

The Spectrum.

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Autumn.

When autumn's winds blow bleak and chill,
And farmers work with hearty will,
Till late in eve, from early morn,
To gather in their stores of corn
And think of harvest season passed,
And how much wealth they have amassed,
Of the comforts they have received,
Of the progress they have achieved,
Of the advantages they enjoy,
Of changes wrought by man and boy.
Of the blessings God doth impart,
'Tis then, that they, with grateful heart,
Should give to Him their sincere praise
For his kind care through all their days.
Be not content the past to scan,
But let each one for life's work plan,
Be not content with what's been done,
With treasures gained, or battles won,
But keep continually in mind
"A higher mental plane I'll find."
With earnest zeal, may maid and youth
In nature's storehouse seek for truth.
"And let them in their search for knowledge
Think of the Agricultural College,
Where we do work with manly pace,
To win our fame and footing place.
Where we are taught that honest toil
Is worth far more than victor's spoil;
That it alone can give us cheer
To labor on for better year;
To honor those that till the land—
Reflective on our "Pilgrim Band."

They asked, "And what is space?"
The trembling Fresman said,
"I can't think of it at present,
But I love it in my head."

Ex.

The siege of Berlin.

THE SIEGE OF BERLIN.

We went up the avenue Champs-Elysees with Dr. V—, seeking the history of besieged Paris in the holes made by shells in the walls and in the sidewalks broken up by grapeshot, when a little before arriving at the Place de l'Etoile, the doctor stopped, and, showing me one of the large mansions so pompously grouped around the Arc de Triomphe:

"Do you see," said he, "those four closed windows high over the balcony? In the first days of the month of August, that terrible month of August of last year, so gloomy with storms and disasters, I was called there on account of a stroke of paralyzing apoplexy. It was the home of Col. Jouve, a cuirassier of the first empire, an old devotee of glory and patriotism, who, at the beginning of the war, had come to reside in the Champs-Elysees, in an apartment with a balcony.

"Do you know why? To be present at the triumphal return of our troops. * * * Poor old man! The news of Wissembourg was brought to him as he left the table. On reading Napoleon's name at the bottom of the bulletin of defeat, he fell paralyzed.

"I found the old cuirassier stretched full length upon the carpet, his face motionless and covered with blood, as if he had received a terrible blow on the head. Standing, he must have been very tall; lying down, he appeared immense. Although eighty years of age, from his beautiful features, his superb teeth and his shock of curly white hair, he appeared to be no more than sixty. * * * Near by him was his grand-daughter, on her knees, and in tears. She resembled him. To see them side by side, they appeared like two beautiful medallions,

struck from the same stamp, only the one was old and a little worn on the surface, while the other was resplendent and bright with all the radiance and velvety appearance of a new coin.

"The anguish of that child touched me. Daughter and grand-daughter of a soldier; her father was on the staff of MacMahon, and the sight of that grand old man stretched out before her evoked in her mind another image no less terrible. I consoled her as best I could, but in reality I had little hope. It was a most serious case of paralysis of one side, and at eighty years one rarely recovers from it.

"For three days the patient remained in the same state of immobility and stupor. In the meantime the news of Reichshoffen reached Paris. You remember in what a strange manner. Till evening we had all believed it to be a great victory; 20,000 Prussians slain and the Prince royal prisoner.

"I do not know by what miracle, what magnetic current, an echo of that national joy reached our poor deaf and dumb one, even in the extremities of his paralysis; at any rate, that evening, on approaching his bed, I no longer found the same man. His eye was almost bright, his tongue less unwieldy. He had strength enough to stammer twice:

"'Vic—toi—re!'

"'Yes, colonel, a great victory!'

"And in proportion as I gave him the details of the great success of MacMahon, I saw his features relax, his countenance clear.

"When I went out, the young girl, pallid and ghastly, awaited me before the door. She was sobbing.

"'Why, he is safe,' said I to her, taking her by the hands.

"The unhappy child had scarcely the courage to reply. The true Reichshoffen had just been made known—MacMahon in flight, the whole army crushed.

"We looked at each other in consternation. She mourned in thinking of her father. As for me, I trembled to think of the old man. Most certainly he could not resist the new shock. And yet what could be done?

"Leave him his joy; the delusion that revived him? But *then* it was necessary to lie.

"Well, I shall lie," said the heroic girl to me. Quickly drying her tears, and with a radiant face, she entered the chamber of her grandfather.

"It was a hard task that she had undertaken. The first days were not so difficult, because the poor fellow's mind was weak, and he permitted himself to be deceived as a child. But in health his perceptions were clearer. It was necessary to keep him informed concerning the movements of the armies and to write out the military bulletins for him. It was indeed a pity to see that beautiful child bent night and day over her map of Germany, marking off with little flags the route of the army, endeavoring to combine all into a glorious campaign.

"Bazaine on to Berlin; Frossard in Bavaria; MacMahon on the Baltic. She asked my advice concerning all this, and I aided her as much as possible; but it was grandfather above all who helped us in this imaginary invasion. He had conquered Germany so many times under the first empire. He knew all the blows in advance. 'Now, see where they are going to go. See what they are going to do'—and his predictions were always realized, which did not fail to make him very proud.

"Unfortunately we took cities and gained batties in vain. We never went fast enough for him. He was insatiable, this old veteran! Every day on arriving I learned of some new feat of arms: 'Doctor, we have taken Mainz,' said the young girl, coming to meet me with a broken-hearted smile, and I heard through the door a joyous voice that called to me:

"'Everything is going well! In eight days we shall enter Berlin.'

"At the same moment the Prussians were not more than eight days from Paris. We asked ourselves if it would not be better to move him away from Paris; but once outside the condition of France would have betrayed the whole truth to him, and I found him still too

weak, too languid from his great shock to permit him to know the truth. We decided to wait a little.

"The first day of the siege I went up to their apartment, I remember, very much affected with that anguish of heart which we all felt at the closing of the gates of Paris. The battle under our walls, our suburbs became frontiers. I found the good man seated on his bed, rejoicing and full of hope.

"Well, said he, 'the siege has commenced!'

"I looked at him stupefied.

"Now, colonel, you know—'

"His grand-daughter turned towards me: 'Oh, yes, doctor. That is grand news. The siege of Berlin has commenced.'

"She said this, drawing her needle with a little air so self-poised and tranquil. How could he have suspected anything? The cannon of the forts he could not hear. This unfortunate Paris, sinister and overthrown, he could not see. What he saw from his bed was a part of the Arc de Triomphe and around him in his room all was bric-a-brac of the first empire, well calculated to sustain his illusions. Portraits of marshals, engravings of battles, the king of Rome in baby clothes; then the large, strong brackets adorned with brass scutcheons and loaded with imperial relics, medals, bronzes, a miniature neck of St. Helena under a glass; miniatures representing the same lady with curled hair and light eyes, in ball costume—a yellow dress with leg of mutton sleeves. All these: the brackets, the king of Rome, the marshals, the yellow lady with short waist and high sash; that awkward stiffness that was considered graceful in 1806. Brave colonel!

"It was this atmosphere of victories and conquests, more than all we could say to him, that made him believe so candidly in the siege of Berlin.

"From this day our military operations were much simplified. To take Berlin was now only a matter of patience. From time to time, when the old man was very weary, we would read him a letter from his son.

"An imaginary letter, of course, because now nothing was allowed to enter Paris, and because after Sedan, the aide-de-camp of MacMahon had been sent as a prisoner of war to a fortress in Germany. You can imagine the despair of that poor child, without news from her father, knowing him to be a prisoner, deprived of everything, sick perhaps, yet obliged to make him speak in joyous letters, a little concise, as a soldier on a campaign must write, who is always advancing into a conquered country.

"Sometimes strength failed her; they remained for weeks without news. But the old man became impatient, did not sleep. Then there quickly arrived a letter from Germany, which she came to read to him joyfully, while restraining her tears.

"The colonel listened attentively, smiled with an understanding air, approved, criticized, explained to us the ambiguous passages. But where he was especially noble was in the responses that he sent to his son. 'Never forget that you are a Frenchman,' said he to him. 'Be generous to those poor people; do not make the invasion too hard upon them.' And there were recommendations without end, delightful preachments concerning the respect of ownership, the politeness one owed to ladies, a real code of military honor for the use of conquerors. There were also mingled some general considerations respecting politics, the peace conditions to impose upon the vanquished. In that respect I must say he was not exacting.

"A war indemnity and nothing more. What good would it be to take the provinces? Can one make France out of Germany?"

"He dictated this with a firm voice, and we felt so much candor in his words, such a beautiful, patriotic faith, that it was impossible to listen to him and not be moved.

"During all this time, however, the siege was advancing, but, alas! not that of Berlin. It was a season of great cold, of bombardment, of epidemics, of famine."

"But thanks to our attentions, to our efforts, to the indefatigable tenderness which surrounded him, the serenity of the old man was not troubled for an instant. Up to the last I could get him white bread and fresh meat. But there was only enough for him; and you can imagine nothing more touching than those so innocently egotistic breakfasts of the grandfather, fresh and laughing, his napkin under his chin, near him his grand-daughter, a little pale from privations, guiding his hands, making him drink, aiding him to eat, all those good forbidden things. Then, invigorated by the repast, in the protection of his warm room, without the north wind of winter, which whirled the snow against his windows, the old cuirassier recalled his campaigns in the North, and related to us for the hundredth time that sinister retreat from Russia, when they never had anything to eat but frozen biscuit and horse flesh.

"Can you comprehend that, little girl? We ate horse flesh!"

"I verily believe that she did understand it. For two months she had not eaten anything else."

"From day to day, however, in proportion as convalescence approached, our task with the patient became more difficult. That benumbing of all his senses, of all his limbs, which had aided us so much until then, began to disappear. Two or three times already the terrible volleys against the Porte Maillot had made him start and prick up his ear like a hunting dog; we were obliged to invent a last victory of Bazaine before Berlin, and salutes fired in honor of it at the Invalides. One other day, when we pushed his bed near the window—that was, I believe, the Thursday of Buzeval—he saw very distinctly the national guards that gathered on the Avenue of the Grande Armée.

"What are those troops doing there?" demanded the good man, and we heard him mutter between his teeth:

"Bad form, bad form!"

"That was all, but we understood that hereafter it would be necessary to

take great precautions. Unfortunately we did not take enough. One evening, as I arrived, the child came to meet me very much troubled. 'It is tomorrow that they will enter,' she said to me.

"Was the door of grandfather's room open? The fact is, that since, in thinking of it, I recollected that he had an extraordinary appearance that evening. It is probable that he had heard us. But we were speaking of the Prussians; and the good man thought of the French, of that triumphal entrance that he had expected so long—MacMahon coming down the avenue in the midst of flowers and the blare of trumpets, his son by the side of the marshal, and he, the old man, on the balcony in full uniform, as at Leitzen, saluting the town flags and the eagles, black with powder.

"Poor father Jouve! He had without doubt imagined that we wished to prevent his seeing this review of our troops, to avert from him too great emotion. So he took pains to speak of it to no one, but the next day at just the same hour when the Prussian battalions moved slowly over the long road which leads from the Porte Maillot to the Tuileries, the window above opened quietly and the colonel appeared on the balcony, with his helmet, his long cavalry sword, and all his faded and antiquated but glorious uniform of the old cuirassier of Milhand. I still ask myself what effort of the will, what revival of strength had thus put him on foot, and dressed. What is certain is, that he was there, upright behind the railing, astonished to find the avenues so silent, the blinds of the houses closed, Paris sinister as a great Lazaretto, flags everywhere, but so singular, all white with red crosses, and no one to go in front of the soldiers.

"For a moment he believed he was mistaken. But, no! Yonder, behind the Arc de Triomphe, was a confused rustling black line that advanced in the opening day. Then, little by little, the spikes of the helmets glittered, the little drums of Jena began to beat; and under the Arc de l'Etoile, echoing with the

neavy step of platoons, with the clatter of sabres, Schubert's triumphal march resounded.

Then in the gloomy silence of the place was heard a cry, a terrible cry: "To arms! to arms! The Prussians, and the four German lancers of the advance guard could see up there, on the balcony, a grand old man, totter and fall heavily. This time Colonel Jouve was certainly dead."—Translated from the French.

H. McGuigan.

Some Thoughts of Recent Progress in Chemistry.

(Address of Professor Ladd Before the
Chemical Club, Oct. 28.)

The discoveries in chemistry during the past few years have been almost startling in their character and truly brilliant in thought leading up to their execution. For fifty years past the lines of research have been in the main in the field of organic chemistry. It was in 1882 that Fischer made the discovery of kairin as a synthetic product which proved to be an antipyretic, of little value in medicine, but nevertheless of great moment as a stimulus to further research along the same lines. This has resulted in the production of a multitude of new modern therapeutic products. The later accidental discovery of antifebrine (acetanilide), a valuable antipyretic, led to the series of investigations that have given us in synthetic forms many of nature's medicines, and in most cases in a purer and better condition than those extracted from the vegetable kingdom. We have improved upon the work of nature and such local anesthetic alkaloids as cocaine, which possessed toxic properties, and was often an irritant, has been replaced by the synthetic product—eucaine "B," orthoform, and holocaine, free from the objectionable features of the vegetable alkaloid cocaine. Homatropine, euphthalmine and mydrol are rapidly replacing atropine as a mydriatic alkaloid.

The metal lithium and its salts have found strong competitors in piperazine, lycetol, lysidine and urotropine for treatment in gout. Antifebrine possesses properties giving bad after-effects, and the synthetic phenacetine has taken its place, and this is rapidly pushed aside by phenocoll, Citrophen, Apolysin, and phesin. In ferratin, the chemist has even imitated the protein iron compound in the liver; and opium, nature's most powerful hypnotic, has a score of synthetic substitutes vying for first place. Synthetic quinine has thus far eluded the chemist's powers, but so close has he come that any day we may expect to learn of the synthetic production of a substitute, and free from the objectionable properties of quinine. Some of the members of the sugar family have already been produced in the laboratory, and following the brilliant researches of Fischer and his school, we may confidently look for the day when a synthetic product will vie with sugar for a place in our confections and on our tables. That the product shall be sucrose is not essential, but rather that it shall be equal or superior to sucrose will be required. We have even been startled during the past summer with the announcement that albumen had been produced synthetically by Dr. Leo Lillienfeld at Vienna. This claim seems premature; what he did claim to produce, it seems, was a peptone, but as there are many kinds of peptones, some good, some bad, we need not look for an immediate fall in the price of steak. The process was said to have been shown before the congress of chemists at Vienna, and the products used are reported. As no sulphur was used, and as peptones contain sulphur, it is hard to see how the product prepared can be a true peptone. Nevertheless this step is an important one in the direction of synthetic production of complex nitrogenous compounds that may in the end lead to far reaching results.

* * *

For a long time controversy has waxed strong regarding fermentation as

to whether it was a chemical process or a vitalistic one, that is, a physiological process performed by the cells of the organism. The recent work of Buchner seems to settle the question that fermentation is not a vitalistic process as held by Pasteur, but rather it is due to the action of an unorganized ferment or enzyme, called zymase. Removing all cells from yeast juice, Buchner found the product still capable of producing the fermentation of sugar, converting it into alcohol. It acts readily upon cane, malt, grape and fruit sugars, but not upon lactose and mannite. Even this experiment throws no new light on the conditions necessary for the formation of enzymes as a distinct group, nor does it invalidate a theory of vitalism in connection therewith.

While the experiments in fermentation have not tended to strengthen the vitalistic theory as viewed by Pasteur, Professor Japp, in his presidential address before the British chemists, has presented the theory of vitalism in a new light, and with such force that an answer must be forthcoming from those who hold to the opposite view. Professor Japp asks: "Whether the phenomena of life are wholly explicable in terms of chemistry and physics; in other words, whether they are reducible to problems of the kinetics of atoms, or whether, on the contrary, there are certain residual phenomena, inexplicable by such means, pointing to the existence of a directive force which enters upon the scene with life itself, and which, whilst in no way violating the laws of the kinetics of atoms—whilst, indeed, acting through these laws—determine the course of their operation within the living organism."

He has come to the conclusion that the theory of vitalism is the only tenable one to account for the many inexplicable phenomena of life. Professor Japp has certainly presented strong arguments, based upon observed facts, in support of his views, and which in no way can be considered as metaphysical reasoning, and he calls attention to the fact

that while the vitalistic theory has been rejected in the past, "recent years have, however, witnessed a significant revival of the doctrine of vitalism among the physiologists of the younger generation." Without accepting all of the arguments deduced from chemistry, and brought forward by Professor Japp as being tenable, and even a necessary part to the confirming of vitalism, I can but feel that his ground is well taken and many of the phenomena of life manifested in the selective power of the organism and in the building of certain optically active substances when we might have expected others more simple, from a chemical view, are to be considered as the result of a directive force implanted within the organism and working through the kinetics of the atom, and which causes the building of products otherwise unaccountable to us.

Whether we accept in substance the theory of vitalism or not we cannot longer thrust it aside by mere argument and disjointed facts, but must meet it with other facts based on experimental knowledge, and facts too that shall account for some of the phenomena which he has seemingly demonstrated to arise under a guiding power in the organism.

* * *

In his presidential address before the British Association, Sir William Crookes, the renowned chemist and investigator, took occasion to point out some interesting facts regarding the world's food and to glance prophetically into the great future and show where chemistry would play an important part in feeding the Caucasian race in a few more generations. Wheat is the great staple food of the Caucasians. More than 500,000,000 people depend upon wheat as the basis for a daily diet. For food and seed they now require an annual supply of 2 1-3 billions of bushels. The wheat eating population of the world is increasing at the rate of about 6,000,000 per annum. Where is the supply of wheat to come from to meet this increasing demand? In the past the increase of wheat area has been greater

than the demand for the crop and there has been an accumulated surplus carried over each year, but this is now changed. The great wheat belt of the world is now largely taken and the increase of area will be comparatively small, but the population may be expected to go on increasing at the rate of 6,000,000 souls annually among the wheat eaters. In 1897-'98 the wheat crop was estimated at 1,921,000,000 bushels and with the supply of 300,000,000 bushels carried over from the years before we are still 103,000,000 bushels short. How are we to meet the demands of the future? Intensive agriculture results in very largely augmenting the crop but for intensive agriculture nitrogen fertilizers are an absolute essential. At the present time Chili salt-peter (sodium nitrate) is the one great supply and this will not last many years at the present rate of consumption. At the present time about 163,000,000 acres are required to produce the 2,070,000,000 bushels of wheat. To raise this yield on the same land to the required 3,200,000,000 bushels to supply the wants for the next generation means we must, according to the best data, use as a fertilizer 12 million tons of nitrate of soda or its equivalent each year. Where is it to come from? Certainly not from Chili. The great storehouse of nitrogen is the atmosphere. Over every square yard of the earth's surface there are seven tons of nitrogen, but not in a form to be used by plants. Over one acre of land there is about 36,083 tons of nitrogen or a building 100x40x20 feet in dimensions encloses 4,065 pounds of air, of which 3.171 pounds are free nitrogen, enough to supply the wants for 2,200 bushels of wheat. How are we to get it? Sir William Crookes calls attention to an experiment made by himself for the conversion of this free nitrogen into fixed nitrogen suitable for plants. He demonstrated that nitrogen is a combustible gas under favorable conditions forming nitrous and nitric acid. By passing a strong induction current between carbon terminals the air takes

fire and continues to burn with a powerful flame. To use coal to secure the necessary current would make the cost of nitrate of soda by this method about \$125 per ton, but if we utilize the great forces of nature, say the water power of Niagara, for supplying electricity, even under present conditions, he estimates that the cost for soda nitrate will be less than \$25 per ton against \$35 as now received for Chili salt peter. Certainly this is an encouraging outlook, when before the investigation of chemistry it seemed probable that wheat eaters would be forced to substitute other products for their favorite diet. To burn the heavens above us is a startling statement, but such it seems may become a familiar example of the future, and our wheat yield raised from the present 12.7 bushels per acre to 25 or even thirty bushels.

But it is to the tropics and semi-tropics that civilized man will look in the future for much of his food products. In possessing ourselves of the newly acquired territory we may be building better for the future than we thought.

* * *

We must now turn our attention for a few minutes to some other phases of the progress in the science of chemistry. Perhaps the most important and far reaching are the low temperature researches of Professor Dewar in the liquefying of air, hydrogen and helium, the last of the so-called "permanent gases." In this way a temperature of -250 degrees C. has been reached in a vacuum, or within 23 degrees C. of absolute zero. What would be the condition of matter were we to reach the cold of absolute zero? Who can foretell, and yet who can fail to speculate? At absolute zero all motion of the atoms would cease. Conductivity would be unknown. The properties of matter arise from molecular motion, and if molecular motion is destroyed, what becomes of the properties of matter? And molecular motion must be destroyed before atomic motions cease.

* * *

Argon and Helium: How startled

THE SPECTRUM.

were we with the announcement of the discovery of these two new elements, the one, argon, a constituent of the air, and the other found in a mineral, also known to exist in the solar atmosphere. The remarkable feature about these elements is their failure to unite with other elements or compounds, and further, that instead of existing like all other known elements in the form of molecules, they exist in the atomic condition. But during the past summer we have been treated to a series of most brilliant discoveries. Ramsay and his associates have added neon, krypton, metargon, and xenon, all constituents of the air. Argon constitutes about .80 per cent of the atmospheric air, or 1 per cent of atmospheric nitrogen; neon (the new) forms about one part in 40,000 of the atmosphere, or is about one-twelfth as abundant as carbon dioxide in the air. Xenon (the stranger) appears to exist only in very minute quantities, but possesses a much higher boiling point than the others. Krypton (the hidden) is a constituent of the atmosphere heavier than argon, but less volatile than nitrogen, oxygen and argon. It has been suggested that with atomic weights about as follows:

Helium	4
Neon	19.2
Metargon	38.
Argon	40.
Krypton	83
Xenon	129.

They would find a place in our present Periodic classification, but their negative properties do not warrant their being placed there with our present knowledge and methods of classification.

The discovery of a means of liquefying air and hydrogen on an extensive scale has placed within our power the means of discovering these new elements, for the atmosphere has evidently contained a series of gases since its beginning that have wholly eluded the chemists' search, as they are inactive and refuse to combine with other elements. What new thoughts are suggested by the mention of argon, helium, neon, metargon, krypton and xenon, products

which are without affinities, with no attraction for anything, or else with forces so strongly binding their atoms in the molecules that no power available to man will tear them apart and force them into new combinations.

Workers with the spectroscope have for some time recognized in the sun's atmosphere an element heretofore unknown upon the earth, but recently Professor Nasini and his associates have discovered a new gas having a spectrum similar to the lines found in the corona of the sun. This element is called Coronium, and is much lighter than hydrogen, our lightest known element. The gas is found escaping from the earth in various parts of Italy, but it is too early to give any definite information regarding its properties, other than unlike all other elements, its spectrum lines are perfectly sharp and straight, and are never bent during solar disturbances.

"Etherion" is still another new element, at least is said to be, and this time the discoverer is an American, Mr. C. F. Bush, the electrician. The new gas is supposed to permeate all space, and to constitute an interstellar atmosphere. It possesses enormous heat conductivity at low pressure. Impure and mixed with other gases, its heat conductivity is more than 100 times that of hydrogen. Its destiny is less than 1,000th part that of hydrogen, while its specific heat is 6,000 times that of hydrogen. Its molecular weight would be .0002; its molecular velocity 105 miles per second, as against a little more than one mile per second for hydrogen. It is found occulted in glass and other bodies. It remains for the future to determine whether the facts warrant the claim for this new element.

The products thus far enumerated among the new elements discovered during the year are gases, but Sir William Crookes has given to the world his contribution in the form of another new element recovered from what he is pleased to call nature's great waste heap. Monium—meaning alone—is a

new element among the rare earths. Its individuality is strongly marked, and it forms compounds with other elements. It seems to stand between yttrium and lanthanum, with an atomic weight of about 118.

Polonium is a new compound, or possibly, an element, discovered in uranium pitchblende, and it has 400 times the power of uranium in emitting a form of energy capable of impressing a photographic plate and in discharging electricity by rendering the air a conductor. What is the source of this mysterious energy always giving forth but never becoming exhausted?

For the first time pure calcium has been produced, and instead of being a yellow metal, it is in reality a brilliant white product forming hexagonal crystals. The pure calcium burns in hydrogen, forming the hydride Ca H_2 .

We have taken a very cursory glance at some of the more noted lines of progress in chemistry, but many things that may have a more far reaching effect than any we have here considered are omitted, for to enumerate all the advances would be to present an extended catalogue of names in this short space.

Football.

Regardless of the fact that Henry and Brand are playing ball in the Philippines, and Schollander, McBain and Tucker of the old team are not in College yet, the boys have shown more enthusiasm in organizing a team this year than has been shown for many years. Sleight, although a new man, handles the ball well, and, with his 200 pounds, has developed into the best center the team has had since Dossell headed the rushes that last carried the ball across the University goal line.

Jensen, another new man, is showing rapid development in his position as right guard. Jones, from the start, showed great activity and good tackling qualities, and soon won an end position, which he is likely to keep. The team adds a new Piper to its list each year,

and Rinhold, although a little slow, has shown such stubborn resistance in the line that he is counted a probable tackle. J. Brand is playing his old position as left guard. Manns, Worst and Thompson have been training for tackles in the regular team, although they all play well behind the line, while Milner and Gorder play left half and full-back, with Greene as quarter.

Never has the effect of a year's training on the second team been more apparent than in Greene, Bottenfield and Will Piper, who played seconds last year, but are counted in the regulars this season. This ought to encourage those who play faithfully on the second team this year in giving the first team practice. Training and experience are bound to be worth more than weight alone. The team made a wise choice in Manns for Captain, and the boys have practiced with an enthusiasm which has won for them the credit of being the best team the College has had for several years. Worst was laid up early in the season with a broken nose, the result of a practice game, but was out again for the St. Paul game,

The first game of the season was played Oct. 21, against the West Superior team. The visiting team were heavy fellows and well trained. They broke up our line and successfully carried the ball around our ends. The boys braced up the second half of the game and advanced the ball well down into Superior's territory, but finally lost on downs, and the game closed with a score of 25 to 0 against us. Twice the Superior team worked the criss-cross for long gains. The principal feature of the game in our side was the splendid tackling of our backs, which left the score against us within reasonable figures.

Not the least dismayed by defeat, the boys worked with a will during the week that intervened before the game with the N. P. team of St. Paul, on Oct. 29. Such an improvement was

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We wish to urge our students to patronize the merchants of the city who advertise in our columns. Before purchasing look over the list of our advertisers and govern your acts accordingly. It is but just that those who support THE SPECTRUM financially should expect the patronage of the college students in return. The business men of Fargo have been very ready to give us their advertisements, and we should show our appreciation by giving them the

benefit of whatever trade we have in their lines. In this number we print a list of our advertisers. Cut this out and carry it with you to refer to when doing any purchasing, and let the merchants understand that, as students of the Agricultural College, your trade is given them in return for their support.

What a noticeable difference there is in the consideration for others which is manifested among students! There are some, who, apparently oblivious to the fact that others possess equal rights with them, constantly annoy and hinder those with whom they associate, it being immaterial to this class whether some particular object is accomplished by their acts, or whether those acts were performed in a thoughtless indifferent manner merely as a pastime.

Those who possess the keener mental faculties and consequently require a much shorter time in which to prepare their lessons, often spend the remainder of the study hour in disturbing those around them. We occasionally find a student who, to all appearances, is entirely indifferent as to the amount or the grade of work which he accomplishes and who spends his whole time in loitering about the halls and study rooms much to the disturbance of every one about.

On the other hand the student who, finds it more difficult to master his lessons than some of his more brilliant classmates, has learned from his own experience that quiet is necessary for complete concentration of thought. To such a one the careless moving of furniture, or the needless walking about the room, the rustling of papers or conversation between others, is a distraction oftentimes amounting almost to torture. Consideration for the feelings of such should prompt all to be very careful as to their conduct in the reading or study rooms.

A shadow of disappointment has spread over the land at the news of the loss at sea of the Infanta Maria Teresa,

which, after considerable outlay of time and treasure was raised by Lieutenant Hobson and was on her way to the Norfolk navy yard for the purpose of being repaired, refitted, and added to our navy as one of the spoils of war secured from Spain. The financial loss is of course considerable, yet in the minds of the people, this weighs but little as compared with the feeling of satisfaction at seeing the flagship of the Spanish navy floating the stars and stripes, her guns trained against the enemies of our country wherever they might be found, not excepting even Spain itself. However, it is a singular feeling which would begrudge Spain the pleasure of knowing that her once valorous flagship now lies beyond the reach of even the "Yankee pigs."

Before this number reaches our readers the election will be over. Aside from the various offices to be filled, the electors of the state will have passed upon an amendment to our state constitution of far-reaching importance. The proposed amendment to section 121 strikes out the provision by which foreigners may vote between the time of

taking out their first and second papers; or in other words, no person of foreign birth can become a voter until such time as he is a full-fledged citizen.

The amendment to section 127 adds to said section the mandatory clause that "the legislature shall by law establish an educational test as a qualification" and provides also that the legislature "may prescribe penalties for failing, neglecting or refusing to vote at any general election." We believe both of these amendments to be in the right direction. We think that the time has practically passed when a foreigner, coming to our shores, ignorant of our laws and institutions, may declare his intention to become a citizen, and immediately exercise the right of franchise, while thousands of native born people possessing property in untold millions which must be effected by the result of the ballot, are not permitted any voice in our elections because forsooth, they were not born men! We hope at no distant day to see our legislators extend the franchise to all our citizens who possess the necessary qualifications of an elector regardless of sex, thus placing the question of a right to vote upon an educational basis.

Exchanges.

The Howard Collegian gives a good insight into the life of the institution which it represents.

"Literary Shadows" in Carlton College Gleaner is a well written article on the dark and bright periods of literary production.

The Volante contains no exchange department, although such is generally regarded as one of the most important features of a college paper. In a paper no larger than The Volante we think it would be wise to devote more space to literary productions and less to societies. The locals are well written.

Regarded from a literary standpoint, The Baylor Literary for October is a

fine magazine. It contains more than the average number of excellent articles, among which we may mention "The Autocrat of the Breakfast Table" as deserving of special notice.

The Furman Echo, one of the neatest of our exchanges, is devoting a large part of its pages to the literary department, the editorial staff believing "that page after page of current topics, local's, and intercollegiate notes do not begin to have the interest to outside readers that a full literary department would do." The productions in the October number are all of a high class.

The Ariel, which comes to us regularly, is always welcome. This magazine

is well filled with local items, but is not as interesting to outsiders as many of our other exchanges. The object of the paper, however, may be simply to note local matters instead of questions of general interest.

Among the exchanges received of which we do not make special mention in this issue for lack of space are: The Cadet, Phreno-Cosmian, The Easterner, The Comenian, Delaware College Review, The Intercollegian, M. A. Record, The Georgetownian, The Yaktou Student, Purdue Exponent, Carletonia, The Student Record, Carlton College Glanc'r.

While Moses was not a college man
And never played football,
In rushes he was said to be
The first one of them all. Ex.

Football.

(Continued from page 25)

made that the Superior boys might well feel glad that their game was already won. Worst went in as left tackle, and Thompson as right, with Manns as left half-back. The home team had the kick-off, and, on a fumble, secured the ball; then, by a series of end and line plays, made a touch-down in just four minutes. Gorder failed goal.

The St. Paul team found something they had not figured on, and it was very soon apparent that the A. C. team was the stronger in both line and end playing. The College again kicked to N. P., who, by end plays, with a line of five for interference, advanced the ball into the A. C.'s territory. The ball went to the College on downs, and was again carried for a touch-down and a goal. The rooters for the College went wild, and various new yells were heard. The St. Paul team played well behind the line, but seemed weak in the line both with the ball and in defensive playing.

The second half was a repetition of the first, and the game ended with the score 22 to 0 in our favor. Good interference and the excellent tackling of

Greene, Manns and Milner were the principal features of the A. C. playing.

On Tuesday, Nov. 8, the first game with the University of Grand Forks took place on the home grounds. Mcinecke was put in as full-back, Worst as right half, in the place of Milner, who sprained an ankle in a practice game, and Lee went in as left tackle.

Mcinecke kicked off for the A. C. and the ball was downed well into the University territory. They immediately returned the ball with a kick, and it was advanced by Mcinecke to the center of the field. Then came ten minutes of hard playing on both sides. The ball exchanged sides twice, but the A. C.'s got the best of it, and advanced for a touch-down, Mcinecke kicking goal. Flannigan kicked the ball over the goal line, and the College took it out twenty-five yards for a kick. The University then by swift end playing, scored a touch-down, Flannigan failing goal. The first half was nearly up, but the University had found a path around the end, and they played it for another touch-down, and the half closed 10 to 6.

During the second half the University repeatedly made long gains on end plays and secured five touch-downs and four goals, the A. C.'s only play being the advance of the ball from within five yards of their goal line nearly across the field, then, by losing the ball on downs, a probable second score was lost.

The A. C.'s put up the strongest game they have played for several years, but the tackling seemed weaker than a week ago. Flannigan and Fitzmaurice played half the game for the U. The A. C.'s worked together well, and did not fumble the ball once, but the backs were too light, with Worst in his weakened condition. Piper was exchanged for Stuart in the last half, but no one was badly hurt during the game, which was clean throughout, and free from all wrangling. Ogiiby and Daniels officered the game with satisfaction to both sides, and although the score was 39 to 6 against us, it was the best game of ball ever witnessed in Fargo. C. H.

Local.

N. P.—No points.

What is a "detail?"

"Please pass the worms."

Do not mention the mud of the past.

Bandanna handkerchiefs for Manila!

Thanksgiving vacation Nov. 24 to 27.

Miss Manns has "Branded" her "Jay" rather early in the season.

Queer how a few drops of rain will frighten some people.

O. A. Thompson, '00, is working upon "The Distribution of Weeds."

An anemometer has been placed on the chemical building. It "goes like the wind."

If you want to be in the fashion apologize to somebody, as it is the latest fad at the College.

F. O. Olsen, '99, and S. C. Powers, '02, attended the game with St. Paul and spent a few hours at the College Oct. 20.

The stamp boxes which will be received by certain boys at Manila are rather suggestive. Don't you think so?

Play basket-ball girls, and perhaps you will be excused from classes some day, too, as the football boys have been.

The anthems rendered by the quartette during the chapel services are always much enjoyed by the students.

We are glad to know that THE SPECTRUM is such a popular periodical. Even members of the faculty read it during the chapel exercises.

Beginning with this issue we shall increase the size of our paper. The addition of the extra pages will enable us to strengthen the different departments.

If the boys of the college do not soon pick up some "college spirit" (they could obtain some from the girls, if they only knew it.) there is going to be trouble. Look out, boys, or the girls will get ahead of you!

If the football boys come over to do the Domestic Science lecture rooms they can have their noses set without going to

a specialist, as the girls are now studying emergency cases.

At the football game of Tuesday, Nov. 8, one of our witty girls remarked, "Our boys' heads are not so wooden but that they can get hurt."

Prof. Joseph Schafer, candidate for Superintendent of Public Instruction, visited the college Oct. 26.

The loud and prolonged laughter heard on physical culture afternoons is simply the girls practicing their laughing pose. You will laugh, too, when you see it.

The museum is being distributed among the respective departments and will henceforth be of more use than it has been. The Geological Department will occupy the room left vacant by the removal of the large cases.

Greene, who so valiantly tackled his opponent in football, was completely unnerved by the touch of an earth worm. To use a chemical term, he was dichroic, i. e., red on the surface but Greene beneath.

The Sophomores devote one afternoon each week to the logical aspect of composition. The transition from the concrete to the abstract was somewhat sudden and has been considerably destructive of gray matter and—patience.

When will wonders cease? We have heard of many queer varieties of fruits, but when one sees bicycles hanging from a tree it gives one a feeling of hunger for bicycles, especially the persons to whom they belong.

In the practice football games of Tuesday, Nov. 1, Fred Malner, our star half back, sprained his ankle. He was immediately placed under osteopathic treatment, in care of Dr. Smith, who says he will soon be on the team.

T. H. Heath is afraid that his inevitable nose-bleeding during the practice football games will eventually result in a change of color in his hair.

Rev. Mr. McClary, from Minneapolis, attended chapel exercises Oct. 31.

Francis Hall is being rapidly transformed into class rooms and offices.

The appearance of the woodwork on the first floor of the main building has been greatly improved by a coat of varnish.

Miss Lizzie McIntyre, a former student, attended the football game on Nov. 8. Her brother plays left half back on the Grand Forks team.

A lecture upon "Bacteria and a Study of the Waters of the Valley," was given by M. T. Field, Thursday evening, Nov. 10, to an appreciative audience, at the Roberts Street M. E. Church.

The advanced classes in French and German are at present translating works never before translated by any author.

The Freshman class in Domestic Science are to purchase the articles for the model kitchen.

Friday evening, Nov. 4th, Messrs. Thompson and Schollander gave a party at the new dormitory, and lucky, indeed, were those who received an invitation, for "fun" was the game of the evening.

A Shakespeare Club is to be organized by the Freshman class, preparatory to their work in literature.

At the last meeting of the faculty a resolution was adopted recommending to the Board the name "Francis Hall" for the dormitory building now being remodelled. The name is in honor of the late O. W. Francis, who was president of the first Board of Trustees, and an earnest supporter of the Institution. The Board adopted the name at its meeting, Nov. 9.

The Trans-Mississippi Exposition awarded the North Dakota Agricultural College one of the two gold medals given to exhibitors of this state. The award was upon a sample of soil taken from a wheat field. The specimen was prepared by the Agricultural Department and proved to be an attractive illustration of the depth and value of Red River Valley soil.

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