she lighted the lamp. "I looked for him around the neighbors and on the Malevky Avenue, and he was not to be seen."

Those motherly words seemed to make a new man out of that tailor. All his anger left him, and his fatherly love returned. All his thoughts were now centered on the safety of his child.

"Was I not cruel, in thus acting to a child, who is not quite six years old, in holding him responsible for a mere accident," thinks Pavlus Cruschlevitz; "While with the richer people, a child is not trusted to walk out without the protection of a guardian."

The city clock struck ten, and still the child has not returned. The mother began to shed tears. Sad thoughts entered the father's mind. "Who knows whether my threats have not driven my poor child into desperation," thinks he.

With those sad thoughts in his mind he hurried from the house. He ran from one police station to the other, inquiring for his boy; but the gruff policemen answered him with indifference, "No boy here tonight."

The city clock indicated midnight; and still there was no trace of his poor child. At last, he entered a police headquarters where he was informed that a strange boy had been taken in. Looking around he beholds his poor Vanuschka sleeping in a corner. Coming closer, the father notices the pale and care worn face of his child; the adventures of the day have likely made an impression on poor Vanuschka.

The father's heart almost goes out from grief and commiseration; the father walks up slowly and wakes him with love, "Vanuschka! Vanuschka dear!" The child opens his eyes and looks with astonishment.

"Don't be afraid, my child, come home to mamma."

"Papa, I could not find the greevenic! I could not," says Vanuschka rubbing his sleepy eyes.

"The greevenic? Never mind that! Who cares about a greevenic?" says the father, and his sick eyes fill with tears. He grasps his poor child with love; presses him to his grievous heart, and bears him quickly to his humble home, to the poor mother.

GEO. RINGEL.

A SKETCH FROM LIFE.

It was in the year of 1861. The morning sun shone brightly from the deep blue of the heavens. The cocks were crowing, the birds were singing, and the dew drops were sparkling with dazzling beauty upon the grass. Everything seemed beautiful, happy and fresh.

The old farm house had never looked so inviting before, nor had the little golden haired housewife ever looked so charming since her wedding day, just one year before, as she did upon this morning standing in the open kitchen door waiting for her husband to come to breakfast. She made a lovely picture there, the sunshine lighting up her face and making it look almost celestial.

A slightly impatient look clouds her brow for an instant: "Why does not Charley come to his breakfast?" she asks herself. "Why does he stand so long talking to that man when he knows things are getting cold?"

"There he is coming at last," she says to herself, smiling at her own impatience.

Suddenly catching sight of her husband's face she stopped and waited for him, her own face meanwhile becoming very grave; slipped her arm into his she looked up into his face.

"Has the call come, Charlie ?"

"Yes, dear."

A long pause followed. The sun still shown, lighting up the earth with radiant beauty, seeming almost to mock the breaking hearts of those two young souls standing there in silent agony.

At last looking up into her husband's face with a brave resolute expression she said, though the tears trembled upon her lashes:

"Go then, dear, if our country needs you. God will care for baby and me."

Silently he folded her in his arms, unable to answer.

* * * * * *

Year after year slowly rolled by, but brought no news from Charley.

The summers came and went just as they always had done, the cocks crowed, the birds sang, and the dew drops sparkled just as beautifully as they had sparkled on that spring morning in 1861. Nothing had changed on the farm so far as one could see. The same quite peaceful beauty reigned there as before, but in the heart of the little fair-haired woman there was something lacking—something forever gone.

The only loved one left to her, her beautiful fair haired boy has grown into a stalwart young man and is his mother's joy and idol.

He does not realize that anything has changed the sweet little mother, but those who had known her as a gay, careless girl sigh as they gaze into the sweet patient face with its wistful longing gaze, telling the story of hope long deferred.

* * * * * *

The rain is pouring down. People are hurrying through the side streets, scarcely stopping to exchange greetings with acquaintances.

The main street of the town, however, is crowded with people, talking in low, sad voices. Here and there are tears glisting in the eyes of a mother or sister, while above them all waves Old Glory in her solemn majesty.

Suddenly a burst of martial music startles the throng, marsheling a long

line of the boys in blue,—our volunteers, marching proudly to the music that inspired their fathers.

Cheer after cheer resounds from the crowd. Surely patriotism has not died out of our land! Our brave soldier boys march to the depot where the ranks are broken, and the last farewells are spoken.

At one end of the platform stands a little old woman. Her hair is streaked with gray, but it still shows something of its former golden luster. Her face, small and delicate, though drawn with pain is calm. Not a waver is expressed by word or look as she bids her boy, her darling, good bye. The country calls and again she brings her offering to the sacrifice. The last and only dear one left her, but it is God's call for humanities' sake and she cannot withhold him.

As the train pulls out from the depot and as her boy waves his hat to his mother amid the cheers of the crowd, the clouds suddenly break slightly, allowing the sun to throw a ray of brilliant light through the rift which falls full upon the delicate little face and figure, just as it had done thirty years before when in the spring tide of life she had brought her first sacrifice to the altar of her country.

Slowly she turns away, casting a wistful glance after the rapidly receding train, now only a speck in the distance.

"How long, oh God! How long must this be?" she murmurs.

Ah! well may we all echo her question. How long must we wait for the angel of the Lord to proclaim, "And there shall be no more war." P. B.

COMMENCEMENT DAY.

Where summer's skies arch bluest over head,
Where summer's verdure gentl'est breezes led,
Down there away from busy, bustling tone
A maiden fair sat all alone, alone.

And all the breezes as they stir the leaves,
They whisper soft to all the twining wreathes:
"O, hush! Be still, our maiden 's thinking!"
And low the brown head droops, she's thinking.

It is Commencement day, she graduates tonight,
She leaves behind her all her school days bright;
The friends of childhood's sweetest love must part,
And all that 's nearest, dearest to her heart.

Forever gone, Ah forever past,
Those days so free that cannot always last,
No more a simple school girl will she be,
A woman now with duties grave to see.

And so she sits and wonders what she'll do,
Tonight when school and all its tasks are thro';
And while she thinks, she seems to hear a voice
From out the whisp'ring leaves she learns her choice,

"Go forth, sweet maid, and leave those school room walls,
But don't forget to go where duty calls.
Forever gone; you'll leave those days so free,
But mind you still do keep those friends near thee.

"Tho' now no more those doors will ope for you,
Beyond are lessons yet more broad and true—
Tho' all the school room doors were closed for aye,
For you there's chance to learn still more each day.

"So now go forth from all those dreams so sweet,
Go forth and make those dreams reality meet,
And when tonight you stand mid friends love sent,
O think, sweet maid, 'tis only a Commencement."

—*G. D. P.*

THE NAUTILUS.

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THE NAUTILUS,
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KANSAS CITY, Mo.

The one absorbing topic of thought and conversation is the conflict with Spain: it overshadow's all else. The departure recently of the Third and Fifth regiments, which numbered in their ranks schoolmates and friends has brought the war closely home to us, and every detail of camp life and announcement of military orders is eagerly watched for and read. The brilliant victory of Dewey at Manilla, in which our navy came off with flying colors, excited general enthusiasm. It has been compared to that of Farragut at Mobile and Nelson at Trafalgar, and has given the American navy prestige abroad. "Nothing can detract from the dash and vigor of the American exploit or dim the glory which Dewey has shed upon the American navy." But the hope that the battle at Manilla might satisfy Spanish military honor and lead to an early peace has been disappointed. Spain has decided to continue the war and must receive several more severe reverses. The decision is to be regretted, most of all by the nation making it, for better terms of peace can be secured now than later. However, every day adds to the liability of drawing other nations into the fray. In this event it is hard to see the end. To fight the matter out as quickly as possible, and by the speedy success of American arms, to insure the prompt accomplishment of our national purpose is what all must desire.

Our entertainment in the auditorium on March 28, consisted in an address by Prof. J. C. Jones of the State University. He gave statistics to prove that in the political and professional walks of life the college-bred man has the advantage. After the address Prof. Jones exhibited with the stereopticon many views of the University.

***

April 4 a very fine musical program was given by Prof. Robins. The successive

numbers were intended to show the progress of a pupil from a beginner to an accomplished artist.

***

On April 11 we had another musical entertainment under the management of Prof. Leib, the most enjoyable feature of which was Prof. Leib's own singing.

***

On April 25 Mr. H. J. Barber held our attention with a series of exceedingly interesting stereopticon views. The pictures were confined to no one theme but extended over the widest possible range of subjects. The subjects treated include astronomy, geology, history and painting. He also threw upon the screen, pictures of people and scenery from all parts of the world. These were explained in a most satisfactory manner, the lecturer pausing now and then to draw some unlooked-for lesson or make an original observation.

***

May 2 the expected lecturer did not appear, but Prof. Morrison made a few timely remarks about the war, which were followed by two exceptionally well rendered musical numbers—a piano solo by Miss Elsie Miller and a violin solo by Mr. Louis Buch.

***

The exercises of May 9 opened with a solo by Mr. Maris Stiles which was much appreciated. Mrs. Hoffman, president of the W. C. T. U. spoke to us in an earnest and convincing manner. She laid stress upon two points: obedience and habit. Mrs. Hoffman showed the importance of learning to obey promptly and exactly, taking as an illustration the rigorous discipline which is exercised at West Point and in the Navy. Habits, she said, make scars on the brain which are just as impossible to obliterate as scars on the body. Mrs. Hoffman's personality added strength to her words.

The unique and delightful program given by the Belles Lettres Society, on April 18, was most heartily enjoyed and applauded. Taste, wit and good sense characterized it as a whole. The stage was decorated in a pleasing manner with pictures, palms and the Society's colors. Although in the debate Miss Jones gave the most forcible arguments, Mr. Rowe considering the sentiments of the audience on the subject under discussion, were against him, presented his side of the question in a skillful and masterly manner. The story by Miss Phillips was good. We would like to mention in particular the agreeably pungent flavor of Mr. Kinney's "Ginger Snaps." They were highly refreshing, and rich in wit and humor. The recitation by Miss Eisen, delivered in an easy and natural manner, was loudly encored, and the musical numbers, a piano duet by Miss McDearmon and Miss Edwards and a 'cello solo by Miss Boright, were well rendered.

The cantata, "David, the Shepherd Boy," presented at the Coates Opera House by the chorus of our school was a glorious success. The performance reflects credit upon the school and our teacher, Miss Wilson, under whose management it was given. The house was filled to its utmost capacity. "The chorus of shepherds and the chorus of women were very effective, and the costuming and stage accessories left nothing to be desired. The cantata was given in ten scenes, beginning with the "Feast of Trumpets" at Bethlehem, and closing with the coronation of David. The song of Michal, "O, Shepherd Fair" in scene five, was one of the prettiest in the cantata; the duet by David and Jona-

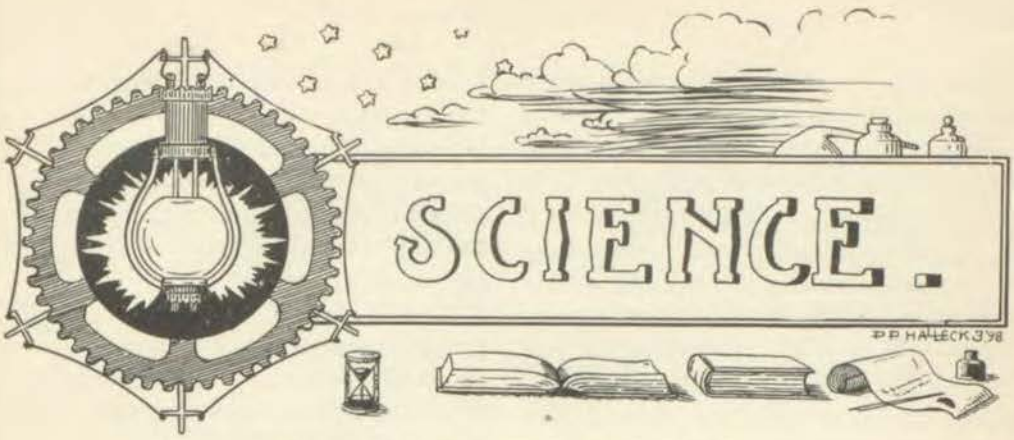
than in the forest of Ziph was most enthusiastically encored, and the duet by David and Abigail in scene nine was very fine. It may be truly said of the presentation of the cantata as a whole that there was a total absence of the amateur, and that it was in every way worthy of the splendid audience by whom it was given so appreciative and enthusiastic a reception."

The Art Club gave its second entertainment, Monday, May 16. The program was especially original. The stage, elegantly furnished, represented a room in Mr. Todd's art studio at Paris, where a reunion of the traveling members was being held. The locals in the letter from home read by Mr. Frank Sharp, and the current news given by Mr. Russell were bright and witty. Mr. John Tate and Miss Nellie McGowan related their traveling experiences in an entertaining manner. The consultation of Muses was picturesque and interesting. During these numbers Mr. Ingenhouse made a series of rapid and clever sketches on his easel. A spring song rendered by Miss Northrup in clear and bird-like tones was received with applause. This was followed by an excellent story by Miss Moore. Whitcomb Riley's selections are always popular, but Miss Pickering makes them doubly so. The closing tableaux, the "Goddess of Liberty", was a beautiful picture, which will long be remembered.

In the death of Prof. Carl Betz the schools of Kansas City will suffer an irreparable loss. The system of calisthenics which the untiring efforts of Prof. Betz has made so efficient and popular in the ward schools, is recognized everywhere for its excellence. Prof. Betz' high qualities as a man have endeared him to the pupils and patrons of the Kansas City schools. He was always polite and gentle in manner, although he possessed that indomitable will and singleness of purpose which carried everything he undertook to a successful issue.

Our boys have been busily engaged in the manufacture of a model school house, which is designed to be a part of Missouri's educational exhibit at the Trans-Mississippi Exposition at Omaha.

The Manual Training High School closes with this issue, the first yearly volume in its history. And it must be freely admitted by all that this year's record has surpassed the hopes even of its staunchest friends and supporters. This is not the result of accident. The success of any enterprise which strikes out into new paths of practice must come alone through definitely connected causes. There is much to protect and to foster the venerable and time honored; but the new must stand or fall on its own merits. That which history has not honored must hew out honor for itself. The school was organized under a definite and clearly thought out plan, which has thus far been unflinchingly carried out. While we have been unhampered by tradition and precedent, we have nevertheless maintained a profound respect for that which has been proved good and worthy, and have held fast to it. So far the school has been kept free from cliques and clans and partisan organizations. But with all these things to encourage and to spur us on we do not assume perfection, far from it. There are many opportunities for improvement, and doubtless many errors which we hope time will enable us to correct.



THE MANUFACTURE OF SOAP.

"The less perfume and the more soap a nation uses, the higher is its civilization." If this is a fact, we must conclude that America is a pretty moderately civilized nation, and Kansas City a perfect town, for in just one soap factory here a bar a day could be made for every person in the city.

The industry of soap-making, though indispensable enough, does not make the impression upon the public that some others do. But if any one wants to get an idea of the magnitude of this business, let him step into a modern soap factory and investigate its processes.

To begin with, soap is made with caustic potash or caustic soda and some fat or oil; in the former case, the product is soft soap, and in the latter, it is ordinary hard soap.

The "caustic" is made by boiling a strong solution of carbonate of soda and throwing in quicklime. This is done in monster vats, and the heat is supplied by live steam under great pressure.

A good deal of fat is originally tallow, which is obtained from the packing houses in barrels, from which it is extracted by injecting live steam. This is pumped to the soap kettles, where it is mixed with rosin. It is melted, and the caustic is pumped in and steam again turned on. A few words about these kettles—there are six of them, each thirty feet deep and eighteen feet across the top. They are cylindrical, and each is capable of holding 300,000 pounds of soap. Think of it! One million, eight hundred thousand pounds of soap boiling at one time! This does not include the two smaller kettles used for making toilet soaps, each of which holds 12,000 pounds of material.

After boiling for a few hours, the fat is changed to soap, and is run out into mixers where washing soda and a kind of coal oil are added. From these mixers, it is run into "frames,"—boxes about five feet high, eighteen inches across and five feet long, which can be taken entirely apart,—and allowed to cool in a cold storage room for about three days.

When the soap is hard, the sides of these frames are taken off, and the blocks are taken upstairs on trucks. Here they are cut up into cakes by fine piano wires and set in another room to harden. After being in here for a day or two, they go to a machine which stamps on the name of the soap, etc, and from there, to girls who wrap it and pack it into boxes.

The rapidity of these girls is something remarkable. Each wraps from fifty to seventy-five boxes a day, or 5,000 to 7,500 cakes. There are thirty of these girls wrapping laundry soap.

The toilet soap is made from purer materials, and is "milled" to give it a finer grain. After having hardened, it is cut up and mashed out into a thin film between rollers. A scraper takes it off of this roller and lands it on a long canvas belt which moves very slowly through a drying-room. Here it becomes almost hard, and is again run through the mill. This time it is perfumed and taken off in fine ribbons, like noodles, and put into a machine which compresses it into a long, solid cake. This is cut up and stamped, wrapped, and packed in boxes according to the brand.

Cocoanut oil soap is made by putting the ingredients into a form and letting the saponification take place without heat. When it gets solid, it is cut up and stamped as all the rest.

Soap powder is simply ordinary washing soap powdered and dried and mixed with washing soda.

As a bi-product, this company refines the glycerine that is formed when soap is made. To get this glycerine, they put salt into the vats before anything is drawn off. This makes the soap rise to the top and the glycerine sink to the bottom of the kettle.

This is drawn off first and taken to the glycerine house. It is very impure, of a dark red color, dissolved in many times its volume of water, and holding much salt in solution.

THE PHYSICAL LABORATORY

It is first treated with sulphuric acid, which coagulates it, then it is pumped to great vacuum pans. Here it is evaporated in vacuo until most of the water is given off and the salt precipitated.

The product, crude glycerine, is then fit for the manufacture of nitro-glycerine. This "dynamite glycerine" is then repeatedly distilled with steam until the required purity is obtained.

K. W. Z.

DIRECTIONS FOR COLLECTING INSECTS.

I. MATERIALS.

At the beginning of his work in zoology a student should provide himself with the following articles and should keep them in proper condition and repair:

1. A cyanide bottle.—This is made by putting a lump of cyanide of potassium, the size of a grain of corn, into any wide-mouthed bottle, covering with water and stirring in enough of Plaster of Paris to make it hard and firm. After this has dried for an hour, put in a piece of cotton and keep the bottle ever afterwards tightly corked. This should always be kept handy in collecting.

2. Forceps.—A pair of forceps of steel or wire should be provided for collecting spiders, bumble bees and wasps.

3. An insect net.—A net for collecting butterflies and dredging ponds may be made by bending a stout quarter-inch wire into a circle about one foot in diameter, leaving enough at the ends to be fastened on a wooden stick three to five feet long. Over this stretch a flour sack or a piece of mosquito netting.

4. Spreading boards.—These are made by placing two flat boards one-half inch to three-fourths inch a part, nailing them firmly and placing underneath a piece of cork for holding the specimens in place.

5. Mounting pins and box.—These should be kept handy for mounting the specimens as soon as captured.

II. LOCALITIES.

1. Electric lights.—Electric lights are so easy of access and provide such an abundance and variety of animals that they are naturally the first fields visited. They should be visited at all seasons from April to November, so that the complete range of specimens frequenting them will be obtained. The most abundant specimens under the lights are beetles; but moths, bugs, grasshoppers, crickets and spiders may also be found there. Collecting is most profitable at the lights during warm, damp (not rainy) nights and it is useless to visit them in a cold, dry night. The beetles will be found under the lights, the moths generally on the post near the lights, the spiders and centipedes in the grass near by.

2. Woods.—A profitable place for collecting is also found in the woods or on rocky ledges. Here the insects are more timid and are found under stones or logs, in decayed trees or stumps, or under the bark of decayed trees. The most common ones are beetles, centipedes, several forms of hymenoptera, bugs and spiders. Heavy logs or stones should not be moved since they contain usually no specimens, and the lighter ones should be replaced after the specimens are obtained.

Care should be taken not to injure the specimens in catching them since an injured specimen is worthless.

All the mature specimens found should be taken, since this will furnish an opportunity of exchanging with others.

In case snail shells are collected the smaller forms will be found in the leaves or in the mosses down close to the rocks.

3. Open places.—This includes prairies and places where the woods are not thick. Such places usually have flowers and other vegetation so that specimens, such as grasshoppers, butterflies, bees, and some forms of beetles are abundant.

The flowers when in blossom attract the butterflies, bees and sometimes the beetles. For catching them the net is convenient, but care must be taken that the butterflies are not allowed to flutter in the net for fear of spoiling the wings.

The grasshoppers are found hopping or flying over the grass, but some of the smaller forms must be looked for in the leaves or on the fence the color of which they imitate. Occasionally boring insects are found here especially in dry clay banks on the sides of the roads or stream. It might be mentioned here that some of the most beautiful beetles are found on or near the bodies of dead animals.

4. Ponds and streams.—These are explored with the net and are very rich in animal forms. The beetles which swim through and on top of the water, the bugs which glide over and dart through the water, and the larvæ of dragon flies

which crawl on the bottom of the pond, are found at all times of the year in great numbers. In the spring fresh-water shrimps, and the eggs of frogs, toads and salmanders are often found In addition to these crayfish are found in all stages of growth during spring and summer. An aquarium to rear and study these forms of life found in the pond, is very profitable as well as interesting.

III. MOUNTING.

As soon as caught the specimens should be put in the cyanide bottle and allowed to remain until they are dead beyond revival. They should then be taken out of the cyanide bottle and put in a box which contains some cotton. When the collector comes home, the specimens should be removed and mounted. In the butterflies, grasshoppers and bees the insect pin should be thrust through the thorax until within one-third of the distance of the top.

They may then be placed in the spreading boards, the wings stretched forward as in flight, and fastened down with pins or small pieces of glass. In this position they should remain until thoroughly dry, the length of time necessary varying from three to ten days.

The bugs should have the pin thrust through the thorax, and in the beetles the pin should be thrust through the right wing cover about one-fourth of the distance back from the prothorax.

The specimens may then be placed in a cigar, or an insect box, which should be neatly lined with white paper, and should contain cork either in sheets or in pieces about one inch square.

When the box is full, two or three moth balls should be placed in it to keep out the insects that infest collections.

IV. NAMING.

After the specimens are properly mounted, they should be named and labeled. The label may consist of a number on a piece of white paper through which the pin has been stuck. This number should refer to the number in the note-book in which is recorded the name of the family, genus, and species, the sex, and the location of capture. These data may be supplemented by any interesting items about habits or variations.

The naming of the specimens may be accomplished by the use of Comstock's or Packard's manual of insects.

The characteristics called for by the book should be closely noted to prevent mistakes, and the drawings or pictures in the book should be closely compared with the specimens.

All the common forms around Kansas City have been, or will soon be figured in THE NAUTILUS.

After locating the specimen in THE NAUTILUS, Comstock's Manual should be read closely and compared with the specimen in order that the characteristics may be impressed on the mind.

If the specimen is not figured in THE NAUTILUS, the tables for determining families in Comstock's Manual may be used in finding the family of the insect, after which the genus and species may be found by comparison with other collections.

Good care should be taken of the collections, and they will always remain objects of gratification and pride.

COMMON OWLET-MOTHS ABOUT KANSAS CITY.

The arc lights on our street corners attract by their brilliant glare myriads of the winged creatures, which each summer brings in its train. Of this motley but intensely interesting hoard, a large proportion are popularly known as moth-millers, or candle-flies. These moths fall into several families which can be accurately separated only by careful study and reference to technical literature, but any boy or girl can soon learn to separate the larger part of them

by a little attention to the general characteristics which will be given presently. Let us first suppose you were just beginning the study of the moths and were supplied with a good dry cyanide bottle, into which a fluffy piece of cotton had been introduced, and had at home a spreading board all ready to receive specimens. Any evening from the first of May until October will furnish plenty of moths. If the night be warm and misty so much the better, for in such conditions these insects revel in immense numbers. We proceed to the nearest arc light as soon as night falls and patiently wait until some gaily bedecked moth alights upon the side of the light-post, or on the sidewalk, then carefully place the mouth of the cyanide jar over the specimen and carefully slip the jar along the surface until Mr. Moth flutters down and gets his feet entangled in the cotton in the bottom of the jar. Then replace the cork and await the next victim. Repeat this procedure until enough moths are taken to satisfy your newly awakened desire for game. We now have our specimens at home. See that every one is free from injury due to careless handling, or to rubbing against bottom of the jar. Carefully pin them through the center of the thorax, noting that the pin passes vertically through the part. The specimen, being pushed up the pin until within one-third to the top, is now pinned to the spreading board, and the fore wings are drawn forward until the posterior borders form a straight line. The hind wings are brought forward until they reach a natural position. The specimens being all thus spread, the wings being held in place by slender pins placed just back of one of the strong wing veins, are ready to have strips of paper or glass laid along upon the wings to hold them flat and smooth Small bodied specimens are dried within a week and may be removed from the board. Others should remain longer in proportion to the size of their bodies.

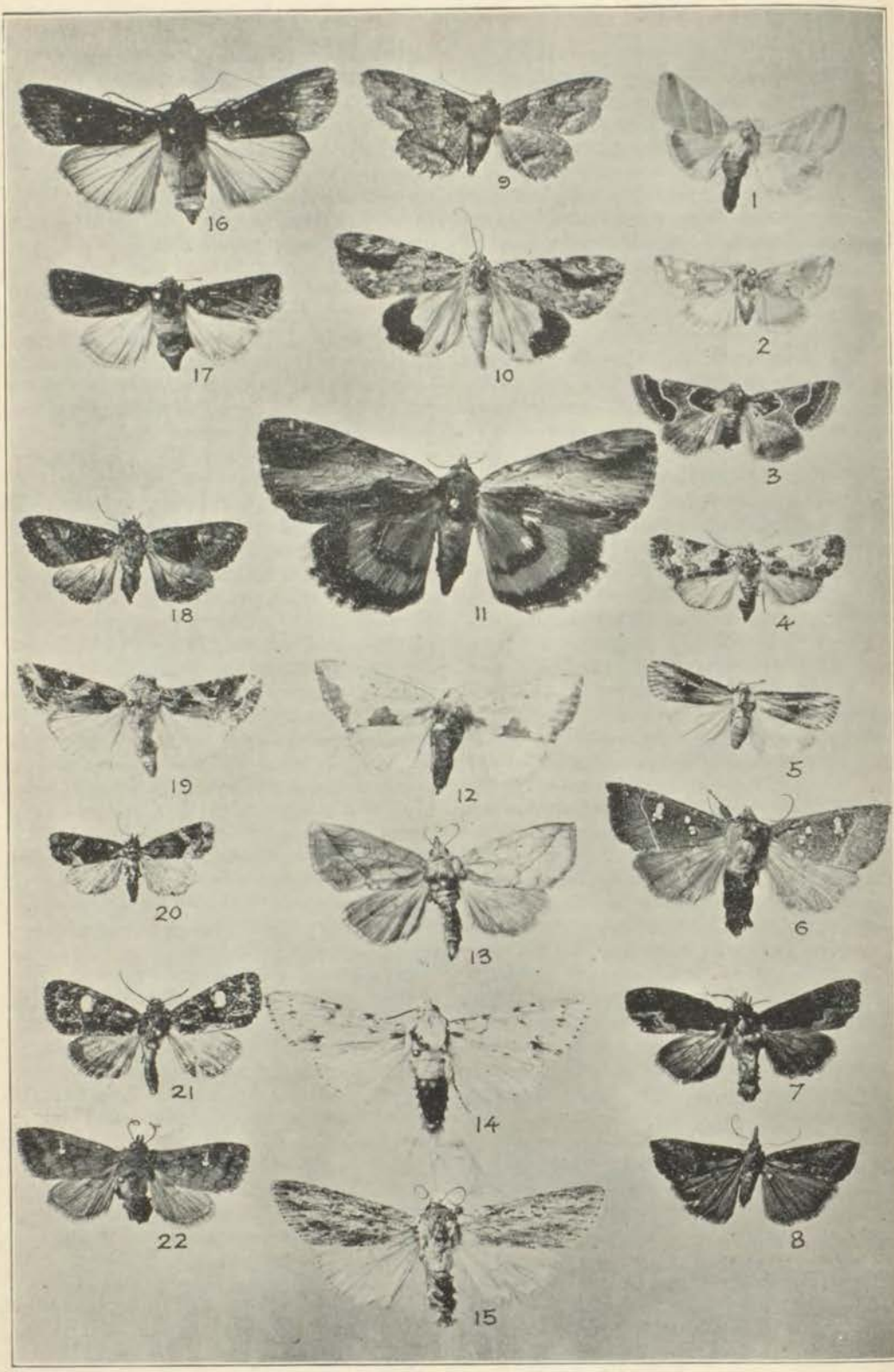
Each specimen should have upon the pin just beneath it a small label giving date and number referring to your note book. If you ever take or send the specimens away the locality should also be upon the label with your name. If collecting is to be done without the aid of the arc-light, a bait composed of equal parts of molasses and vinegar and brushed on a tree will lure large numbers of specimens, which may be taken by quickly flashing a dark-lantern upon them and dexterously placing the bottle over the choice specimens.

We will now suppose you have your pinned specimens and wish to classify them into families, or to get at least some idea of the species nearly allied. If the specimen at hand has a slender body, fragile, finely scaled wings, both pairs of which are similarly colored and marked, the specimen is very probably a Geometrid. If the body be heavy, wings short, stiff and with the fore pair ornamented with wavey transverse lines, while the hind pair are slightly or not at all ornamented the specimen is probably a member of the family under consideration, the Noctuidæ. The members of this family are usually sombre colored and of medium or small size, expanding about an inch and a half. Of course there are exceptions. In the Noctuid genus Cotocola for instance, the hind wings are brilliantly striped in red and black, while they expand as much as three inches. As a rule, however, if a species is brilliantly colored it is not a Noctuid.

There is another family of modest colored and woolly bodied moths which are attracted to light. The species have woolly legs which they project forward when at rest. These moths form the family Lymantriidæ.

Still another group of woolly moths with brilliantly spotted wings, which are folded roof-like when the insect is at rest, forms the family Arctiidæ.

By holding a small moth between the eye and a light the veins of the wings may be observed. About in the center of each wing may be seen quite a space not occupied with veins. Sometimes this space is limited externally by a cross-bar known as the discal vein, and this enclosed space is the discal cell. If you have a moth which looks like a Noctuid but in which there is a vein arising from exactly the center of the discal vein, you may be sure it is a member of another family known as



Shadowless Photo, by Davison. COMMON OWLET-MOTHS ABOUT KANSAS CITY—PLATE I.

Notodontidæ. The caterpillar which assembles in such immense numbers on walnut trees develop into a moth referable to this family.

These few remarks are very general and are made only to get you interested; that done a vast and beautiful field is open to you. There will then be an object to your after-supper bicycle ride and to the jaunts in the woods. Nature will have a meaning to you which it never had before. The pursuit and capture of specimens will develop you physically while the study incident to classification will form those analytical habits of mind which make strong thinkers. The making of apparatus and cabinets will form a pleasant application of your lessons in manual training.

The Noctuidæ is an immense family, comprising very nearly two thousand species in North America alone. We will not attempt here to enable one to trace all his specimens to their genera but indicate groups of genera for all and the particular names of only a few most frequently met with in this vicinity.

The first characteristic we will use for classification is the eyes. Examine your specimen with a magnifier and find whether the eyes are smooth all over, or if little hairs arise from the surface. If there are no hairs on the surface of the eye, make a further examination and learn whether the eye is surrounded by a collar of evenly arranged hairs, or merely rests in a mass of scales.

Thus we limit three great groups each containing many genera. Each of these groups are sub-divided into divisions based upon the armature of the tibiæ. The first sub-division contains genera having spines along the tibiæ; the second those genera having unarmed tibiæ.

This arrangement is not complete, but is sufficient for beginning students.

Now for a few examples of each division.

The first plate we will devote to the naked-eyed genera. A glance at the plate indicates how very diverse these moths are. Still, after a little experience, one becomes expert in distinguishing Noctuids by their general appearance, or habitus.

Figure 1 represents a species of Heliothis, a genus, poor in species, but rich in specimens. The larvæ found eating into tomatoes produces H. armigera, a species whose pictures may be found in almost every book on entomology. The species figured, H. rexia, is often taken at the arc-lights.

Figure 2 is a beautiful moth having splotches of metallic silver on the front wings. It is Schinia chrysellus and is found at light during the late summer.

Schinia marginata (Fig. 3) is more representative of this very large genus. Notice the type of ornamentation and you can easily recognize other species of the same genus, some of which have orange colored hind wings, or secondaries, the fore wings being termed primaries.

Chamyris cerintha (Fig. 4) is a common little moth, with white, black and blue markings.

Crambodes talidiformis (Fig. 5) is a smoky colored moth which occurs at light during June.

Hydrœcia nitela (Fig. 6) represents a large genus of very similar moths. They are found at light in September.

Dipterygia scabriuscula (Fig. 7) is most frequently taken at sugar-bait.

Hypena scabra (Fig. 8) is an example of a large group of genera having very long palpi. They are called Deltoids. The species are usually obscurely marked, and are found among grasses where their larvæ feed, and at sugar-bait.

Homoptera calycanthata (Fig. 9) is most frequently taken at sugar. The genus contains quite a number of species, all of which have the primaries and secondaries similarly ornamented. Each species occurs in several varieties. Homoptera lunata is our largest and commonest species.

Catocala amica (Fig. 10) and Catocala ultronia (Fig. 11) represent a genus of the largest and most beautiful moths of the family Noctuidæ. These moths, as a rule, have brilliantly colored secondaries and very modestly ornamented primaries, thus reversing the usual order of ornamentation. But this is for a purpose. These insects inhabit the woods, and when at rest upon the rough, lichen covered bark of a forest tree, with their brilliant hind wings well

covered by the fore ones, detection is well nigh impossible. When disturbed they fly very quickly, displaying their vivid colors to the eye of the pursuer. But this only serves to confuse the would-be captor, for when they alight they as suddenly and as completely disappear as an extinguished flame. These moths appear in June in a profusion of species. They are the prize moths of every collection. Their larvæ feed upon forest trees and are protected by color and form as the adult insect. They are quite large and naked, resembling very closely a flat piece of twig or bark.

Stiria rugifrons (Fig. 12) is a beautiful, sulphur-yellow insect with chocolate markings. It appears at light in September.

Closely allied to the preceding is Basilodes pipita (Fig. 13), a species of a beautiful metallic golden color with fine lines of brown. It appears with preceding species.

Acronycta lepusculina (Fig. 14) and Acronycta oblinata (Fig. 15) represent a large series of moths, all of which are similarly ornamented with white and black. June is the best month to collect them.

Agrotis ypsilon (Fig. 16) displays the general features of the largest proportion of Noctuids. Fore wings dark blackish-brown, becoming paler toward the ends. Hind wings semi-transparent and smoky.

Feltia gladiaria (Fig. 17) is a common insect about the arc-lights in the fall. There are several others of the same genus equally common, and of similar appearance.

Euplexia lucipara (Fig. 18) is often taken at sugar. It is rich, dark brown with lighter markings.

Prodenia commelinæ (Fig. 19) is very common at light and at sugar. Its larvæ is one of the most destructive cut-worms.

Erastria apicosa (Fig. 20) is dark brown with lighter color at the ends of the winds. It frequents light all summer.

Hadena miseloides (Fig. 21) is a member of a very big genus comprising moths of widely different aspect. This species sometimes lacks the white spot on the fore wings.

The last species under the naked-eyed division which we will speak of is Tricholita signata (Fig. 22), a uniformly chocolate brown species with a whitish discal dot, as the dot in the center of the fore wings is called.

Plate II will be devoted to the representatives of the lashed-eyed and hair-eyed genera.

We have but few lashed-eyed genera represented in this locality.

Very early in the spring, usually in the latter part of March, we have a few warm evenings. This is the time to search for Dicopis grotei, (Fig. 23.) This moth is shaggy in appearance and of a mossy-green color. A very closely related species, Eutolype bombyciformis (Fig. 24), found in company with the preceding, is a smoother species and rather dark bluish-gray in color.

Calpe canadensis (Fig. 25) is a rather peculiar Noctuid. It is a light fawn color with darker shadings. A small tooth of scales project back from about the middle of the anterior margin of the fore wings. This peculiarity is extremely rare in moths of this family, but usually in the allied family, Notodontidæ. The species comes to light in June.

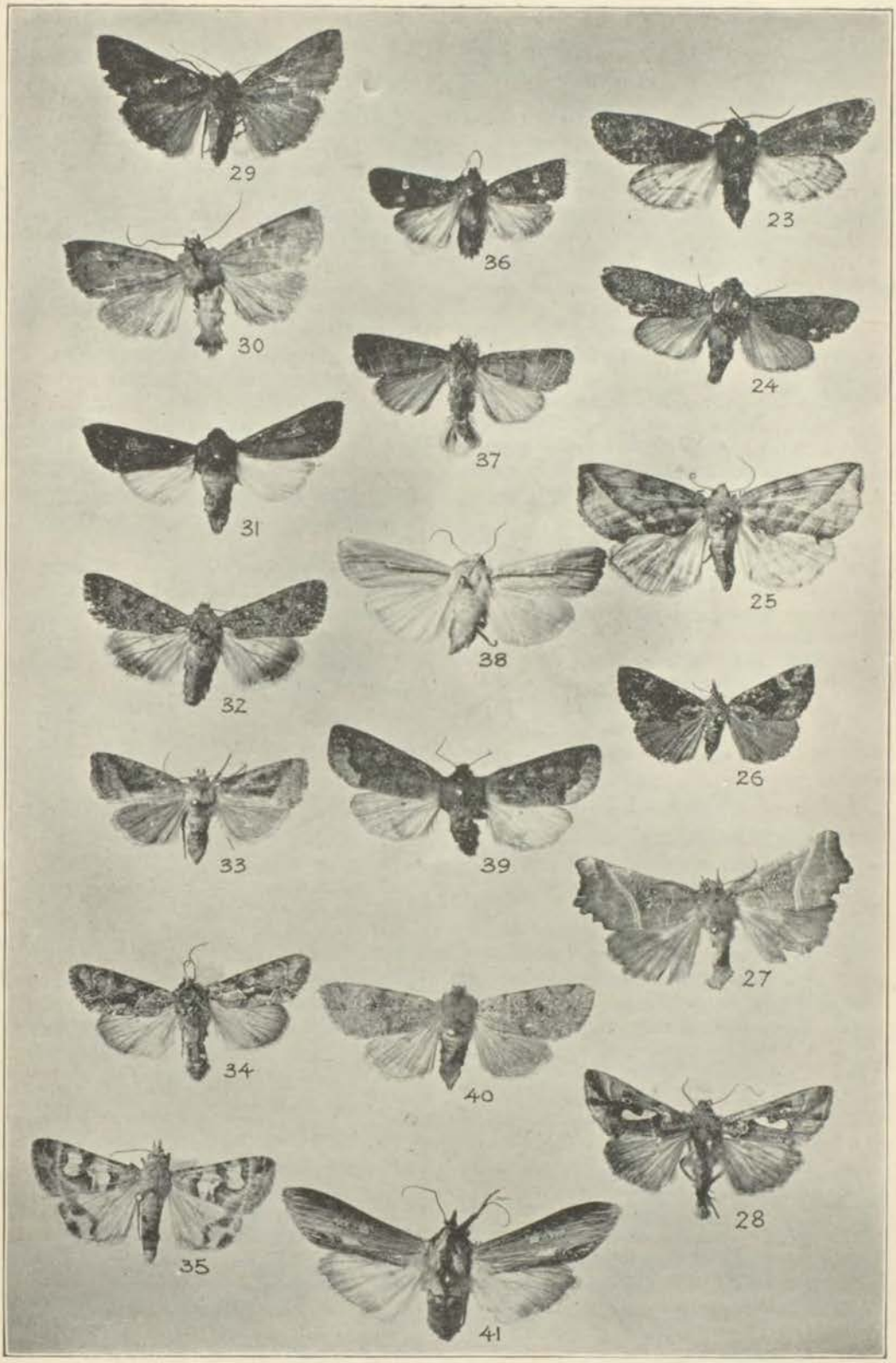
Bomolocha scutellaris (Fig. 26) is a lashed-eyed Deltoid, possessing, you will note, the long palpi of the Deltoids.

Scoliopteryx libatrix (Fig. 27) is found both in Europe and in America. The larvæ feeds upon willow, and makes a light coccoon in the forkings of twigs. This is rather a unique habit for this family.

Plusia biloba (Fig. 28) and P. ou, (Fig. 29) represent a large genus, most of the species of which present a metallic spot on the fore wings. All the moths of this genus have a tuft of scales on the thorax and upon the abdomen, giving the insects the appearance of having a saddle upon their backs. They are fond of hovering about flowers.

Orthosia helva (Fig. 30) is a reddish-brown species with a black discal dot. It is not very common.

Mamestra picta (Fig. 31) is quite a pretty species, having rather narrow fore wings which are colored a rich, brick-red, contrasting with the white hind-wings. This genus is the largest of the hairy-eyed genera.



Shadowless Photo. by Davison. COMMON OWLET-MOTHS ABOUT KANSAS CITY—PLATE II.

Mamestra trifolii (Fig. 32) is very common at light. Its color is dark brown with indistinct markings.

Mamestra lorea (Fig 33) is light brown with smoky secondaries.

Mamestra distincta (Fig. 34) is quite common. It is grayish with a distinct black dash in the center of the primaries.

Cirrhobolina deducta (Fig. 35) in its general appearance resembles a small catocala. There is a yellow spot outlined in black on the secondaries. The species comes to light both in the spring and fall.

Figure 36 represents Mamestra renigera, one of our commonest Noctuids. Its colors are very dark brown with a white spot beyond the discal cell. Often times there are also traces of yellow on the primaries.

Orthodes cynica (Fig. 37) is reddish brown with finely cut lines of buff on the primaries. All members of this genus have these finely cut transverse lines on the primaries.

Lucania adonea (Fig. 38) has the typical appearance of the genus. All the species are some shade of light buff, with markings longitudinal. L. unipuncta is the dreaded army-worm moth.

Tæniocampa garmani (Fig. 39) is one of the first moths to appear in the spring. Color reddish brown with black points.

Tæniocampa alia (Fig. 40) is mouse colored with brownish shadings.

Cucullia asteroides (Fig. 41) is a most peculiar moth, having a movable crest of scales on the thorax which generally project over the head, giving the moth the appearance of having a hat on. The color is brownish on the anterior and posterior edges of the primaries with a lighter shade through the center.

The species whose photographs we here present you are but a small fraction of the throng of beautiful moths which any diligent collector may land in his cabinet during the summer season.

Those who may desire to pursue the subject further can find assistance in reading, "Insects Injurious to Vegetation," by Harris; "Packard's Guide," or "Comstock's Manual," all of which are in our public library.

FRANK J. HALL.

EXPLANATION TO PLATE I.

1. He-li-o'-this rex'-ia.
2. Schi-ni-a chry-sel'-lus.
3. Schi-ni-a mar-gin-a'-ta.
4. Cham'-yris ce-rin'-tha.
5. Cram-bo'-des tal-i-di-form'-is.
6. Hy-dræ'-cia ni-tel'-a.
7. Di-pter-ygia' sca-bri-us'-cula.
8. Hy-pe'-na sca'-bra.
9. Hom-op'tera caly-can-tha'-ta
10. Ca-toc'-a-la am'-i-ca.
11. Ca-toc'-a-la ul-tron'-ia.
12. Sti'-ri-a ru-gi'-frons.
13. Bas-i-lo'-des pi'-pi-ta.
14. Ac-ron-yc'-ta le-pus-cu-li'-na.
15. Ac-ron-yc'-ta ob-li-na'-ta.
16. Ag-ro'-tis yp'-si-lon.
17. Fel-ti'-a glad'-ia-ria.
18. Eu-plex'-ia lu-cip'-ara.
19. Pro-den'ia com-me-li'-na.
20. E-ras'-tria ap-i-co'-sa.
21. Ha-de'-na mis-e-loi'-des.
22. Tri-cho-li'-ta sig-na'-ta.

EXPLANATION TO PLATE II.

23. Di-co'-pis gro-te'-i.
24. Eu-toly'-pe bom-byc'-i-formis.
25. Cal'-pe can'a-den'-sis.
26. Bom-o-lo'-cha scu-tel-lar'-is.
27. Scol-i-op'-ter-yx bi-ba'-trix.
28. Plu'-sia bi-lo'-ba.
29. Plu'-sia ou.
30. Or-tho'-sia hel'-va.
31. Ma-mes'-tra pic'ta.
32. Ma-mes'-tra tri-fol'-ii.
33. Ma-mes'-tra lo-re'a.
34. Ma-mes'-tra dis-tinc'-ta.
35. Cir-rho-bo-lin'-a de-duc'-ta.
36. Ma-mes'-tra re-nig'-e-ra.
37. Or-tho'-des cyn'-i-ca.
38. Lu-can'-ia ad'-o-nea.
39. Tæ-ni-o-cam'-pa gar-man'-i.
40. Tæ-ni-o-cam'-pa al'-ia.
41. Cu-cul'-lia as-ter-oi'-des.

HERE AND THERE.

It is wise to do a little thinking ourselves and depend less on the newspapers. This is the conclusion of a good many voters since the last city election. The newspapers went the entire latitude and longitude of the earth to find reasons why this or that candidate should be elected; measures were quite absorbed by individuals. When matters had been settled and the votes counted, it was discovered that an appropriation which was to be used in completing the Manual Training School was lost. Then it was in order to ask, "Mr. Speaker, where are we at?"

The future of the state, the government, indeed everything depends on the youth of today, and their equipment, therefore, nothing for which our citizens voted was of greater importance. Yet it received little thought and attention, and for the lack of knowing just what the measure meant, many did not vote either for or against. Unless something is done the Manual Training High School will be greatly handicapped.

The boys' shop work is divided into a four years' course. The first year carpentering, the second wood turning and pattern making, the third forging, and the fourth machine work. We have equipment for the first year only.

We are confident that the defeat of this measure was merely an oversight, and that the wise and progressive spirit by which Kansas City is distinguished will right the matter in the near future.

The Shops.

The work of the boys in the wood working department is very creditable. They have learned to make all kinds of joints, dove-tailing, etc.; and a tour of the work-room will show good execution in T squares, boxes, key racks, card trays, picture-frames and clock holders. The T squares will be used by the classes in drawing next year.

Some of the boys are taking "time by the fore-lock" and making book-cases, picture-frames, china closets, music racks and stands, chiffoniers, tables, chairs and tabouretts. We are even building a miniature school house, after the most modern style and adapted to use in the country. We must get at the thinking apparatus of the city fathers, and the quickest way is to insist that they attend our Exhibition Day,—seeing will be believing. If this is not effective, the manual training department will present each balky voter with an auger.

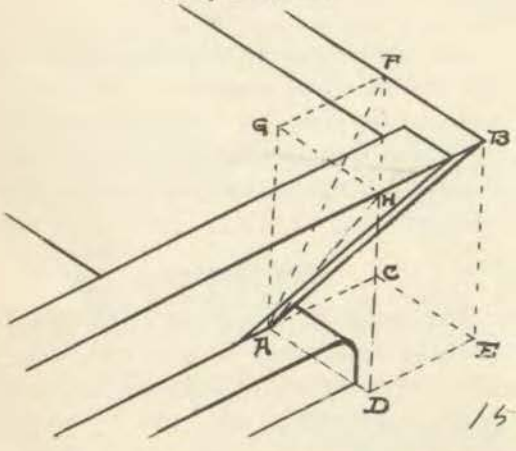
It is very fortunate that vacation is near at hand, for we are getting lazy and think a little rest would be helpful. The signs of the times all point this way; when the boys only black their shoes in front and do everything else in the same manner, spring fever is likely to be an epidemic.

* * *

It is said that three-fourths of the engineers of this country earn their living in offices by drawing and designing. This is enough to show the importance of our mechanical drawing department.

TODD.

A Trigonometrical Solution of the Card Tray Problem.



It is necessary in a great many cases to calculate angles of this sort in practical work, especially when the lengths of the top edge and the angle H A D are given.

Let the figure represent one corner of the tray, a hopper, or anything of the sort. Required the angle F B A so that we may set our bevels correctly.

BE = Perpendicular height of tray.

Draw the right parallelopiped G E

AH = AF = width of side of tray.

$$AH = \sqrt{DH^2 + DA^2} = AF$$

$$AC = AD = FB$$

$$\therefore \tan \angle FBA = \frac{\sin}{\cos} \frac{AF}{BF} = \frac{AH}{DA} = \frac{\sqrt{DH^2 + DA^2}}{DA}$$

COOKERY.

The best cooking schools in the world are in Holland; but England is noted for its advancement in this line.

In our own country, the first public schools into which cooking was introduced are in leading cities of the north-eastern and north-central states. Owing to the expense of equipment, colleges and universities were first to take it up. It is, however, gradually working its way into high schools, and in time, this line of educational work will form a part of the course in the graded schools, thus leaving no break in the system from kindergarten to high school.

Our Manual Training School is the first one of its kind in this part of the United States; because of its success, we are justly proud of it.

Cooking schools were first popularized through individual effort, but now, although at one time the manual training for boys had the preference, cooking forms a part in the course of every complete Manual Training School.

The length of the regular course in cooking, in our school, is one year. Because of its close connection with chemistry, it is a senior study—cooking is applied chemistry. It is dignified to

regular laboratory work.

Although the course includes but two terms, it is hoped that arrangement can be made for an advanced class, next year, in which the chemistry and hygiene of cooking will be studied, especially with the view of partially preparing girls for teachers in this line of work. Their work will not be confined entirely to their own class, but they will act as assistants in the beginning classes, thus learning what can be learned only by the teacher before the class.

Many seem to think that our course includes but few phases of cooking. Not so. It is very comprehensive. It includes: fruits, water and waterfoods, milk and milk foods, cereals, vegetables, eggs, fish, meats, salads, bread and muffins, puddings, pastry, cake, frozen foods and hygienic foods. Serving is an important as well as a necessary part to be learned. Model meals are cooked and served, the girls themselves being the guests.

A few illustrations will show the relation between chemistry and cooking. When water is boiled, the oxygen, nitrogen and carbon dioxide escape in bubbles which rise to the surface. This softens the water because some of the lime, no longer held in solution by the carbon dioxide forms a coating on the inside of the tea-kettle. The loss of these gases also causes the water to taste flat and insipid. The boiling of water kills all living organisms and thus prevents the carrying of disease.

This same principle is applicable to milk, a solution especially adapted to bacterial growth. If milk is to be used with immunity, every drop should be scalded.

Perhaps nothing is more often improperly cooked than eggs. They contain all the elements in the right proportion, necessary for support of the body. To cook them properly they should not be exposed to a high temperature. Albumen, which constitutes about half of the nutrient portion of the egg, coagulates at a temperature of from 134 to 160 °F. Boiling water makes them tough, horny and almost indigestible.

The same principle may be applied to meats, for their delicate tissues consist chiefly of albuminous substance. When boiled for eating, meat should be put at once into boiling hot water, and then the temperature kept low. For soups, the juices from the meats should all be drawn into the water. To do this, it should be put into cold water and cooked at a low temperature.

No subject better illustrates the relation between chemistry and cooking than bread-making. The yeast plant, Saccharomyces cerevisia, belongs to the lowest and simplest order of plants. The transparent cells of which it is composed are more or less round and multiply by budding. In the presence of this ferment the starch, ($C_6 H_{10} O_5$) of flour, takes water, ($H_2 O$) and forms sugar ($C_6 H_{12} O_6$). The sugar, then, in the presence of the diastase separates into alcohol ($2\ C_2 H_5 O H$) and carbon dioxide ($2\ C O_2$). The carbon dioxide, becoming entangled in the dough, makes it light. If the action of the yeast is allowed to continue too long the alcohol ($C H_3 C H_2 O H$), becomes oxidized, forming acetic acid ($C H_3 C O O H$), and the bread is sour.

The wheat grain is composed of 13.5 per cent water, 64 per cent starch, 12.5 per cent proteid, 1.75 per cent fat, 2.4 per cent gum and dextrine and 2.5 per cent cellulose.

Spring wheat flour, when taken into the hand, will crumble, while winter wheat flour will keep the impression made by the hand. The former, being rich in proteid is best for bread-making.

"The cook makes the body, the apothecary only cobbles it," is a terse statement of an important truth by Oliver Wendell Holmes.

Simple foods correctly cooked are best, but pie, cake and pudding, when made properly, and served with other foods, may not be injurious to some.

Hardly a day passes, but that a number of visitors pass through our school, and almost invariably their first question, when they come to the cooking department, is in regard to what is done with the materials cooked by the girls. It is to be remembered that the cooking is done only in small quantities, the recipes being divided into fourths, eighths, sixteenths, and even into twen-

ty-fifths. In these cases each girl eats what she cooks. As this requires more skill than the cooking of the full recipe, there are no fears that the girls will not be able to make any desired quantity.

Sometimes, however, as in the case of bread, pies and some cakes, it is impossible to divide the recipe, and the girls who wish may pay the cost of materials and take their products home. A few things have been sold to persons outside of the school, while others have been sent to charitable institutions.

E. B.

OUR COOKING CLASS.

The girls in the cooking class have at last gotten beyond saying, "O, I could do that at home, if I just had a recipe!" They have passed beyond the cooking of some of the simpler and more useful things, and are now in the land of pies and cakes. We wonder why the visitors sometimes look so amused when two or three girls with red faces rush out of the cooking-room just as the tardy bell begins to ring, and flying madly down the hall bump into interested visitors here and there until, each sinking into the long desired seat, a sigh is heard and a voice murmuring, "O, my side aches so!"

"For every like there is a dislike," so take heart, girls. You are fast making friends with your delicious pies and cakes.

Indeed, the girls feel quite important with the attention given them. Visitors hungrily inquire as to the price of a cake, and the faculty expects "our girls" to make cakes for their social session.

About the middle of May the halls were odorous with the smell of fruit-cake. Currants, raisins and citron with "sugar and spice and all that's nice" were piled into that cake. Then, when 'aken from the oven each was given a coating of white, and was ready to be laid away until next year. But do you for an instant suppose that those cakes are quietly reposing in each girl's box until next year? No, indeed! They mysteriously disappeared as soon as the frosting was hard, never to be seen more.

The first year of our Manual Training School is drawing to a close, and I am sure I speak the sentiments of many hearts in saying that I am truly sorry. Not so sorry because I will not have geometry to pour over, or Latin to worry my brains with, but on account of the happy times in cooking that will be no more. Miss Bachellor has done her best to make us spend a happy time in her room, and I, for one, have never heard any one say they dreaded the hour when cooking came.

We did not seem to be worrying our brains, but just spending a pleasant hour. It was such a recreation, after going through the same old routine of reciting German, English, etc. In cooking there is always something new and interesting. Yet one must not think we fool away our time.

Oh, no, we have learned a great deal in the last eight months. There will be many girls who never before went into the kitchen, who will go into their mother's kitchen, this summer, and cook dainty, as well as substantial food, that will make their mothers' hearts glad; and those who said, at the first of the year, that we would only fool away our time, will have a proof of how we have spent this last year in room 27. Beside learning cooking we have been taught economy and cleanliness. We had a splendid example of how our kitchens, cup-board, table drawers, etc., should be kept. In looking around our cooking-room everything is in perfect order, and it is only through the untiring efforts of Miss Bachellor and her assistant that these things are kept so.

We have added quite a number of charts and decorated our boards, so that our room is very pretty.

Every class of girls had a lunch some time ago.

Miss Bachellor gave each girl something to do. Two set the table while the rest cooked.

After all was prepared the girls sat down and enjoyed eating the nice things they had cooked.

A host and hostess were appointed and were taught the duties of their respective positions.

Our menu was:

Their decorations were red, white and blue, and the menu was:

Bouillon
Roast Beef
Mashed Potatoes Tomato Salad
Green Peas
Parker House Rolls
Coffee
Fruit Drinks
Strawberry ice-cream
Brides Cake

THE COOKING LABORATORY.

Chicken Salad
Olives
Muffins
Strawberries and Cream
Lemonade

The girls are becoming quite popular, for this week they gave a dinner to the Board of Education, which was fully appreciated by that dignified body.

It was given at six o'clock Thursday, May, the nineteenth.

I think much honor is due Miss Bachellor for all her patience and kindness. No matter when you go to her she is always willing to help you, and nothing is too much bother.

I wish cooking were a two year's study instead of one, for I know how I shall miss it next year, both for the pleasant times connected with it, and the knowledge derived from it.

To all the girls who will have the time next year, I say, "Take cooking and you will never regret it."

OUR SEWING CLASS.

How we have progressed! In the beginning of the year we learned the various stitches, and these we displayed upon models; this name, however, appeared to some of us as a misnomer. Now we have risen superior to small squares of material, and for the last seven weeks, we have watched with interest, the evolution of a garment from the snowy cotton cloth. We admit that the pristine hue has slowly but surely been lost, but not our pride; for the work has gone on unceasingly, until at last we have what may now be dignified by the name of skirt.

It is a thing of beauty, and we hope that it may be a joy forever. Not a Worth creation, perhaps, nevertheless a creation which only the individual girl can fully appreciate, for she alone knows how difficult it was to guide the needle of the machine along the edge of the hem, or keep it away from the edge of the tuck; and through what bitter hours she has struggled with the ripping of that hem which would not go straight—we all agree that it was the fault of the hem, and those refractory tucks. Hers also is the glory when the last stitch is taken and the victory complete.

All honor to Miss Casey and Miss Griffith, who have so faithfully demonstrated to us that the needle is the mightiest weapon in the feminine hand. L.

A FIELD DAY FOR THE STEAM AND ELECTRICITY CLASS.

Just after dinner a few weeks ago the steam and electricity class, accompanied by Mr. Kent, boarded a north bound cable car at Fifteenth and Troost. We were all in excellent spirits as we were going to spend the afternoon as a field day. You may think it strange that such a subject would require field work. However, we were tired of designing dynamos and talking about types of machines that we had never seen so we were only too glad of a chance to really see some of the machinery of which we had been making drawings. Of course in a class which studies forms of energy the chief problem constantly before it is how to get energy as cheaply as possible. So don't be surprised if we get a great deal of energy for a nickel.

At Twelfth and Troost we transferred west. While waiting for the car we were fortunate in seeing the soldiers of the Third Regiment while they were executing military evolutions that are supposed to facilitatethe execution of Spaniards.

At Twelfth and Main streets we transferred north, and, as there was no Main street car in sight, Mr. Kent took us to see Bernheimer's power plant. The engine and dynamo room of this store reminds one of a parlor rather than an engine-room, even the boiler-room is kept far cleaner than many kitchens. The dynamos and engines here are of the same type as the one in our school. We also examined the elevator machinery here, which is known as the Hale vertical cylinder type. As the fifteen minute limit of our transfer checks had about expired by this time we hastened back to the cable line and were just in time to catch a car. We then took transfers west at Fifth and Main streets and took the full fifteen minutes allowed in looking over the power plant at the City Hall. The dynamos there are of a type now nearly obsolete. The furnaces were fitted with different kinds of smoke consumers so that persons owning smoky chimneys might see the workings of the

various appliances for the abatement of the smoke nuisance. The elevator apparatus here claimed most of our attention, as it is so arranged that all the machinery can be seen. The method of operating the elevators here is known as the horizontal cylinder system.

Again we were fortunate in catching a car just in the nick o'time, and while we were riding, Mr. Kent explained various kinds of elevator systems. We got off the car this time without transfers, but we were fully satisfied with the nickel's worth of energy which we had purchased from the cable company.

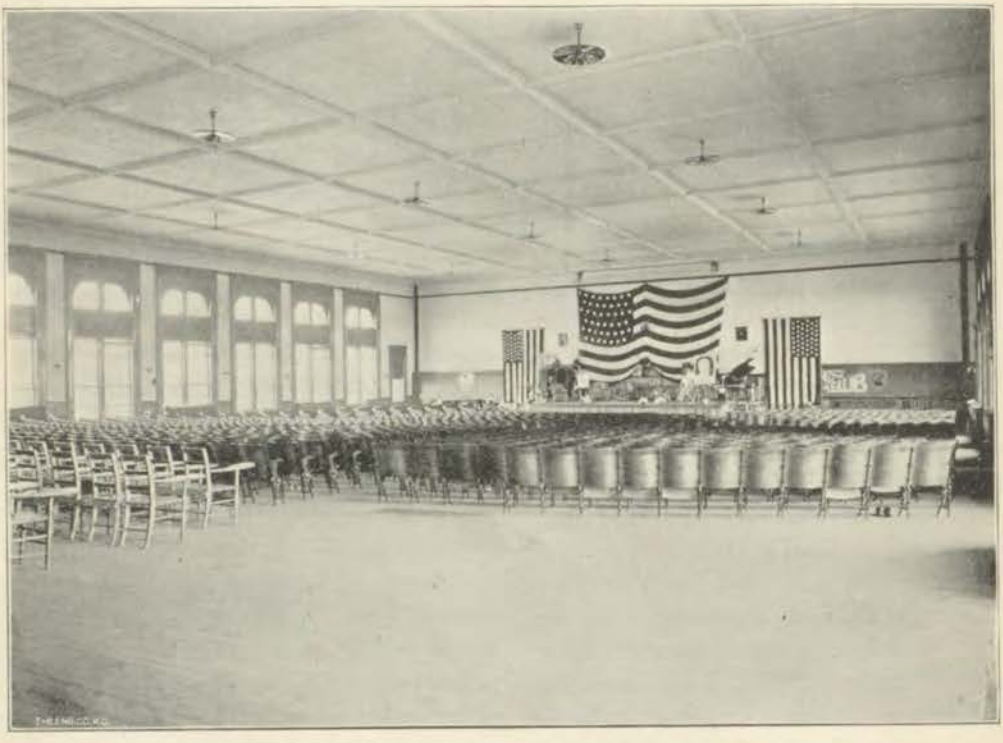
We walked across the Kaw river on the bridge that is used by the elevated railway, and entered the Riverview power house of the Metropolitan company. The first thing to claim our attention was the device for feeding the furnaces. This is known as the Balcox and Wilcox automatic stoker, and consists essentially of a long chain like grate,—only the chain is nearly as wide as it is long—which is kept traveling into the furnace over two large cylinders. A small engine keeps these cylinders revolving in such a manner that the endless grate comes up over the one in front and goes down over the cylinder in the rear end of the fire-box, thence it returns beneath the furnace to the front cylinder. As this chain-like grate leaves the top of the front cylinder on its journey back into the furnace, it passes under a wide spout which continually feeds coal onto it, thus the fires are kept burning just right, and the work and salary of several firemen, who would otherwise be required, is saved. The boilers of this extensive plant are of the water tube type.

The engine and dynamo room of this power house would rival the lobby of the finest hotel in the land in regard to neatness. But people generally overlook such little points when they enter this room, and stand gazing in open mouthed wonder at the great flywheel and armature revolving before them. Well may a feeling of awe be inspired by this sight, for here the spectator is surrounded by an atmosphere surcharged with the force of 2,000 horses. All the thunderbolts ever heard by one person in a life-time would not equal in energy that which silently flows from this great dynamo every day. Power for the Elevated Railway, the Rosedale, Argentine, Wyandotte and Armourdale electric lines is distributed from this one machine. In addition to this, besides running many hundreds of electric lights, it runs a huge motor of 400 horse-power at Ninth and Washington streets, which in turn pulls the long cable on the Summit street system. Is it any wonder that the study of electricity and steam should be fascinating to an ambitious young man, when he sees feats of such stupendous magnitude already being done? Almost daily we read accounts of wonderful results with the work at Niagara Falls. Who in the face of such marvellous achievements will dare to limit the possibilities which the future will disclose?

After first allowing us to satisfy our curiosity, Mr. Kent described everything to us, told its use, how it was made, and when interesting, its history. He began with the great switch board, portions of which it meant death to touch In the center of the numerous arrangements for automatically breaking the circuit whenever anything unusual happened, was an interesting mechanism which contained a small armature not unlike that which is in every fan-motor. This armature was slowly revolving and moving a train of wheels which indicated on little dials certain numbers, which when multiplied by a certain number, called a constant, gives the output of the dynamo in watt-hours. Such an instrument is called a recording watt-meter. The

lightning arresters next claimed our attention, for in spite of the fact that the energy in a thunderbolt is not a very great amount, yet the force is very great owing to the short space of time in which it acts.

Passing on from the switch board we next examined the dynamo. This is similar to the one that was used to run the Intramural railway at the World's Fair. It is of the multipolar type, and in this respect is similar to the one in the Manual Training High School. The shaft and armature alone weigh seventy tons. A special car with wheels all along under it had to be provided to bring this important piece of machinery from the factory. A compound condensing engine revolves this mighty armature, and a fly wheel also, which alone weighs seventy-five tons. To describe these remarkable engines would require too many technical terms; this one fact however might be interesting to those who wish to understand the term "condensing." The steam that comes from the cylinders of this engine, after passing through the condenser and air pump, isn't steam at all, but water, just hot water. This water goes to a tank from which it is again pumped into the boilers to be used over and over to push the big pistons and spin the wheels of the trolley cars.



A CORNER IN THE AUDITORIUM.

Another device for saving the expense of manual labor was next examined. This consisted of an endless chain which carried pans used to hoist the coal to the bins above the spouts which feed it onto the moving grate. This same device was also used to remove the ashes. It is well to state in connection with these labor saving appliances that the steam engine is rapidly sup-

planting the human engine, for there is no more expensive form in which energy is purchased than through the medium of muscles. If men would realize this, perhaps we would have fewer strikes for nothing more than merely a raise in wages. A steam engine that costs five dollars per day to run will do as much of some kinds of work as a gang of fifty men, costing one hundred dollars per day.

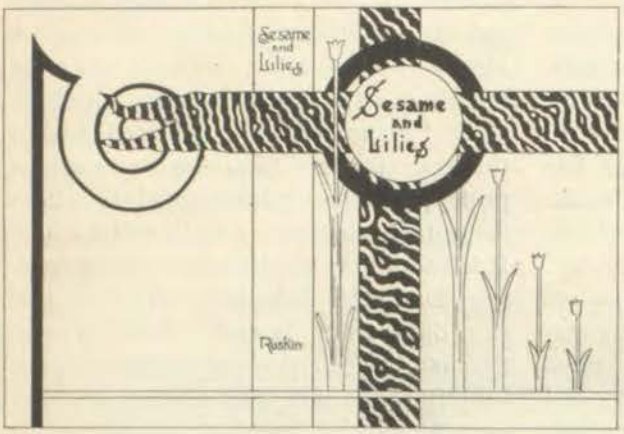
From the Riverview power house we went to the Turkey creek pumping station. This is the place where the pressure of the city water is controlled, and the additional pressure for fire is applied. Doubtless, many have wondered what was the use of the great reservoir on top of the hill at Twenty-second and Holly streets. This is the fire reservoir. By opening the valves of the pipe from this reservoir eighty pounds additional pressure can be added to the normal pressure in the city water mains. A new tripple expansion pumping engine has recently been placed in this station. The pumping engines here receive the water that is piped from the Quindaro pumping station, and force it into the city mains where a normal pressure of one hundred and twenty pounds is maintained.

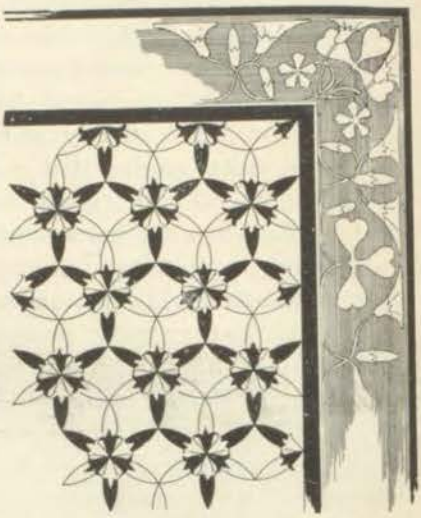
It was about six o'clock when we left the pumping station and went to the Kansas City electric light plant in Toad-a-loup. Here is the place where the sunlight imprisoned in the coal thousands of years ago is changed to a form of energy so that it may be again set free. The lower story of this building is occupied by the engines and boilers. We stayed for only a cursory examination of these, however, as the dynamos above were being turned on to prevent the streets of Kansas City from getting dark. We hastened upstairs to see the pyrotechnic display which always accompanies the operation of arc lighting dynamos. At first we were blinded by the blue and violet light that flashed from the comutators of these spitfire machines. The roar of the blowers on the Thompson-Huston dynamos made conversation almost impossible. The slapping together of the various belts, which in several instances were operated, two or three in tandem from the same power pulley, and the vibrating of the floor caused a sensation not unlike that which is felt to a very slight extent when reading Dante's "Inferno." Add to this the danger of instant death if you touched one of the many wires in the building, and you will readily see why people don't go there for amusement as often as they do to a theatre. Amidst the many noisy machines were a few more modern alternating current dynamos, that were running as smoothly as our dynamo down stairs. The alternating current, however, is only used for running incandescent lights where the distance is too great for the direct current.

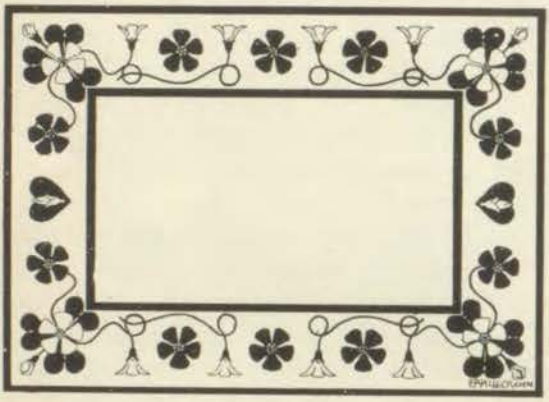
Mr. Kent explained the complicated winding on the armature of the arc lighting dynamo, and then took us to the office where he introduced us to the electricians who have charge of the plant. They were very polite, and showed us the method for keeping the current strength constant; they also explained for us the mechanism of the arc light and many other things of a nature too technical to mention in this article.

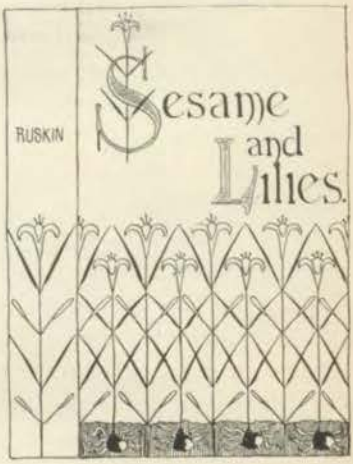
As it was getting late, we took our leave of this demi-inferno, and started home. Over our heads where we walked were several wires of about the thickness of a lead pencil, yet through these, as silently as the foot falls of night, traveled the power of two thousand horses. Ahead of us we could see light after light, tiny suns these, shedding again to the world that which was lost by the sun so many centuries ago. Who would not crave the knowledge of these mysteries of nature!

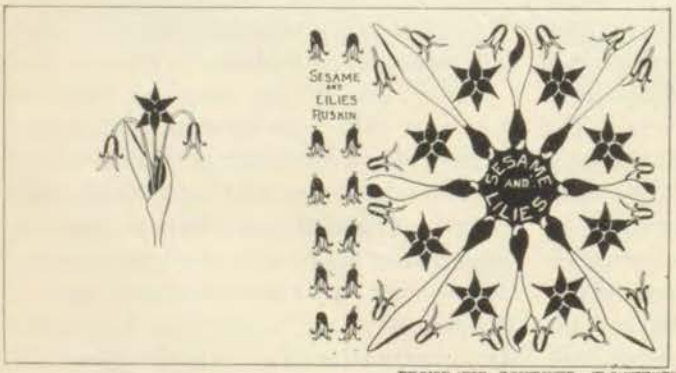
Clarence Rowe.



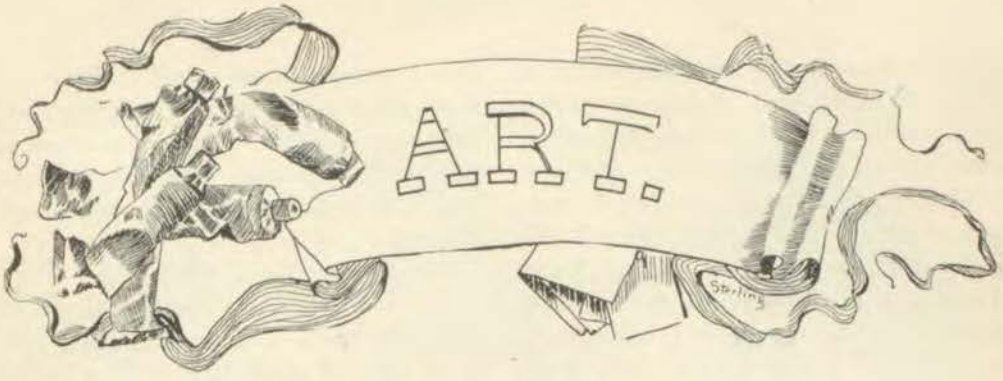








DESIGN FOR BOOKCOVER T SWEENEY



ART IN ILLUSTRATION AND DECORATION.

Art is eminently a subject requiring practical experience and especial study. It cannot be grasped in its large relations by minds habitually occupied with other matters and whose claim to treat of it is their faculty of verbal expression.

Art is those productions of skill and imagination which minister to the gratification of the esthetic rather than the utilitarian in life. There may be some question whether modern illustration as we see it in newspaper and magazine, properly comes under this head; but it is the natural outcome of the universal craving for news.

Being limited in early days to crude drawings on fragments of bone by the cave-dwellers, or to a monotonous procession of captives depicted on the walls of an Egyptian Temple, illustration may truely be called a modern art. It is a province of the Kingdom Beautiful which is justly ours by right of conquest; we are not trammeled by the traditions of the old masters, those stumbling blocks to the modern artist.

Notwithstanding the great demand and immense supply of these pictures of every day life which must be adapted to the tastes of the multitude, there are evidences of artistic improvement.

Though the public while enjoying it, considers illustration a branch of utilitarian, therefore not of pure art, it might remember that much of the greatest art of the world serves practical ends. Why then should we undervalue illustration, that vine which climbing over the prosaic masonry of the printed matter, enriches and beautifies it?

The majority study art to develop themselves and only study it so far as to satisfy their own selfish motives. But a true artist studies to benefit the human race. And do you not think the man who raises some poor persons ideal, is a benefit to the progress of civilization?

Many books and magazines are bought and read because of their illustrations. If they are good books, you have through this medium transmitted information which probably the reader would never otherwise have gained. These illustrations bring us into closer relations with the great heart of nature.

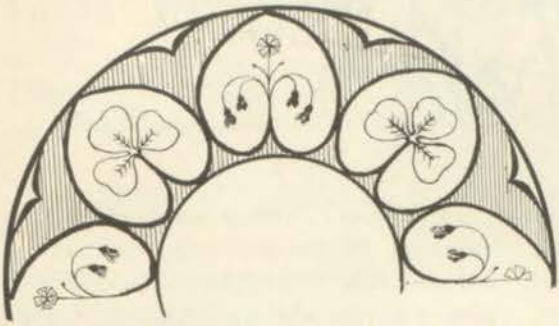
Decorative art is, or it should be, purely esthetic. It is one form which is pre-historic; as far back in history as we read, decorative art is present, and forms much of that which was, and is, beautiful to us now.

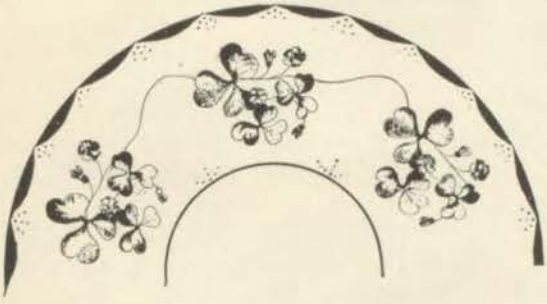
In our design class we have worked out plate borders, damask patterns, borders for wall paper, covers for books, and numerous other little designs. In this work we are often helped by little hints, which are very simple but still of great profit. For instance by folding together

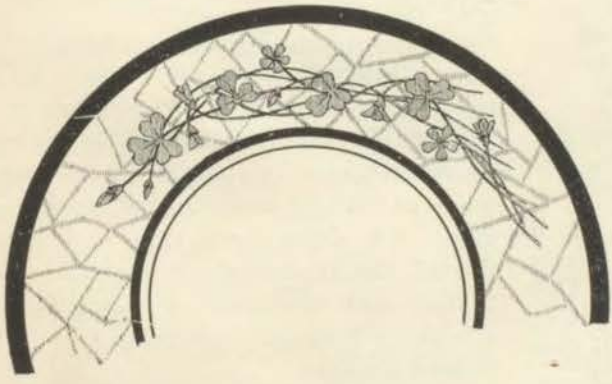
a piece of paper on which your name is written in ink, you obtain a design when unfolded more or less beautiful, as the curves may determine. Here we introduce symmetry and immediately have an ornamental figure. In all this kind of work we aim for variety, for in all kinds of art this lends the greatest charm. Much is gained in this class, for each piece is the special work of the student, obtained by adapting a real or conventionalized stem, leaf, bulb, flower, or even tendral, to suit his particular idea. It is surprising the different forms a single plant assumes under our pencil. Here too, as well as in literary work is shown the working and developement of the pupil's mind. And each piece of work is characteristic of that person—some designs are massive and strong, others graceful and delicate, but in all our work, the ideal is Nature.

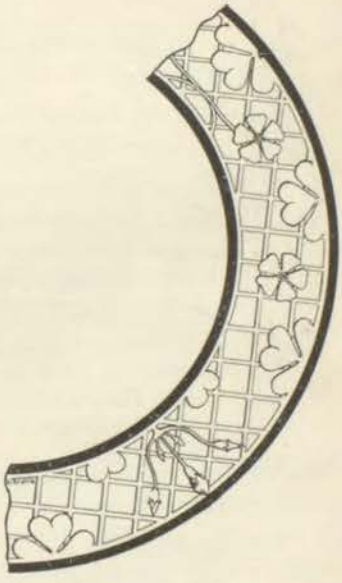
There is no royal road to art just as there is none to mathematics. The more we work and practice, the better we grow. A great fault of the art student of today, is his wish to obtain by absorbing, all that he does learn about art. We do not care to work hard enough to gain a little.

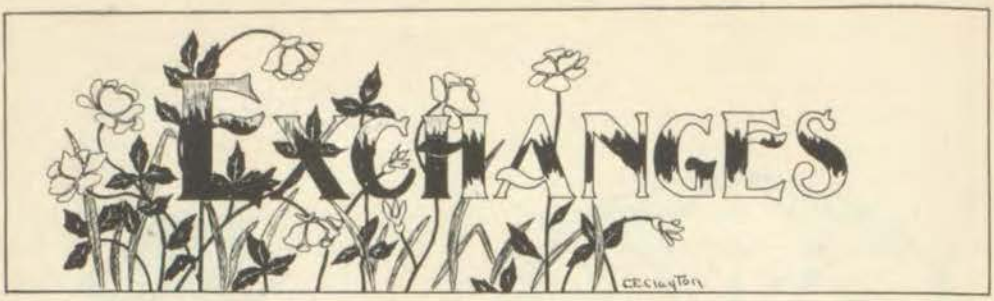
Claude Monet says, "If it is in you to be an artist, go and look at Nature, do and see what you feel." H.











We wish to extend to our exchanges our hearty thanks for the help which they have rendered us in this the first year in the history of THE NAUTILUS. We feel that much of our success is due to them. Not only witty remarks and bits of poetry have been appropriated, but a great many valuable suggestions have been drawn from them. We hope that the second year of THE NAUTILUS will be as successful as the first and thereby deserve the continuance of its exchanges.

The only way to have a friend is to be one.—Ex.

Friend to Farmer—"Does your son stand well at college?"

Farmer—"Well, I should say so! The first time he came home he had a pin with '98 on it."—Ex.

The stern-faced Judge in Sessions sat,
And to an old-time "drunk" said he,
"Indeed, it grieves me greatly, Pat,
To see you here so frequently."

Then Patrick answered with a leer
That lightened up his flaming phiz,
"Begorra, sure, I am not here
As often as Your Honor is!"—Ex.

One of our new exchanges is THE NAUTILUS from Kansas City. It is so well edited in all of its departments that it seems a pity not to publish it oftener than once in two months.—The Jabberwock.

"When the small boy starts early for the pantry, it isn't to avoid the jam."—Ex.

Teacher—"Tommy, express the same meaning in the following sentence in fewer words: 'When Mr. Flood, accompanied by his wife and children, stopped the horse before his house he threw down the reins and they alighted.' "

Tommy—"The reins descended and the Floods came."—Ex.

PROP. XIV, COR. III.
That Noah knew Geometry
Is safe surely to remark,
For in Genesis we find
That Noah made an arc.—W. M. C.

Oldstyle—"I don't think that a college education amounts to much, anyway."

Sparerod—"Don't you? Well, you ought to foot my boy's bills, and see."—Ex.

'I hate that man," the rooster said,
Unto his cackling frau.
"I sympathize with you," she clucked,
"I'm laying for him now."—Ex.

THE NAUTILUS, Kansas City, is an excellent paper, containing thirty-seven pages of reading matter and several fine cuts. All departments are well conducted, the typography is neat and up-to-date and the spirit of a successful school is manifest throughout.—High School Apropos.

Jean—"Why do you never speak to Mr. Outre? He is uncouth, but I feel sure he is a diamond in the rough."

Katherine—"So do I. That's why I'm cutting him."—Ex.

MY MISTAKE.

I told my sweetheart she was like
The violets she wore,
Then dared compare their perfume rare
With the love I for her bore.

A look of scorn she cast on me,
Ye Gods and higher powers!
I saw too late, O sad mistake,
They were artificial flowers!
—Vassar Miscellany.

A declaration of independence—"I'm of age."

A Kansas woman was decorating her room with pictures and hung her husband's picture on the topmost nail and then stepping back to admire her handiwork remarked: "Now everything is lovely and the goose hangs high."—Ex.

Little Sam,
Pot of tar,
Thought 'twas jam—
Gates ajar.

New Servant—"I found this coin upon your desk, sir."

Master—"I'm glad you're honest. I put it there purposely to test your honesty.

New Servant—"That's what I thought."—Ex.

We call special attention to the beautiful cover of THE NAUTILUS, Kansas City, Mo. This paper numbers among our best exchanges, and shows the deep interest and support of the school, also good management on the part of the editors.—Tattler.

Stranger—"Do you know a man around here, with one leg, named Jones?"

Doctor—"Could you tell me the name of his other leg?"—Ex.

A TRAGEDY.

The dance was on, yet he lingered there,
In his lonely place on the quiet stair,
And he sighed to think of the maid below,
Whose eyes were wondrous tender,

She—"You love another."

He—"You're another."—Ex.

Then he gnashed his teeth in sheer despair,
And he longed to curse—yet he didn't dare—
But rushed above and prepared to go—
For he'd broken his suspender.—Ex.

"How do we know Hamlet had a bicycle?"

"Because he said, 'Watch my safety while I sleep.' "

He—"Don't let your father put in electric lights."

She—"Why not!"

He—"Well-er-you can't turn it low."

New Doctor—(To wife of injured man he had been examining)—"I fear your poor husband is dead."

Supposed Corpse—"No, I ain't."

Anxious Wife—"Hush, John, be quiet; the gentleman must know better than you what is the matter with you."—Ex.

A big wash-out.—On the clothes line. —Ex.

Will—"Did you tell your father that I love you with all my might?"

Nina—' Yes, but he said your mite was too small."

Good boys love their sisters,
So good have I grown,
That I love other boys' sisters
Better than my own.

There was a fire down town the other afternoon at the residence of Mr. B., but not much damage was done. A reporter of an evening paper called to learn the facts, when the following dialogue took place between the servant and himself:

Reporter—"Can I see Mrs. B?

Servant—"She's out, sir."

Reporter—"One of the family, then?"

Servant—"All out, sir."

Reporter—"Well, wasn't there a fire here this afternoon?"

Servant—"Yes; but that's out too."

Maid Servant—"Professor, O Professor, just think, I have swallowed a pin."

Absent minded Professor—"Never mind, here is another."—Ex.

(Extract from a letter written from college.)—"I am much rejoiced, dearest uncle, that you are coming to visit me next Monday. I will be at the station to meet the train. As we haven't seen each other for a long time, that I may easily recognize you, hold a $10 bill in your right hand."—Tid Bits.

This ink that I am using
Is very bad, I think—
And also most dishonest,
Because it's copying ink.—Ex.

A maiden fair once sat and sighed,
"Ah me! the heavenly choir;
To be with them, the golden ones,
And tune and strike the lyre."

Her little brother shouted "mouse!"
His voice rose high and higher,
She grasped her skirts and climbed a chair,
Then turned and struck the liar.—Ex.

Teacher—(to student whose Homer had been stolen) "And don't you lock your door, sir?"

Student—"I do now, ever since the book was taken."

Teacher—"A case of locking the stable door after the horse has been stolen."

Student—"Oh no, sir, it was the text that was taken; the horse is all safe."—Ex.

In the fall he played foot ball,
And played the season through,
In the winter he played a banjo,
And he sang in the glee club, too.

In the spring he swung a racquet,
And base-ball too, played he,
In one year he graduated,
With the degree of "G B."—Ex.

Junior (who has answered correctly, to the astonishment of the professor)—"You look surprised, professor."

Professor—"So was Balaam."—Ex.

It isn't always well to look
A bull dog in the eyes
If there is any way in which
One can do otherwise:

Nor is it always best to tell
A liar that he lies
Unless you're big and strong, and he's
Not more than half your size.—Ex.

Cuba has sympathy for breakfast, sympathy for dinner, and sympathy for supper. No wonder she's hungry!—The Constitution, Atlanta.

If an S and an I and an O and a U
With an X at the end spell Su,
And an E and a Y and an E spell I,
Pray what is the speller to do?
Then if also an S and an I and a G
And an H. E. D. spell cide,
There's nothing much left for the speller to do,
But to go and commit Siouxeyesighed.—Ex.

Upon the hill-top rested
A wagon worn and old.
It said, "Alas, my wheels are tired
And worst of all I'm coaled."

Just then a crowded cable-car
Came groaning up the hill
It shook and shivered in the wind
As if it had a chill.

"Good evening, friend," the wagon cried,
"This is a stormy trip,"
"That's right," the cable-car replied.
"And O, I have the grip."—A. M. F.

Student (translating Cicero)—And-er-and lest-that-er-that any one should marvel-at-this-er-this oratory—"Shall I go on?")—Ex.

"How much is this silk a yard, sir?"
A blushing maiden asked
Of a gay and gushing salesman,
Who admiring glances cast.

"Only a kiss," he answers,
With an audacious air,
As he unfolds the fabric
Before the maiden fair.

"If you please, I will take ten yards, sir,"
For a while his heart grew still,
Till the cruel creature added,
"Grandma will settle the bill."—Ex.

Mexicans are not very fond of Spanards, and jokes are constantly cropping up in Mexico, illustrative of the arrogance of the Spanish character. One new current in Mexico runs as follows: A Spanard arrived at Vera Cruz and stepped ashore just as an earthquake occured. Putting on a benighn smile, he said: "Tremble not Earth, I am not going to harm thee."

She shuns the water, yes, for she
May shrink with better grace
Than may her witching bathing suit
From the water's damp embrace.—Ex.

"I'll knock daylights out of you," said old Sol, going down behind the western hills "—Ex.

A livery stable—Soph's Latin book. —Ex.

The superintendent is still engaged in hearing the reading in the schools, and says there are many good readers in them, but that some of the reading is a study dangerously like the following, reported for the Detroit Free Press:

Two men approached each other and spoke as follows:

"Hellole man, wutz news?"

"Noth'n talta know of. Rher wife got baa kyet?"

"No. Spectnerback never train. Woan chav some'm?"

"Mutcha bligeda, jus tad one. How zerything?"

"Oh, bout zhusual. Sni sweather w'ravin' now?"

"Certain liz. But fdone train farmer slava hard timather wheat. Say, gotcher hor soce ainta fraid etha car shet?"

"Oh, yessezez gentleza lamb now. When zher brother gona selly zouse?"

"Soony zeek'n fina mantel paze price. Sawful hard nowta sell anything fwuts sworth."

"That stright. Jerreck'n thing sloose snuppa little this fall?

"Yessa guess thrizen wheat'll may keverything moo flong."

"Well, Imes be going. Drop pin some timenyer pasing."

"All ri; chew dotha same."

"I will. Gladta metcha."

No, son, this is neither Scotch, Irish, Creole, New England, Wild West, Kipling-American, Georgia Cracker, Bowery or Craddock-Moonshiner dialect; it is simply the English language as she is spoken every day in any town in the United States by the average American citizen.

AN UNEXPECTED RECEPTION.

I stood in the hall at midnight
When the clock was striking the hour;
Her pa slid down the balustrade
And kicked me with all his power.
I didn't reckon his boots were quite so full of feet;
I went on the spur of the moment and landed in the street.—Ex.

HIGH SCHOOL LEXICON.

Po-ny—A beast of burden used by students when traveling in unexplored lands.

Flunk—Process of changing from a four to a five-year's course.

Senior—One who rides a pony in the race for a sheepskin.

Junior—One who knows it all and tries to teach the faculty.

Val-e-dic-to-ri-an—A wind instrument belonging to the graduating class.

Quiz—An instrument of torture which teachers delight in using on the pupils.

Fac-ul-ty—A troublesome organization which interferes with student's enterprises.

Soph-o-more—A wise person; one of nature's noblemen.

Com-mence-ment—The end.

Rhe-tor-i-cals—A revival of the tortures of the Middle Ages.

Fresh-man—A rejected subject from Hades—too green to burn.—Ex.

Our last issue this year.

How do you like the cover?

Didn't it seem like war to see the soldiers drilling on Fifteenth street?

We had several "dewey" days, didn't we?

We are all sorry school is ended.

The fame of our school has spread far and wide.

We will have our second year manual training apparatus in spite of the voters.

Our faculty was nicely entertained by the Central faculty.

We say farewell to the Seniors with tears in our eyes. Ha! Ha!

Have you seen Johnson's dollar Photos? Southwest corner 12th and Grand.

We miss one boy, the fellow with the horn; he has gone to war.

The teachers had a glorious spread on the fourteenth.

Some of the "freshies" must think they are greatly needed when they ask for eighty-six tickets to graduation.

Even Mr. Connell says "you bet." We hope he does not.

Girls, aren't you glad you are girls? No war for you.

They say Mr. Chace's smiles should be kept on ice, they so soon spoil.

Some one had the impudence to ask Miss Gilday if she owned the waist she wore.

Can you pronounce "Mcwtadjr-aesmd?" If so, go to the Art Club and receive reward.

No, Margaret is not the preacher's daughter. Couldn't you tell?

At a reception given to the teachers of the M. T. H. S., Mr. Moore was introduced as the head of the shaving department.

The faculty had a spread on the 7th.

Mr. Merrill says if Miss Rowe should take to the water, the sponge would take to the land.

Frank Wynne assisted in the preparation of the article on beetles in our last issue. By an oversight, his name was omitted from the article.

Freshman—"We are making a card tray now."

Visitor—"Will it hold a full pack?"

One of Mr. R's. pupils translating said "Then he stood and looked over the tops of the trees at his feet." It surely must have been an angel.

Talking about Greek meeting Greek, you should have seen Sloan grab Sloan

Oh, Mr. Peters some of us saw you watching the base ball game through a crack in the fence.

Don't tell us not to swallow the dippers, the chains will tend to that.

Mr. Miller's chemistry classes had a very interesting trip through Peet Bros'. soap factory.

Who has not enjoyed field days?

The teachers' pictures would have been in this edition if they had not been compelled to have so many sittings. Poor photographer.

Life is not a burden when you go to the M. T. H. S., is it?

We were glad to see so many of our old friends from Central down on Art Club Day.

Go with Val and James to get a haircut, for 25c; they go to Geo. Herold's Shaving Parlor, 322 Ridge Building.

We hope our new trees "will live long and prosper."

"David the Shepherd Boy" was a grand success.

There were sixty-one panes of glass broken in our school by that horrible hail storm.

Rusty now has the nick-name of "Patronize the advertisers of THE NAUTILUS."

There isn't a whisper of "Who's going back to Central?"

Where is that base-ball nine; have they won a game yet?

A new song by Will Hall entitled "I got a new wheel."

A daily cry that is sung by Mr. Smeby entitled "Lend me a Toe."

You should have seen Clarence Kinney turning that freezer. Picture?

Said the Junior lass to Senior lad,
As he met her at the door,
"Did you like the hymn we sang just now?
How the music did outpour?"
"Well, yes," said he, "I 'spose 'twas good.
Tho' I don't know much, for one;
Your rhetoric class should know lots more
From the scanning it has done.
Just tell me please, which is the best
Of the meters in hymn or song,
Dactylic, spondaic, iambic or what,
The common, the short, or the long."
"Well, some like the long and others the short
In closing their favorite hymn,
For myself, I prefer," she said with a blush,
"A good come 'n' meet 'er him."

Why is it Miss Casey calls Miss Osgood "Our Klondike treasure."

Susan doesn't know that a dish mop isn't made to mop the floor.

Mr. Miller says phosphorous is like an old aunt, it makes matches.

Miss Van Meter speaking of flowers said "I have no violets or roses in this class, but I have two sweet Williams—William Andlauer and William Hall.

Mr. Sloan has kindly offered to pay the expenses for a girls' class in mechanical drawing. Boys get tiresome, don't they, Mr. Sloan?

Beginning May 31, Mr. Peters will have a private class, at his residence, 1011 Prospect Ave., in penmanship, bookkeeping, shorthand and typewriting. This class is to accommodate those who wish to make a special study of these subjects.

Did you think Ben looked like a picture in that shepherd's suit?

Physics teacher—"Name an electrolyte?"

Mr. Smith—"Electric light."

Mr. Peters, where do you leave your umbrella on a rainy day?

Dignified Miss N——spoke of her dancing as "schuffling her feet."

"Miss Hunt, you always keep Hidden back there."

Mr. Cline is sometimes inclined not to decline his German nouns.

Grace—"Can you write poetry?"
Corinne—"Oh, yes. But mine is always blank verse."

We will keep off the grass—when we get some.

How old was Mr. Rowe when he began business with the bank?

Something interesting—THE NAUTILUS advertisements—read them.

"Live and learn"—the blow that almost killed Donald.

What if Mr. Page should turn out as Major Kelsey did and say he had been married for a year.

Some of the Freshmen think one times one times one make three. Not so with credits.

When Will and Frank are seen together people remark "The Artist and the Monkey."

Don spent all his money for flowers and Miss Gilday's note-book suffered.

Who is it Bailey calls the "French maiden?"

The M. T. H. S. girls gave the Board of Education and the newspaper men a dinner the 19th.

Why are the goods of our advertisers like our school yard? Why, there is nothing green about them

John Tate:—"Mr. Connel, you ought to give us three days of grace on our note books."
Mr. C:—"Well, when you come to die, you won't get three days of grace."

The yelling on Art Club day was not started by members of our school.

What is ¼ shirt? For example, a 15 collar fits perfectly on 14¾ neck band; sold only by Harry B. Woolf, 1119 Main.

Mr. C. to Mr. Hertz:—"Infants must crawl before they can walk."

MacMath returned to the city with a carload of men, he says.

A common question in the physics room, "Has anyone power to attract."

Where is the Cycle Club? Surely it isn't dead.

We all began to wonder if the teachers were going to hang us up for exhibition.

Blow on, MacMath, blow on.

Flossie, spiders are very, very dangerous.

If our grass is not soon started the surveyor will have to be called to locate the boundaries.

They say a cage of parrots was found in one of the German classes.

The Seniors are a mighty band:
They make the whole school tremble,
At least one Senior thought he did
As in physics he did tumble.

Just a few more field days and it is all over.

Mr. Richardson says that advanced French class "has to show him" that they study.

Did you ever hear of the deaf and dumb man who wore mittins to bed, so as not to disturb any one by talking in his sleep?

Lives of Seniors oft remind us
What a blessing it will be
When the mighty little Junior
Will a mighty Senior be.

Didn't the Belles Lettres have a fine time at Mr. Swan's?

Miss Bacheller, who holds a life diploma to teach in the public schools of Kansas, has been granted the same for Missouri. The day after school closes, she will start for Chicago to visit Armour and Lewis Institutes. After spending a few days looking up domestic science in these schools, she will visit Drexel Institute at Philadelphia and Pratt Institute at Brooklyn. The last two weeks of June and the first two of July will be spent sight-seeing and visiting friends and relatives in her native town of Norwich, N. Y. The National Cooking Teachers' League will meet at Chautauqua, N. Y., and gives a course of lectures in connection with the Assembly. Miss Bacheller will read a paper at the League and will spend six weeks at the Assembly.

One of our German teachers tells us he is attractive, he knows, but he wishes the pupils would look at their books.

It makes one of our teachers feel bad to see the pupils stick their fingers in their mouths.

Mr. Richardson:—"Mr. Smith, read please."

Mr. S:—(who has failed successively for a week) "I can't."

Mr. R:—"My, I'm shocked that you can not! You should have warned me that you were going to fail and it would not have taken my breath."

"New souls for 15 cents." This was written on the Matron's blackboard.

Paul said that Moses wrestled with the angels. So?

Mr. Merrill:—"How many of you have seen the sun drawing water?"

Pupil:—"Yes, some sons have a natural aversion to drawing water."

Everyone thinks it is the other fellow when Mrs. Elston gives lectures on whispering during the entertainment.

Miss W:—(in music class) "What is used to raise a flat?"

Smart Pupil:—"They are using jackscrews to raise one over on Sixteenth Street."

Miss W:—"Oh, you stupid boy; what is used to lower one?"

Smart Pupil:—"Why the cyclone out in Kansas knocked a couple of them down yesterday."

Miss Ingram:—"Mr. Peters, I am blocked."

Mr. Peters:—"Well I will have to see Mr. Block about that."

Pupil:—"I live out in the country and put in onions and radishes every spring."

Mr. Phillips:—(interrupting,) "So do I. I put in onions yesterday at the expense of my breath."

Oh if Mr. Frost could only bring some frost to us, it might cure our spring fever.

Pupil:—"Miss Fisher I am too warm."

Miss Fisher:—"Well if you can't be warm now when will you be?"

Miss Wilson:—"What is a key?"

Pupil:—"What you unlock a door with."

Miss Wilson:—"There are others."

Persons wishing advertising space in this paper please address

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