BACTERIA

A Marvelous Discovery for Enriching Exhausted Soils.

GERMS BRED FOR USE AS FERTILIZERS

A Legney from Pasteur's Great Worl Bids Fair to Work a Revolution in Agriculture-Novel Experiments.

From Germany comes the announcement of the success of a series of novel experiments carried on by Prof. Nobbe of Tharand, in Saxony, which, in the opinion of scientific men, seem destined to be the beginning of a revolution in farming. Those who follow closely the technical journals are aware that some months ago Prof. Nobbe an nounced that he had been able to make "pure cultures" of bacteria for the purpose of promoting the growth of certain plant forms. Their specific office was to promote the absorption of nitrogen by leguminous plants and to his new cultures, therefore, he gave the name "nitragin."

The invasion of the field of agriculture by the bacteriologists is to the ordinary understanding at least strange enough. But it follows legitimately upon the remarkable discoveries and researches of Pasteur concerning the work of micro-organisms in countless processes which have hitherto been regarded as a purely chemical nature. Those whose notions of natural science have been derived chiefly from such text books as are in use in the public schools will recall that one of the conceptions inculcated therein is that the action of fire and the decay of a piece of wood, for example are simply different forms of exactly the same process, namely, of oxidization. The view formerly held was that the different The etween the two was simply one of rapidity

Perhaps the greatest work of Pasteur was to show that the process of decay or putre-faction of organic matter constantly going on all over the earth's surface is due to the action of microscopic organisms, or bacteria. Subsequent research has demonstrated that of these germs there are many varieties and that in one or another they play a tremendous part in almost every life process. The functions of bacteria in the dairy are now well understood and the use of the latter is now general by all in-telligent dairymen. The various changes which milk undergoes are all traced to the action of its microbic denizens, and with this advance in knowledge it is now possible to keep milk perfectly fresh even in the hottest summer for a long period. A REGULAR BUSINESS.

The making of butter, cheese and koumyss, as well, is now conducted with the aid of "pure cultures" of bacteria, the manufacture and sale of which has become a regular business. With the use of these cultures the dairyman may secure that uniformlty of quality, taste and color upon which the success of his business so largely

It was only a matter of time when bacteriological research should extend farther and take up the mode of plant rowth. Following upon Pasteur's discovery was found that the soil of the field is literally teeming with millions of these minute forms of organic life, and finally it is now the conclusion of science that the fertility or barrenness of the soil depends presence or absence of certain The apparent office of the latter is to take up the different substances in the soil and prepare them for assimilation by the plant. Most of the substances are re quired by vegetable life in a simpler form than they are originally present, and in some way of which as yet there is but scant knowledge, the bacteria make over the soil into such a condition that plants may

It has long been known that nitrogen, which is one of the prime elements of plant food, is absorbed by plants in the form of nitric acid, or to speak with more precision, as nitrates, and it was further found that nitrogen in the form of organic compounds and ammonia was liable, under certain conditions, to be converted into nitrates in the soil itself. In 1877 it was discovered that this process, to which the name nitrification was given, was caused by micro-organisms. Subsequently it became possible to separate the forms of bacteria implicated in this process, and some years later two German professors made a further advance in identifying a certain class of bacteria which infest the little nodules or fleshy excrescences to be found on the root of human plants. They found that the office of the latter was to render the free nitrogen of the air available for the plant.

SCIENTIFIC EXPERIMENTS. This power of utilizing the free nitroger of the air, is to be explained, is possessed only by a limited number of plants, such as clover, peas, beans and the like, which are grouped under the name of leguminous, and the discovery laid bare why it is that these plants have the power of resuscitating soil which has been exhausted by other crops. This process of nitro-fixation, as it is called, is not as yet known with accuracy, but it seems clear the nodules containing the bacteria are gradually absorbed by plant and the nitrogen taken up in this way. A long series of very interesting experiments was carried on in Germany to test the accuracy of this theory, with the result that an attempt was made to inoculate the nitro-fixing bacteria in large num-

To effect this satisfactorily, however, it was found that anywhere from half a ton ton of such impregnated soil had to be being very cumbersome, was not free from the being very cumbersome, was not free from the other objections, since other organisms than other objections, since other present in and lee, and cold, piercing winds sweep and lee, and cold, piercing winds are cold, and cold, piercing winds and cold, piercing winds and cold, piercing winds and cold, piercing winds are cold, pie used per acre, and this method, besides the soil thus applied and produced a dis-tinctly unfavorable action on plant growth as well as inducing fungold diseases or parasitic growths.

It was at this stage that Prof. Nobbe who stands very high as a bacteriologist set himself to obtain, "pure cultures" of the nitrogen fixing germs. This process, which now a very common one, consists simply obtaining a number of bacteria of the kind desired, and separating these others by eliminating and then propagating these cultures" in some medium which will not take up other germ forms, and which is itself thoroughly sterilized. The substance most usually employed for this purpose is a preparation of gelatine; in this the bacteria altiply with amazing rapidity. From a single parent thousands, or for that matter millions, of "pure cultures" may be obtained. These may be put up in bottles, usually of eight or ten-ounce capacity, and old as ordinary merchandise. The cost of preparation is not great, and in Germany The cost this work has been undertaken by a number of large chemical manufacturers

CULTIVATING BACTERIA. These bottled "cultures" have to be kept from the influence of the light, and care must be taken not to expose them to a the temperature of 98 degrees Fahrenheit. Incestitation of the soil on a practical scale dash may be treated with the preparation before it is sown, by making a watery solution of the pure cultivation, immersing the seed in this solution and subsequently drying it; or, the inoculation may be effected by treating a quantity of fine sand or earth in the same way and then source. a quantity of fine sand or earth in the same way and then sowing this over the field in the same way that grain is sown, and subsequently working it in the sell to the depth of about three inches.

other vegetations such as may be desired. In this simple manner worn-out fields may be brought to the highest pitch of fertility. and at a cost much less than any other known method of fertilization. Even at and at a cost much less than any other known method of fertilization. Even at and around them are others still, the gorthie present time a field may be thus inoculated for something like \$1.25 an acre, and without doubt as the manufacture of these exquisite harmony and delicacy of their

steadily grown so that there are now more then a dozen of the most deadly plagues that visit mankind, including cholera, typhoid fever, diphtheria, and a number of others equally well known, that are now reasonably under medical control and curable. In the opinion of those who are at work in this field it does not now seem improbable that the inoculation of the soil with different bacteria, towards a specific end, will be gradually extended so that farming will within the near future not be reduced to a science, but to very nearly an exact science at that. Since a possible, as Prof. Nobbe has demonstrated separate bacteria which will enable the eguminous plants to draw such a supply of nitrogen from the air so as to enrich, in this regard, the most barren fields, it does not seem too much to hope that with the progress of this work other germ forms will be identified and their culture or manu-facture undertaken to promote other functions equally valuable. In a word, the art of fertilization will have made an enormous advance and we shall come to regard the soil not as a mine, to be exhausted, but as a laboratory for the production of

FARMER CHEMISTS. It seems clearly within view when the

farmer will have his own little storehouse where for almost every department of his work he will have his bottles of "pure cultures;" that the farmer himself, to be successful, will have to become something of a bacteriologist and a chemist as well and from a dreary round of uninteresting toil, farming itself will become one of the most skillful and absorbing of occupations. What a field is opened up may be indicated in the fact that some recent experiments been conducted showing micro-organisms, the very existence of which but a few years ago was utterly un-known, may be present to the extent of 45,000,000 per granma-the one twenty-eighth part of an ounce. It has been demonstrated that these bacteria are of countless variety and that their functions are varied as to their form. Some are useful, some are harmful, some whose work is for good under certain conditions becomes evil under other conditions, even as is the case with human beings. To separate the different varieties, to determine the functions of each, and the conditions under which they will work for good or ill means an enormous labor. But, though the work has just begun, it can bardly be doubted that the conquest of the world of micro-organisms now so brilliantly opening will be carried to completion. It is not the least pleasurable of thoughts to the man of science that this work which in common with many other forms of scientific research was but a little while ago regarded as of no practical value, should already bid fair to become of vast importance to so intensely practical a field as

A TALE OF TWO GITIES

Two cities there are within the same corporate limits-twin cities, perchance, for they sprang into existence almost simultaneously. One is the city of the livingthe other of the dead. One bears the magic name of Omaha, the "Gate City of the West;" the other, Prospect Hill, the "City of Rest." Their history dates back to a time when civilization west of the Missour river was in its infancy, for with the ever onward march of emigration the Angel of Death followed close on its trail. During nearly half a century they have grown up side by side, and kept pace each with the other.

Prospect Will is not the oldest, but the most attractive cemetery in Omaha. Today it looks down upon a great city of nearly 150,000 inhabitants, teeming with social life and business activity. Here sleep the dead of the long ago, and around them are clustered fond recollections of these early piomunicipal and state government strong and to whom the Master shall say: "Well deep, and whose names are identified with Enter thou into the joy of thy Lord." all that is great and good in the early growth and development of our city and

state. Great, brave, noble, courageous men and vomen were they-greater far than we who today enjoy the freedom and civilization made possible by them are apt to realize. Here also repose the bodies of more than seven thousand, who, having finished the journey of life, have passed out into the Great Unknown. Among them are both mer and women from every profession, vocation and station in life, and representing in nationality every civilized nation of the

Here sleep those far advanced in years. whose whitened locks and bended forms and enfeebled step told the story of a life whose allotted to man and many of whom, by reason of their strength, had reached the grand old age of four score and more before the Reaper came and gathered them to their re-

Close by their side is encamped the army of the Holy Innocents—those little ones, whose pure young lives, unsullied and un-stained by sin, went out in the early morning of their existence, before the evil day dawned upon them and the trials and disappointments and heartaches of life were known. May holy angels guard their tot-tering feet on the other shore!

Here, too, sleep the nation's dead; brave men, who at their country's call, bade fare-well to home and friends and went boldly forth under the inspiration of their coun-try's flag to do and to die for freedom and

Within its peaceful borders all ranks are leveled, all distinctions done away; young and old—the good and bad—the high and low—the rich and poor—all sleep side by side, and one common sepulcher within the hospitable bosom of Mother Earth is the final abode of them all. The rough rigor and shrubs with their icy branches glisten in the frosty air and reflect their splendor In the sunlight. Fleecy snowflakes, like tiny feathers from angel wings, gracefully flutter in the light and gently fall un-heeded upon their bed.

And then, snon, the spring comes and

lavishes its splendors on every hand. The gentle rain falls upon the earth, and the genial sunshine warms into life and sets in notion the hidden machinery of Nature The green sward spreads its velvet mantle over the earth, and all nature smiles again. Buds and leaves simultaneously burst from trees and shrubs; delicious odors fill the air, plumage and of song skip from branch to branch, and joyously warble their hymns of praise, while each passing breeze mingles their wild notes with the sweet perfume of fragrant flowers, and wafts them ever onward and upward to the throne of

ing face. The angry blackness of the storm clouds as they gather mountain high over our heads; the fierce hurricane, as it sweeps in all its terribleness over land and sea, car-rying death and destruction in its trail; the awful roar of heaven's artillery as it shakes the earth; the sharp cracking and unapping of the vivid lightning's tash, as it rends the sky and illumines the firmament with its fearful grandeur and

ing tremble with awe; but the silent sleeper wakes not-neither does he fear their fury. Again the clouds break; the rain ceases depth of about three inches.

When thus inoculated the most barren and is in repose again. The rainbow of promise, which, in the early dawn of time, first spread exhausted soils can be made to produce rich which, in the early dawn of time, first spread its brilliant arch over the earth, continues to its brilliant arch over the earth, continues to the heavens with its glory and reflect span the heavens with its glory and reflect the many colors of the sunbeams there.

Silvery clouds tipped with gold stand out

flowers are closing their petals ere they, too, take their rest. The soft night wind whispers through the leafy trees, and luils all nature to reponse. The great, round

silver moon rears its head above the east-ern horizon, and sheds its luster and its brightness over the living and the dead. Standing here in the quiet and hush of the eventide, how exquisitely beautiful, how sublimely picturesque the scene! Here no sound breaks the stillness of the evening air save the faint rushing of the wind through the leaves. The silence is appall-ing-like unto that of death.

What holy memories cluster about this epot and how like a mighty floodtide they rush in upon the souls as we contemplate them; like living pictures they stand out in bas relief before our gaze; memories of childhood's happy days, when love was young and pure and true; memories of mother and of home; memories of pledgelove and reciprocal devotion; memories of wedding day and the wedding ring; of mar riage vows kept and broken; of friendships true and false; of promises made and broken; of kindnesses received and denied; of joys of sorrows and disappoint and gladness, ments, and all the long and innumerable catalogue of events, which from the cradle o the grave enter into and make up human

Hither the fond mother comes, with tearful eyes and heavy heart, to kneel beside the little green mound which contains, for her, the dearest of earth's idols. Hither, too the lonely widow, from whom the staff stay of life has been taken away, wends her weary footsteps. Like a frail bark, tossed hither and thither upon the ocean of life. without sail or rudder, she gropes about in darkness of despair, without one bright ray of hope save that of a blessed immortality after this fitful, fretful life is ended to cheer her on the way.

With bended form and knee she stoops to plant bright flowers upon the new-made grave, and to water them from the ever-flowing fountain of tears at her command. And thus, the pathway from the city of the living to the city of the dead is daily trod by hundreds whose willing feet and sorrowing hearts find their greatest com-fort in the pilgrimage.

Yonder lies that other city. Its lights are clainly seen through the darkness that intervenes. The sparks from her many furnaces continually fly upward, and the smoke from her chimneys reach into the heavens. How marked the change! Here, noise and confusion and the strife of tongues reign-continually-hurry and bustle-the wild rushing hither and thither in the mad race for wealth and power and place. The struggle for an existence of the poor! The sor-rows and heartache of the disappointed. The want and distress of the unfortunate; the pain and suffering of the sick; the com-forts and pleasures of happy homes; the merry laugh of innocent childhood; the blessed hope of an immortality beyond this earth life—are all found within, and make

up the city of the living.

And thus time and years glide rapidly on, and each returning season brings its joys and sorrows to the living and adds its numbers to the dead.

The sweet and solemn notes of the cathedral chimes as but a few short days ago mournfully rang out their requiem for Trinity's lamented Dean are still lingering in our ears. They come back to us on th wings of memory, laden with many tender, loving thoughts of him whose lamp of life so suddenly and unexpectedly went out. They bid us look beyond the shadows and the gloom, beyond the weeping and the waiting, and catch some new inspiration from his pure and holy life, his true Chris Inspiration itna character, his well-rounded manhood that shall be helpful to us along the journey of life, and make us better, truer, noble

nen end women. In every walk of life, wherever duty pleasure called; in the sacred calling of his high priestly office; at the holy altar; in the home; at the bedside or the open grave—he was ever the same kind, gentle, loving and sympathizing friend, honored and beloved by all. "May his soul rest in peace, and ueers; who not only braved the hardships may light perpetual shine upon him." and privations of frontier life, but who also laid the foundations of business, social comes, are found ready. Thrice happy they Day after day the solemn warning is

ounded in our ears—"Be ye also ready." During the week that has passed three of maha's oldest citizens have passed away. and the places that knew them shall know them no more forever. Strange as it may cem they all came here the same year, 856, within a few months of each other, and oday they all sleep side by side in beautiful respect Hill cometery. The first to pass away was Mrs. Emily J.

Briggs, widow of the late Judge Clinton Briggs, whose memory is fresh in the recol-lection of all the old ploneers. Her body ow reposes in the new and substantial reiving vault beside that of the late Dean Gardner.

The next day Mrs. Amanda Orchard. other of Samuel A. Orchard, at the ripe old age of 86 years, closed her eyes to earthly scenes and entered into rest. And then, a few hours later, Andrew J. Poppleone of the most conspicuous and honored figures at the bar; a man of great learning, of marked ability, of inflexible inegrity, whose character was pure and unsullied, and whose reputation was beyond repreach, after the hand of affliction had for many months been laid heavily upon him, peacefully passed away, to be no more seen upon earth

And thus, one by one, they fall like au tumn leaves to enrich CHARLES F. CATLIN. CONNUBIALITIES.

The rumor is abroad that Dr. Jameson is wed, on his release from imprisonment. Georgianna, countess of Dudley, said to

a beautiful peeress. Albert Fisher, a 16-year-old boy of Baltimore, committed suicide the other day because he could not marry a 14-year-old

A courtship remarkable for its length i that of Abram Maris, aged 60 years, and Miss Sarah B. Williams, aged 47 years, and the scene is Damascus, a quaint little quaker village of Kentucky. Both bride and groom are among the wealthicst members of the Society of Friends in that state, and for forty years met each other on Sunday at the old brick church in their quaint village. The attachment between them began when Miss Williams was a rosy-cheeked girl of 17, but the only love making was a smile and a minute's conversation at the church

door once a week, year in and year out, Miss Ella Collins, daughter of a New York tailor, will be the first woman of the United States raised to a throne by marriage. will shortly become the wife of Colonel John F. Hoobs, who, under the name of Oumalea, reigns over the semi-barbarous people of the Jilka islands, in the New Hebrides group. Colonel Hoobs was born in South Carolina and after a wandering life full of strange adventure settled on one of the Jilka islands Since then he has become the undisputed ruler of the 1,200 or more people who live there, under the title of king. By the edic of the assembly which chose him the title is to remain with him and his descendants

forever. A certain peasant and his wife, in Germany, were married on the same day as the emperor and empress, the peasant's Chrisian name being William. Their first child crown prince, after which they had five other sons, each of whom was born at same time as the five younger boys of the emperor. The royal couple were informed of this, and were exceedingly intercuted in the very strange coincidence, but this intereat was intensified when on the last occa-sion of a royal birth, viz., the little daughter of the kaiser, it was learned that the peasant's wife in question had also given birth to a daughter on the same day. So astonished were the emperor and empress that they stood as godfather and godmother to this little girl, and have well provided for her future.

William M. Byers, a Chicago painter, and Ida May Smith of Ind'anapolis were married on the 12th inst. 250 feet above ground on top of the Indiana soldiers' monument. Cusknown method of fertilization. Even at the present time a field may be thus inoculated for something like \$1.25 an acre, and without doubt as the manufacture of these "cultures" becomes general the price will become greatly reduced.

This discovery may be likened in its importance to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to medicine. As every school-the home to the discovery of vaccination or inoculation to the manufacture of these ever reproduced, and the goor inoculation is now gratified, and he considers the highest soldiers' monument in the United States properly dedicated. A delegation of court house employes, including several woman, followed 'Squire Hay to the monument and witnessed the properly the manufacture of these expulsive harmony and delicacy of their decision of court house employes, including several woman, followed 'Squire Hay to the monument and witnessed the properly the monument and witnessed the cremony. No one offered to kiss the bride, and the grown husted here away, taking the next train for Chicago, odian Captain Wright has had a standing

ECLIPSE

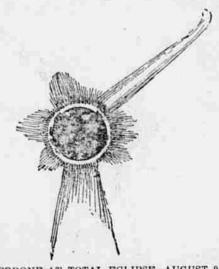
A Study of the Rare Spectacle During It Entire Progress.

OBSERVATIONS OF AN EYE WITNESS

Phenomena Attending the Eclipse. Great Brillianey Shown by Many Planets and Constellations During the Totality.

(Copyright, 1896, by B. S. McClure Co.) The total eclipse of the sun, which has been looked forward to with such deep interest by the scientific world, has come and gone, with but meager results as far as science is concerned. Only a fortunate few obtained a glimpse of the wondrous sight, and the hepes which had been entertained as to the solution of many doubtful problems concerning the nature of the corona and the character of its luminosity were doomed to disappointment. The two expeditions sent | from this country, one from the Lick observatory under Prof. Schaeberle, and the other from Amherst college under Prot. Todd, to view the eclipse at Yezo, in Japan, were unable to make successful observations owing to cloudy weather. Recalling the fact that Prof. Todd has been two years making arrangements to view this total eclipse, and that he was specially skilled to make val-uable observations, assisted by Prof. Schaeberle, it seems all the more disappointing sky should have been cloudy at the critical moment.

A third expedition sent from this country and composed largely of tourists and a few scientists prepared to see the eclipse from Bodo, a little island south of the Lofoden We sailed on the American line hip Ohio. Our captain, named islands. steamship Ohio. Boggs, was as enthusiastic over the coming eclipse as any of the astronomers nate. On arriving at Southampton he was informed that owing to a high range of mountains at Bodo it was not a desirable not far from Bodo. Arrangements were accordingly made for the Ohio to anchor off that island at the time of the eclipse On the way to Bodo we stopped at Copen-hagen, and one of our party, Mr. Fred W joys and delights of social life; the peace Weston, a Yale student, having a letter and satisfaction of holy religion, and a of introduction from Dr. Elkin of Yale college to Dr. C. F. Pechute of the Copenhagen observatory, called bn him and made



CORONE AT TOTAL ECLIPSE, AUGUST 9.

inquiries as to the coming eclipse. He was far west for favorable observation, Pechute suggested that the lighthouse island of Stot was in all respects a desirable position. This information was con veyed to Captain Boggs, but as he had orders to take us to Traenen he refused re incur the responsibility of acting against orders unless a petition requesting him to go to the island of Stot was signed by every passenger on the ship. It was not long before the petition was signed and presented to the captain, who was only too pleased to graciously grant our re

AWAITING THE EVENT. We therefore anchored off Stot island, on the west coast of Norway, latitude 66 de-grees, 57 N. longitude 13 degrees—30 E, on the evening of Mugust 8. Next morn-ing we were awakened at 3 o'clock by the sounding of the gong and after a hasty meal of coffee and sandwiches we hastened on eager for the coming event. sun had already risen and save for a few deecy clouds tinged with pink near horizon the sky was practically cloudless. The hills on the Kunnen promontory were clearly outlined against the sky and the sea was as smooth as glass. All the pas-sengers had provided themselves with pieces of smoked glass and they had their field glasses in readiness for the instant of totality. Telescopes were utterly useless. owing to the unsteadiness of the vessel, so that all we could expect to observe with our field glasses were the attendant phenomena, such as the approach of the lunar shadow, the colors and illumination during totality, the shadow bands, the moments of the appearance of the sky, the contact, corona, etc.

Among those specially interested in making observations were Captain Boggs and Mr. E. Roberts, first officer of the ship, who assisted me in timing the eclipse by of the ship's chronometer, with the following results:

59 22 First 53 25 Tot. 55 00 Tot. 50 63 Last contact. began. ended, contact.

A THRILLING SPECTACLE. As the black body of the moon slowly encircled upon the sun, a somber yellowish hue gradually spread over the sea and the mountains on the Kunnen promentory near by, and just before totality a bank of gray clouds settled over the top of these mountains. At the same instant the temperature fell 2 degrees, from 53 degrees to 51 de-grees, and we noticed a perceptible chilli-ness in the atmosphere. The faces of the ness in the atmosphere. The faces of the passengers assumed a ghastly appearance, and the on-rushing gloom cast a weird color over the scene. The sea gulls flew affrighted from the approaching darkness, and in silent awe we awaited the moment of totality. It came so swiftly that a shout of wonder echoed from one end of the ship to the other, as we gazed upon the marvellous sight before us. The sun was entirely hidden from view by the inky ball of the moon, which was partly edged with scarlet prominences glowing like lurid flames against the dazzling white of the inner corona. Beyond this streamed the silver rays of the cuter corona, distinctly outlined against a sky of coppery hue. The streamers directed from the solar poles were shorter and less brilliant than those extended along the eastern line, whilst along the western line a streamer reached to a distance equalling apparently three times the diameter sun. The planets Jupiter, Venus and Mercury shone with great brilliancy, and many of the well known constellations were plainly to be seen, whilst the Pole star was almost overhead. Just before totality the western edge of the smoon was outlined with a dark line of vivid red light, and next mo-ment the sun burst forth in a blaze of glory, and the silver corona vanished-all too soon; but that impressive moment, occupying one minute and thirty-five seconds of time, is one that can never be forgotten. It was magnificent beyond all description, and a sight but few enjoy in a lifetime. THE FINAL CONTACT.

Assisted by the captain and the first neer, I closely observed the eclipse till the final contact, and within half an hour of totality clouds drifted across the sun, resembling the clouds upon the planet Jupiter. Just before the last contact the clouds were still drifting in that direction, so that we had to watch most carefully in order that we might detect the exact moment of the final might detect the exact moment of the final comic opera singer, is engaged to marry contact, which occurred at 16 hs., 50m., 03s., Sellie Holbrook, only child of a late wealthy merchant of New York. They will be married in November and make their home in Jordan of Germantown, Pa., but only the inner corona was visible. Observations of himself to literature.

1896 the attendant phenomena were made by Mr. John C. Ryder of Boston, Mass., Mr. Fred W. Weston of Yale college Mr. Theodore Gilmen of Williams college and Mr. Farquhar of Washington. But the excitement was not yet over, for

we were anxious to know if the other ex-peditions had shared our good fortune. We were so assured that they had that it was with a feeling of the deepest regret that we heard the next day, on arriving at Trond heim, that the expedition to Vadso had falled utterly in observing the eclipse during totality. Sir Robert Ball, Mr. Norman Lookyer and Dr. Crommelin presided over the observations, but only sufficient glimpser of the collinse were obtained to intensify the disappointment caused by the pres-ence of the intervening clouds. It is estimated that over 3,000 persons were specta tors of this wonderful scene, and a lar number of scientific and distinguished vi itors were present, including the king of the Belgians and his party, and Mr. Bayard the American minister in London. According to the telegrams received from Vadso he results of the observations were of scientific value, whilst the photographs take every five seconds had no special interest. Prof. Ball gives the following interesting account of his experience: PROF. BALL'S OBSERVATIONS.

"At the time of the eclipse the instruents were duly opened, for it was decided that no matter what happened the contem-plated programme should be faithfully carried out. I was stationed at the small equatorial or three-inch aperture. It was was with some hope that we saw the partial clearness of the sky, and the sun peeped forth. But I failed to see the first en-croachment of the moon on the sun's limb. A cloud prevented that, though almost im-mediately after I could see the advance of the moon, and thus learned that the both the moon, and thus learned that the cellipse had actually commenced. For an bour we had one glimpse after another of the resistless march with which the dark moon entered straight on the brilliant disc. Beautiful, indeed, were the cusps disc. Beautiful, indeed, were the cusps of light as they grew steadily narrower. For a long time there was but little appreciable effect on the general illumination of the earth. It was not until about four-fifths of the sun's disc were obscured that became conscious of the increasing gloom of the landscape, and felt as if some tremen dous thunderstorm were approaching Gradually the interest and excitement au on board, and in fact it was mainly owing gumented as the solar crescent became to him that we were so peculiarly fortuonly to be seen occasionally, and even be seen occasionally, the crescent had become perceptible. place for viewing the cellipse, and he was advised to take us to the island of Traenen. reme moment of totality. But alas! jus as the crescent began to shorten and ap-proach the vanishing point, the clouds through which my vision was straining closed in again. I found it impossible to distinguish this extraction distinguish this extinction of the light rom the extinction of totality itself, and thus I was led to believe that totality had reached some seconds before the acbeen reached some seconds before the actual moment. Those who were not engaged as I was at the telescope, had a more accurate method of determining its advent by the advance of the shadow. Miss Klumpke was, however, so fortunate as to be able to note the exact moment through the relescope, and this is at least one. her telescope, and this is, at least, one valuable observation which is doubly ac-ceptable amid the almost universal failure. CHARACTERISTIC PHENOMENA ABSENT. Of the phenomena characteristic of a

total eclipse, namely, the corona and the prominences, not a trace was to be seen. Not until after the precious 106 seconds had long expired was the sun again seen as a crescent on the other side. The plates were consider a possible to the sun itself. crescent on the other side. The plates were duly exposed, no doubt, but as the sun itself was not able to pierce the canopy it need not be expected that its faintly luminous appendages could send a single ray to a plate. It has thus to be admitted that the object with which the elaborate instruments were transported with so much trouble to Vadso has been entirely defeated. But there are certain phenomena of a total eclipse which certain phenomena of a total eclipse which do not depend upon the corona and promi-nences, and these other phenomena are in themselves so interesting and striking that I feel heartily glad that I came to witness so sublime an event. The approach of the shadow is a spectacle of unparalleled magnificence, and from our situation at Vadso many of the party were most favorably placed for its observation. The eclipse took place when the sun was east and the shadow alvanced from the west. To reach us it had to travel within sight of the observers at Vadso for many miles over a mountainous district, and then for many miles down the fjord. Mr. Crommelin succeeded in finding the commencement of totality by the approach of the mighty shadow as a dark curtain drawn over the sky, while the end of tain drawn over the sky, while the end of totality was sufficiently manifest by the sudden lightening up which so many observers in this, as in other eclipses, have noticed. Other observers testify to the artistic beauty of the phenomena of totality; they were struck by the indigo-purple color of the clouds and the amber-yellow light between while at the beriese. between, while at the horizon tints between, while at the horizon tints re-sembling those of the setting sun were ex-tremely beautiful. It must be confessed that the results of scientific interest are very meager, but to many of us the occa-sion has been one of much interest and profit in every direction. The attempt made to observe the cellpse has been a gallant one, and if so much well meant effort not borne all the fruit that we might have wished, it has, at all events, tended to show that astronomy was never before cultivated with the same vigor that it is at present. We must hope for better luck next time. Shall I add in conclusion that the morning beauty!" (Such is the irony of fate!—M. P.)
FAILURE IN JAPAN.

In Japan the astronomer royal and the Savilian professor were in charge, but they met with no better success, and the philosophers were exposed to the double disapphers. pointment of learning on their return from selected elevation where they had seen nothing, that the simple folk who remained in Yokohama or in Tokio, obtained what they described as a good view of the eclipse they described as a good view of the eclipse —one which was, at least, satisfactory to themselves. We fear their observations would not accomplish much in the way of removing the uncertainties of the learned, and it is to be deeply regretted that both of the English parties have failed in accomplishing anything towards the attainment of their cherished hopes. However, the members of the British eclipse expedience. tion on Sir G. Baden-Powell's vach on Sir G. Baden-Powell's y o made excellent and valuable Otario, made excellent and valuable ob-servations of the eclipse in Nova Zembla. The corona and prominences were clearly visible, and very satisfactory photographs were taken. Nova Zembla was also occu-pied by expeditions representing the Rus-sian Academy of Science, and the Kasen Society of Naturalists. Scientists from the Pulkova observatory occupied a station at Orloffskoe, on the Amur, but owing to the Orloffskoe, on the Amur, but owing to the state of the weather no observations could be made during the eclipse. The sky was overcast at the time, but during totality several stars of the first magnitude were distinctly visible through the telescope. The darkness was not complete. Six photo graphs were taken illustrating the different phases of the eclipse. A telegram from Bodo states that a photographer from Flensburg had taken eleven photographs of the eclipse at Bredvik on the Skjerskad

fjord, where the total eclipse was clearly After all, the success of a few of the eclipse expeditions has made the eclipse of 1896 escape being an utter failure. The phenomena attending a total eclipse of the aun is beyond all that human eye can ever see, and is the most solemn spectacle one can picture to the imagination. "The im-pression is singularly vivid and quieting for days," to quote the words of Prof. Todd, "and can never be wholly lost. A startling nearness to the gigantic forces of nature and their inconcelvable operations seem to have been established. Personal-ities, hates jealousles in the control of t ittes, hates, jealousies, towns and cities, and even mundaue hopes, grow very small and far away.

Whatever the corona may be, it is of the most striking and imposing of all the phenomena of the solar system. "It is," as my father expressed it, "a fitting crown of giory for that orb which sways the planets by its attraction, warms them by its fires, illuminates them by the splendor of its light, and pours forth on all of them the electric and chemic influences which are as necessary as light and heat for the welfare of their inhabitants." MARY PROCTOR.

Aubrey Boucleault, youngest son of the late Dion Boucleault, and an actor and

COL. CODY COMING HOME

OMAHA SATURDAY, OCT. 10.

Council Bluffs Friday, Oct. 9 Beatrice Thursday - Oct. 15 North Platte Monday, Oct. 12 St. Joseph Friday - Oct. 16 Hastings Tuesday - Oct. 13 Leavenworth Satur., Oct. 17 Lincoln Wednesday, Oct. 14 Kansas City, Topeka, Fort Scott, Se-

Col. Cody will positively take part in both the afternoon and evening exhibitions at all these points.



An exact duplicate, man for man and horse for horse, of the exhibins given at the Columbian World's Fair at Chiengo in 1803, all summer New York in 1804, and 160 of the principal cities of the East in 1805. ORGANIZED ON THE MOST LAVISH SCALE.

MORE MEN, MORE HORSES, MORE CARS THAN ANY TWO EXHIBITIONS.

And perfected in all the details that the combined managerial experience and wealth commanded by the trio of Tri umphant Careered Caterers to public instruction and entertainment,

NATE SALSBURY, JAS A. BAILEY AND COL. WM. F. CODY



36

NEGRO

Absorbs Primitive and Civilized Horsemanship. READ THE ARRAY

That Nations Furnish and Races are Exhausted to Complete. All kinds, all colors, all tongues, all men fraternally mingling in the picturesque racial camp. All born

Hereditary Princes of the Saddle

100 INDIAN WARRIORS.

Ogalalla, Brule, Uncapappa, Sioux, Chey-enne and Arapahoe Tribes. 50 American Cowboys, 30 Mexican Vaqueros and Ruralies,

30 South American Gauchos, 50 Western Frontiersmen, Markse men, Etc., 25 Bedouin Arabs.

20 Russian Cossacks of the Caucasus Detachment of U. S. Cavalry, Royal Irish-English Lancers, French Chasseurs, German Cuirassiers,

ALL UNDER THE COMMAND OF COL. W. F. CODY-BUFFALO BILL

THE LAST OF THE BUFFALO

ONLY HERD ON EXHIBITION.

This enormous outfit is transported in Special RAILROAD TRAINS Using its own specially constructed rolling stock, the largest traveling Commissary, Dormitory and Equerry Accommodations,

complete in every particular, and equaling the requirements of the modern methods A FULLY EQUIPPED ARMY

IN TIME OF WAR. Carrying all the paraphernalia necessary to **A Covered Grand Stand** Seating 20,000 Persons.

ASSURING PERFECT Protection from Sun or Rain So organized and arranged as to camp close to the city in an easily accessible location. On the first day of arrival there will be

given A FREE STREET CAVALCADE At 10 a. m., by detailed detachments from each division (Wild Horses, Buffalo, Cattle,

etc., being necessarily guarded in camp), "So that he who runs may read." The march will be enlivened by 3 MAGNIFICENT MUSIC

Buffalo Bill's Cowboy Band. At night a Brilliant Electric Display by the Largest Portable Double Electric Plant

Two Exhibitions Daily, Rain or Shine

Doors Open One Hour Earlier. Night as Light as Day and as Complete in Detail. General Admission 50c. Children under 9 years 25c. Numbered coupen, actually reserved, seats will be sold on the day of exhibition at Kuhn & Co.'s Drug Store, 15th and Douglas Streets. Bicycles checked.