

The M. A. C. RECORD.

MICHIGAN STATE AGRICULTURAL COLLEGE.

VOL. 11.

LANSING, MICHIGAN, TUESDAY, MAY. 1, 1906.

No. 32

HEATING AND LIGHTING PLANT AT THE MICHIGAN AGRICULTURAL COLLEGE.

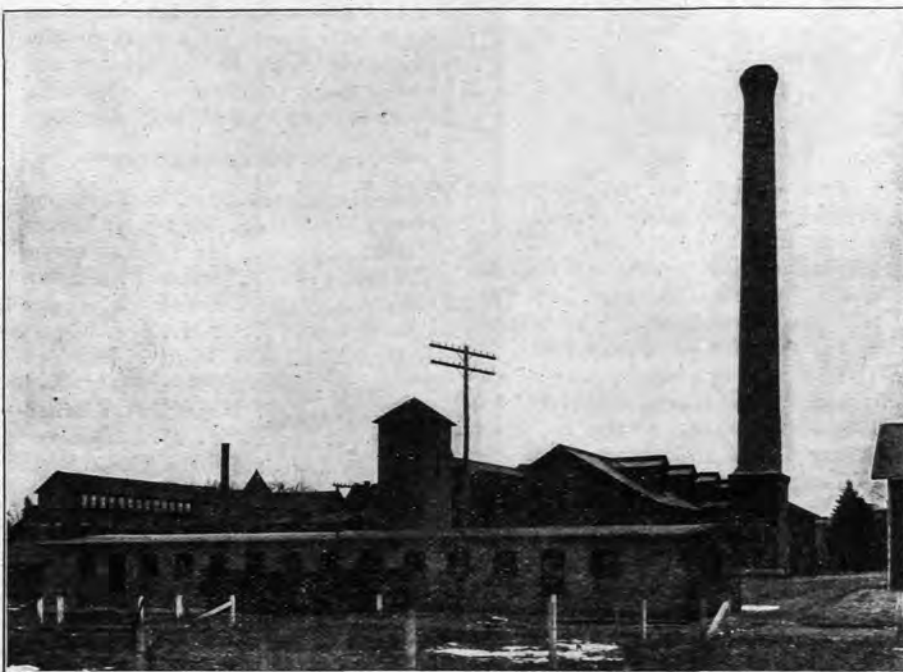
The problem of economically and satisfactorily heating and lighting the nine department buildings or laboratories, four dormitories for housing students, and certain other buildings on the campus of the Michigan Agricultural College has recently been solved by the construction of a central generating plant and sub-surface distribution through tunnels.

The campus upon which the buildings under consideration are located comprises an area of about thirty-five acres; the farm proper covers an area of 676 acres. The buildings are arranged somewhat in the form of a figure eight with one of the loops incomplete. The generating plant is located a little below the base of the complete loop and somewhat to the right of the center line of the figure. From the generating plant the distribution pipes and cables of the system lead to the various buildings through watertight concrete tunnels. The main tunnels are six (6) feet wide and six and one-half (6½) feet high, inside measurement. The branches to the various buildings are somewhat smaller than the main lines. The view of one of the main tunnels, at its point of junction with the pit of the power house, shown in one of the illustrations, discloses the steam main and return on the floor, and incidentally, the system of illuminating the interior of the tunnels when necessary to work in them. The electrical distribution cables were not installed when this picture was taken and so are not shown. They are, however, carried on suitable racks on the side walls of the tunnels where they are accessible at all times for inspection, testing, etc. The total length of the tunnel system is about four thousand (4,000) feet.

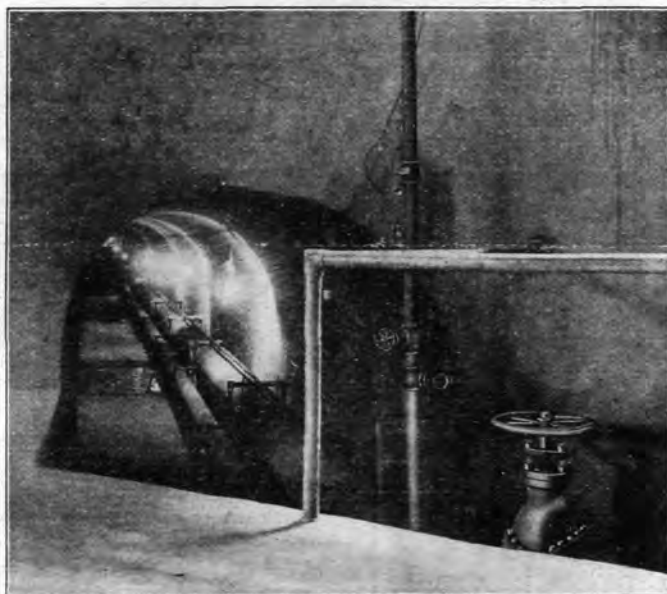
Low pressure steam is employed throughout the heating system. The pumps which return the water of condensation to the boilers are located in a pit which occupies one end of the boiler house. The floor of this pit is lower than any other point in the entire system, so that the water of condensation from all parts of the system returns there by gravity. The pumps for the College water supply and a four stream fire pump are also located in this pit.

Direct current for lighting and power is generated at a pressure of 240 volts by two 112 K. W. and one 45 K. W. Bullock Generators driven by direct connected simple Chandler & Taylor engines. Steam is supplied at 100 lbs. pressure and the exhaust passes to the heating system.

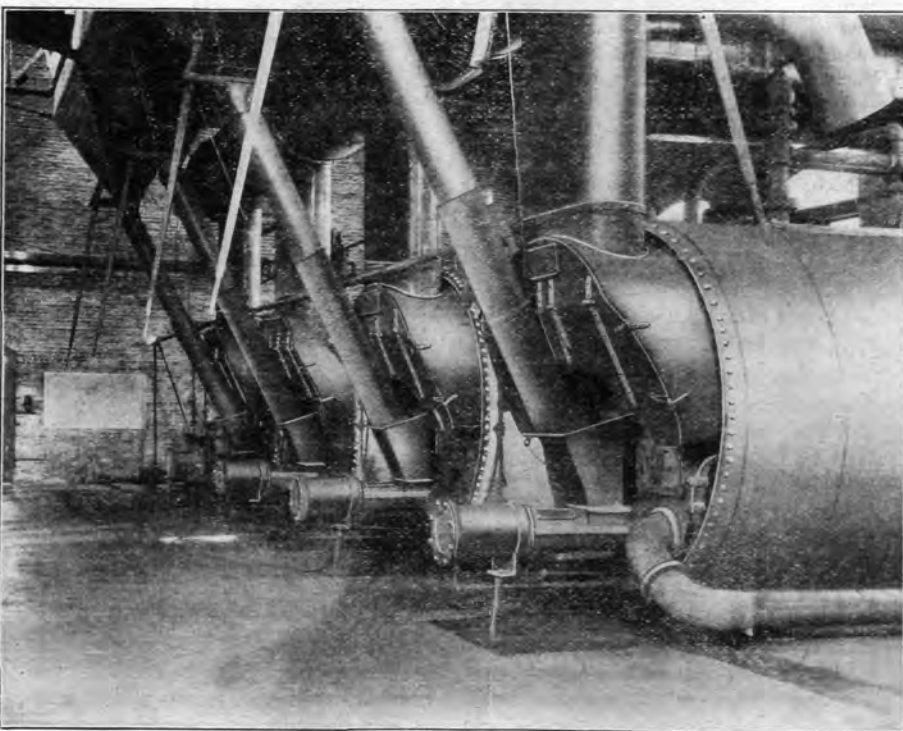
A view of the power house from the front shows the generator house, with the office of the chief engineer in the front adjoining the main entrance, and the end of the boiler house occupied by the pump pit. The view from the rear shows the coal shed with car on adjoining siding; the tower containing the elevator for hoisting coal and ashes;



NEW CENTRAL GENERATING PLANT.



A VIEW OF ONE OF THE MAIN TUNNELS AT ITS JUNCTION WITH THE PIT OF THE POWER HOUSE.



BOILER ROOM IN THE NEW CENTRAL PLANT.

the covered overhead tramway from tower to loft of boiler house; the boiler house with ventilators in side of roof; and the chimney from bottom to top—from car to chimney top at a glance. The chimney, which is 125 feet high above base with a flue six (6) feet in diameter, was built by the Alphons Custodis Chimney Construction Company, Marquette Building, Chicago.

The coal shed has a reserve storage capacity of 1,200 tons. From the shed the coal is chuted into a dumping car on the elevator in the pit of the elevator tower and then hoisted to the overhead tramway, over which it is transferred and dumped into the hoppers in the loft of the boiler house. Ashes of clinkers are removed by dumping them through holes in the floor in front of the boilers into dumping cars in a tunnel beneath. These cars are conveyed through an extension of the tunnel to the elevator in the pit of the elevator tower of the coal shed and are hoisted and dumped into an ash hopper holding thirty (30) tons which is located under the overhead tramway immediately adjoining the elevator tower. The bottom of the ash hopper is at such an altitude as to permit driving under it with a wagon and dumping the ashes directly into the wagon for carting them away. One coal passer easily attends to the transfer of the coal and ashes.

The equipment of the boiler room consists of a battery of four (ultimately five) internal furnace boilers having corrugated furnaces fifty (50) inches in diameter and fifteen (15) feet long—the tubes being of the same length; a total rated boiler capacity of 640 H. P. Two of these boilers were installed by the Springfield Boiler & Mfg. Co., of Springfield, Ill., and two by the S. Freeman & Sons Mfg. Co., of Racine, Wis. The Jones Under-Feed System is employed for firing. The coal is fed to the stoker hoppers automatically through chutes from the hoppers in the loft of the boiler house as just described. This coal is high in free carbon, but by this system of firing it is so very completely burned that ordinarily no smoke whatever, or but the slightest film of greyish vapor can be seen at the chimney top. Tests of the boiler and stoker equipment show an equivalent evaporation from and at 212 deg. Fahr. of 11.3 lbs. per pound of combustible, using Fairmount slack coal.

The principal steam main in the boiler room forms a complete loop around the boiler room with connections and valves so arranged as to facilitate using any number of the boilers and cutting out the others. The pipes supplying the engines are connected to the steam loop at that side adjoining the partition wall between the boiler and generator rooms.

Plans and specifications for the plant were prepared by Chas. L. Weil, Consulting Engineer of Lansing and Detroit, and the equipment was installed under the direction of Mr. Weil and Mr. L. F. Newell, operating engineer at the college.

THE M. A. C. RECORD.

PUBLISHED EVERY TUESDAY DURING THE
COLLEGE YEAR BY THE
MICHIGAN STATE AGRICULTURAL COLLEGE

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Subscription, 50 cents per year.
Remit by P. O. Money Order, Draft or Registered Letter. Do not send stamps.

Address all subscriptions and advertising matter to the College Secretary, Agricultural College, Mich. Address all contributions to the Managing Editor.

Business Office with Lawrence & Van Buren Printing Co., 122 Ottawa St. E., Lansing, Mich. Entered as second-class mail matter, Lansing, Mich.

This paper is occasionally sent to non subscribers. Such persons need have no hesitation about taking the paper from the post office, for no charge will be made for it. The only way, however, to secure the paper regularly is to subscribe.

TUESDAY, MAY 1, 1906.

ATHLETICS.

The inter-class meet held Saturday was a successful one, and much interest was shown. The freshmen secured the highest number of points at 57 5-6, the sophomores 42 1-3, juniors 23, sub-freshmen 20 5-6, and seniors 13. The five largest point winners in order were Waite 19, McKenna 17 1-2, Allen 13, Small 11 1-2, and Graham 10. The relay was won by the class of '09, '08 second, and '09 and '10 tying for third. The time made in the 220, 440 and 880 yard runs was especially good. The events and winners follow:

100-yard dash—Graham, Hall, Phippeny, Oviatt, time 10 2-5
220-yard dash—Pearsall, Hopson, Allen, Phippeny, time 22 4-5.
440 yard dash—Bignell, Hough, Hopson, Verran, time 54 2-5.
880-yard dash—Allen, Bohn, Connolly, Krehl, time 2:09 4-5.
1-mile—Hatfield, Waite, Heinrich, time 5:05.
2-mile—Waite, Ralph Carr, Roberts, Hewson, time 11:15.
120 hurdle—McKenna, Small.
220 hurdle—Pearsall, Hall, Small, McKenna.
Shot-put—Burroughs, McKenna, Campbell, Reid, distance 36-2.
Hammer—McKenna, Waite, Burroughs, Small, distance 87 ft.
Running broad jump—Allen, Waite, Belknap, Small, distance 18 ft. 11 1-2 in.
Running high jump—Graham, Hall, Small, Reid, height 5 ft. 6 in.
Pole vault—Gilbert and Small, Turner and McKenna.

Discus—Waite, Burroughs, McKenna, Hatfield, distance 100 ft. 6 in.

Immediately following the meet, the baseball game with Orchard Lake was called which resulted in defeat for the home team 7 to 2. The feature of the game was the pitching by Tully for O. L. He is certainly one of the very best in the state and probably the hardest man we shall have to play against. He had perfect control and was master of the situation at all times. This coupled with lucky hits at the right time, and Akers' wildness was responsible for the size of the score.

Score..... 1 2 3 4 5 6 7 8 9
M. A. C..... 0 1 0 0 1 0 0 0 0
O. L. 0 0 0 0 3 2 2 0 0
Hits, Orchard Lake 10, M. A. C. 4.
Errors, " " 4, " 3.

Y. W. C. A.

The weekly meeting was held, as usual, on Thursday evening under the leadership of Miss Mary Allen. The topic was "Missionaries," but was slightly changed by the leader who by reading a number of references, pointed out to us the reason why we should be more willing to enter the missionary field. These together with her few remarks were well chosen.

Y. M. C. A.

The subject of the Thursday evening prayer meeting was, "The Place for Young Men." F. M. Barden led the service and was assisted by remarks from Mr. Dice and Mr. Musselman. The interest and attendance were very good.

The Sunday morning service was conducted by Blanche Cox, who is Brigadier General of the Salvation Army. She brought out the idea of definiteness of purpose in life and proved by examples that in order to be a successful Christian we must know what we believe and then have the courage to do our duty without faltering. The captain of the band sang a solo and the scripture lesson was read by the staff general. The meeting as a whole was very helpful and caused favorable comment from the student body.

Miss Johnson, who is state secretary of the Y. W. C. A., addressed the union meeting Sunday evening.

HORT. CLUB.

At the meeting April 25, Prof. Bogue spoke on the subject "Achievements of Horticulture." Mr. Bogue handled his subject in an interesting way. He brought out the fact that Horticulture is a broad and attractive field and that specialization in one branch is essential to the highest success.

"Great benefits have been derived from the investigations and writings of such men as Darwin and others." "There are still new problems to be proven, old varieties to be improved and new ones to be discovered." "This is to be brought about by cross fertilization and careful selection." A few new problems suggested were, the improvement of the Golden Rod, the Cosmos, the potato, and an apple which would have good desert and keeping qualities. Mr. Bogue thinks that by constant division of the tuber, the potato degenerates.

Mr. Bogue spoke of the great achievements along the line of vegetables, of the still greater development along floriculture lines and of the broad field for tree fruits.

THE RUGGLESES

Will appear at the Armory Friday evening, May 4, at 7:30, under the auspices of the Kings' Daughters. The "Birds Christmas Carol" will be given, the proceeds from the entertainment to be used as an offering to the memorial building fund. The popular prices of 20 and 10 cents will be charged and it is hoped that the standing room will all be taken. There will be on sale all kinds of fresh baked goods and also a booth at which various needful articles may be purchased at fire

sale prices. In addition to the above the Y. W. C. A. will also conduct a booth for the sale of home made candies which have never been offered before. Tickets for this entertainment will be on sale at the book store and library, and a canvass will also be made so that all may be duly notified.

"A merry laugh is good medicine."

Just take a look at the following caste and draw your own conclusions, but come to the armory and have them confirmed. Nothing more is to be said till afterward.

CAST OF CHARACTERS.

Mrs. Ruggles... Mrs. E. E. Bogue
Sarah Maud.... Mrs. J. J. Myers
Peter..... Mr. B. A. Faunce
Cornelius..... Mr. A. M. Brown
Susan..... Mrs. J. L. Snyder
Clementine..... Mr. J. J. Myers
Kitty..... Mrs. Warren Babcock
Peory..... Mrs. C. B. Collingwood
Eily..... Mrs. C. A. Cornell
Larry..... Mr. C. L. Brewer
Mrs. Bird..... Mrs. C. L. Weil
Uncle Jack.... Mr. W. O. Hedrick
Maid..... Mrs. C. H. Chase
Carol Bird..... Gertrude Babcock

INTERSCHOLASTIC MEET.

It is planned to hold an interscholastic field meet at M. A. C. Saturday afternoon, May 19, the same to be under the auspices of the M. A. C. Athletic Association which will donate the use of equipment, banners and souvenirs. The gross receipts will be divided among the contesting schools according to number of contestants and distance they are obliged to travel in order to reach Lansing. First place in each event will score five points, second place 3 and third 1, and the school winning the greatest number of points will be given a large championship banner. A list of regular field day events will be run off with the exception of the 2-mile, 220-yard hurdle and the discus.

It is hoped that this meet may be made an annual event and each school is being urged to send as many contestants as possible. Invitations are being sent out to all schools in Central Michigan. Lansing has in the past always turned out well on such occasions and it is firmly believed that the receipts will more than pay the expenses of visiting athletes. Entries close May 9 and all lists must be certified to by the superintendent or principal of schools represented. All communications should be addressed to Director C. L. Brewer.

It is not expected to go into this matter very heavy this year, but a good start may be had and it will no doubt be made a permanent thing. Enough interest has already been shown to practically insure its success even now and many entries will no doubt be received before May 9.

Friday's *State Republican* gives a list of the high school teachers for the coming year, among whom are the following M. A. C. people: Mrs. Daisy Champion Coffeen '93, Winifred Cannell '04, Francis Sly '02, Bon Bennett '05 and Lula Newlon with '05.

When the desire to do is accompanied by the power to accomplish, things happen.

ALUMNI.

'90.

F. B. Mumford of the Missouri Agricultural College was recently offered the position of director of the State Agricultural College at Montevideo, Uruguay, at a substantial increase in salary. Prof. Mumford declined and will remain at Mo.

'90.

Howard Hall of the above class held a position in the Leland Stanford University as assistant professor of English.

'95.

In sending in a very liberal subscription for the memorial building, Frank Johnson, whose address is 229 Melbourne Ave., Detroit, says: "This represents only a small portion of my obligation to M. A. C., and I will do more if necessary."

'96-'98.

President Snyder has received an interesting letter from Mr. H. Carmanian of Amassia, Turkey, in Asia. He has been quite successful in his work since leaving college and speaks of his college days as among the happiest in his life. He seems somewhat discontented just now and contemplates coming back to America again.

'02.

E. R. Bennett has resigned his position at Storrs, Conn., and is now located at the Colorado agricultural college where he is associated with W. Paddock, '93. He finds the country all that it is claimed to be and thinks he will not regret the change.

'04.

W. O. Thompson who has charge of the division of livery and transportation at the Tuskegee Institute, has under his charge 110 work animals, of which 87 are mules. When he entered upon his duties some 10 or 12 of these were in the hospital, but as the result of careful care and feeding he has reduced this number so that at present only two are laid off on account of disability. In referring to the work of the division Booker T. Washington said that it had improved greatly since Mr. Thompson had had supervision of it.

'05.

On Wednesday, April 25, occurred the marriage of Claude I. Auten and Bessie Phillips, at the home of the bride's parents in Davison. Both young people graduated last June and have many friends at M. A. C. Mr. Auten now has a fine position with the Cambria Steel Co. at Johnstown, Pa., where he begins work today. Those from the College to witness the ceremony were Messrs. Wilkinson and Ashley and Misses Hesse and Ashley. About 100 guests were present. The RECORD extends congratulations.

The last issue of the *Michigan Farmer* might be called an M. A. C. edition, as a large portion of the matter was contributed by "our folks." Those contributing articles were: P. G. Holden '89, C. C. Lillie '84, Prof. C. D. Smith, H. W. Mumford '91, C. H. Alvord '95, F. O. Foster '03, S. B. Hartman '03, Mr. T. Gunson, and L. A. Bregger '88.

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dollars for.

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HOLLISTER BLOCK

ABOUT THE CAMPUS.

Mrs. Snyder returned Sunday morning from her eastern trip.

Several thousand pedigree strawberry plants were set out last week.

Prof. Holdsworth is expected home from the west this evening or tomorrow.

M. A. C. won the first game with De Pauw last night, 3 to 1. Nies pitched a star game.

Former short course students are still sending in subscriptions on the memorial building project.

Lost—Copy of Kent's Engineering Hand Book. Finder will please leave at president's office or at 131 Abbot.

"The Worst Foe," a temperance story by Grace Strong, has been presented to the library Mr. L. F. Jenison.

O. L. Ayers '02 visited at his home over Sunday. His work during the summer will be in Racine Co., Wis.

Over 4000 names have recently been added to the bulletin mailing list of the Experiment Station which brings the total up to nearly 45000.

The M. A. C. public school observed Arbor day by appropriate exercises Friday of last week. Dr. Beal gave a very interesting talk to the children.

On Friday night, May 11th, will be given the last military hop of the year. Uniformed men \$1.00, non-uniform men \$1.50. Good music has been secured and the officers aim to make this one of the best parties of the year.

The Freshman Oratorical contest of the Themian society was held Saturday evening, April 25th. Miss Helen Hull was awarded first place. Miss Hazel Taft second, and Miss Grace Perry third. The judges were Miss Gilchrist, Miss Wellman and Secretary Brown.

Mr. F. R. Reed, of the bureau of soils, department of agriculture, is at the College to carry on some investigation work showing the new basket culture method lately introduced to determine the manurial requirement of soils. He will probably remain three or four weeks to complete the test.

A committee of the Mt. Pleasant school board visited college last week in search of a young man to teach science in the high school. After a careful canvass of the departments it was found impossible to supply them with a teacher. The members of our senior class seemed to have something more attractive in view than high school work—something which promises better for the future.

The Columbian Literary Society gave a very enjoyable costume party Friday evening. Among personages represented were Uncle Sam, Napoleon and Roosevelt, while Indian and German costumes were also much in evidence. Flash light pictures were taken of the participants, and the guests are indebted to the society for a most enjoyable evening. Mr. Gunson acted as chaperone.

Saturday night, April 28, the "Tics" gave their first party of the

spring term in their society room. The society was pleasantly surprised by Mr. and Mrs. F. S. Schneider of Grand Rapids who came down for the party. Mr. and Mrs. Hal Reed kindly acted as chaperones. About thirty couple were present and as usual the last dance came altogether too soon. The rooms were decorated with palms and ferns and Mr. Baker furnished the music.

The circulars announcing the summer school which will be under the direction of the mechanical department are now ready for distribution. The term opens June 27 and ends Aug. 8, the work to be much the same as that given last year. The fees will be \$10 of an entrance and \$3 for each course taken. If you have friends who might be interested in such a course leave addresses of same at the president's office.

The class of '08 will issue an annual next year and plans are well under way for its publication. The following officers have been chosen: R. G. Carr, editor in chief; H. A. Orvis, assistant editor; R. A. Turner, business manager; W. A. Hopson, illustrator; M. B. Ashley, historian; Miss McManus, society editor; Miss Leta Hyde, class editor; J. V. Gongwer, literary editor; F. B. Wilson, assistant literary; F. H. Wade, humorous editor; Miss Pratt, assistant humorous; W. H. Small, athletic editor; G. W. Dodge, advertising manager.

President Snyder with Senator Burroughs, Congressman Gardner, and Prof. Curtiss, of Iowa, called

upon President Roosevelt on April 18, urging him to attend the semi-centennial celebration of the College. This meeting with the president had been arranged beforehand by our congressman, the Hon. S. W. Smith, who unfortunately was absent from Washington on this date. Prof. Curtiss represented the executive committee of the American Association of Agricultural Colleges and Experiment Stations. President Roosevelt received the committee very cordially, and assured them of his great desire to be present, but stated that it was a little too early to give a definite answer. He also stated that the greatest barrier to his coming was the possible flood of invitations which would sweep in upon him from the prominent cities of the state.

He signified that if he could come to Michigan and make but one address, he would make a great effort to do so; but if he were to receive invitations from a number of places, he would probably be compelled to give up his entire trip. He stated that he hoped to visit Missouri University and several other institutions in the west, and if this stop could be made on the same journey it would simplify matters. Of course it would be very desirable to many of our cities if arrangements could be made to have the president give them a visit while in Michigan, but as this will be utterly impossible it is very much desired that all forces of the state join in the invitation extended him to visit this College.

SOMETHING ABOUT EARTHQUAKES.

(Continued from last week.)

Mountain ranges rising several miles above the general outline must have their weight counterbalanced by force or pressure acting downward on adjacent parts of the seabottom and the continent. Any great change in weight or pressure on one area will be followed by movement or attempt at movement on the other. Now, we know that rain, melting snow and gravity are continually sweeping rock waste, soil and solid material of all kinds from the mountains into the streams and rivers and eventually into the sea. The transfer of such solid material is always from the continent into the nearby ocean where it is distributed and deposited in layers along the coast. This means that a vast weight is being slowly yet continually shifted from the belt of mountains along the continent borders into the adjacent sea, and as a consequence the pressures on these parallel belts must be continually changing. Whenever this change of pressure becomes so great that the strain can no longer be endured the sea bottom may slowly subside and the mountain region may rise correspondingly. When such an adjustment takes place one of the inevitable features is the cracking of the crust of the earth along one or both of these belts, and such a crack, with the subsequent slipping of the rock masses separated by the crack, causes an earthquake. Volcanic action may or may not accompany such a change, but in very many cases the greatest earthquakes have been entirely unaccompanied by volcanic action of any kind. In the recent California earthquake the disturbance was caused undoubtedly by some such readjustment of pressures as has been described. The seat of the immediate trouble appears to have been in the Coast Range and within fifty miles of San Francisco. Probably several successive cracks in the crust of the earth occurred and the rock masses bordering these cracks slipped on each other more or less, the greater slips causing the heavier shocks, the lesser slips the fainter tremors.

The varying degrees of devastation were in part due to varying distance from the seat of the disturbance, but also largely to the character of the crust at different places. The jar caused by an earthquake travels through the earth in widening circles precisely as a water wave travels over a lake or ocean, and a study of the character of the havoc caused at different points usually enables the expert to locate the center of the disturbance, and make an approximate estimate of the character and amount of the force. The fact that in San Francisco the greatest damage from the earthquake shocks was inflicted on that part of the city built on land recently reclaimed from the sea, or at least from the marshy sea border, does not indicate that the shock itself was more severe at that point or that the seat of the disturbance was nearer that point, but merely that the character of the ground in that region was such as to suffer the greatest disturbance from the passage of the earthquake wave.

After the Valparaiso earthquake of 1822 it was found that the coast of Chili near that city had been

raised at least three or four feet, and thirteen years later a second earthquake in the same region lifted the surface four or five feet more, although it afterward settled again about half that distance. Undoubtedly similar changes of level in California will be discovered after the experts have examined the region critically.

If a stretch of country fifty miles long were to crack through the middle and one half were to slip on the other a distance of a yard at one time, a very destructive earthquake would result; if however, the same amount of shifting were accomplished by 36 distinct slips of an inch each, with intervals of quiet between, the damage would be comparatively slight.

It is extremely improbable that the California earthquake had any connection whatever with the eruption of Mt. Vesuvius or the recent eruptions in other parts of the world. There is so far nothing whatever to indicate any such connection and the phenomena observed can all be accounted for without assuming any connection with volcanoes near or distant. A vast amount of nonsense has been published moreover, in regard to the danger of other large cities in different parts of America. Unquestionably a city located on the seacoast near a mountain range is more likely to be visited by an earthquake than a similar city situated on a plain or plateau a thousand miles from sea or mountains; but generalizations of this kind mean little to any but the scientist and at all events large cities situated as the last described would be hard to find. Salt Lake City is just as likely to be overwhelmed by an earthquake as any other city in the country.

WALTER B. BARROWS.

The Farmers' Club announces the following subjects for the remainder of the spring term:

May 1, Manurial Requirement of Soils, Mr. Reid, Department of Agriculture, Washington.

May 8, Country Roads, Hon. H. S. Earle.

May 15, Handling the Corn Crop, N. P. Hull, Dimondale.

May 22, How to get the most out of a College Course, Prof. R. S. Shaw.

May 29, The Outlook for the Agricultural College, Pres. J. L. Snyder.

June 5, Farm Sanitation, W. G. Sackett.

June 12, Rural Education, Dr. Waterman.

Meetings called to order 6:30 p. m. You are cordially invited and welcome.

There is so much bad in the best of us,

There is so much good in the worst of us,

It behooves all of us not to talk about the rest of us.—Anon.

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J. E. STOFFER, D. D. S. Office 105 Washington Ave. S. Citizens' Phone 1049, Former M. A. C. student.

N. H. MOORE, D. D. S. Office 411-13 Hollister Building, Lansing, Mich. Citizens phone 475.

R. W. MORSE, D. D. S. Hollister Block, Room 517. Citizens Phone 52, Bell Phone 396.

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