

THE CANALS OF MARS.

WHAT ASTRONOMER SCHIAPARELLI SAW THROUGH HIS TELESCOPE.

Some Remarkable Appearances Which He Noted—Is Mars Inhabited?—Facts Which Seem to Call for an Affirmative Answer.

It was in 1877 during a favorable conjunction of Mars—that is to say, at the time when Mars was unusually near to the earth—that Schiaparelli first saw the canals. It will be recalled that in that same year Professor Hall discovered the two tiny moons of Mars with the great telescope at Washington, an instrument in comparison with which Schiaparelli's telescope is a pigmy, and yet, so far as we are aware, the canals were never seen with the Washington telescope. This fact, however, is by no means decisive, for in the first place Schiaparelli's telescope, though comparatively small, is of acknowledged great excellence; secondly, and more important, the skies of Milan are incomparably clearer and better suited to delicate telescopic observation than those of Washington; and lastly, Schiaparelli, who possesses exceptionally sharp vision, like the celebrated Dawes, of England, was engaged in the special study of the features of Mars' surface when he made the discovery. It may be added that last year three observers—M. Perrotin and M. Pollon, at Nice, and Mr. Demming, in England—succeeded in seeing the canals of Schiaparelli, and detecting some of the exceptional appearances which he noted. When Schiaparelli first saw the canals in 1877 they appeared as single lines, but subsequently he found them double. He even watched the process of doubling, which was a very curious phenomenon. But will he let him speak for himself, as quoted by M. Flammarion: "There are upon that planet great dark lines, traversing the continents, to which many have given the name of canals, although we do not yet know what they are. Various astronomers have already detected several of them, notably Dawes in 1864. During the last three oppositions I have made a special study of them and have recognized a considerable number, more than sixty. These lines run from one to another of the dark spots that we regard as seas, and form a well defined network over the light or continental regions. Their position appears to be invariable and permanent, at least according to the judgment I have been able to form by four and a half years of observation; nevertheless their aspect and their degree of visibility are not always the same, and depend upon circumstances which the present state of our knowledge does not yet permit us to discuss with certainty. In 1878 many were seen which were not visible in 1887, and in 1882 those that had already been seen were detected again, accompanied by new ones. Several of these canals present themselves under the form of vague, shadowy lines, while others are clear and sharp, like a mark made by a pen. In general they are linear, that is to say, drawn upon the sphere as lines of great circles. They cross one another obliquely, or at right angles. They are fully two degrees broad, or 190 kilometers, and a number extend over a distance of eighty degrees or 4,800 kilometers.

"Their color is very nearly that of the seas of Mars, but a trifle lighter. Every canal ends at its two extremities in a sea or in another canal; there is not a single example of one extremity ending in the middle of the solid land. That is not all. In certain seasons these canals split up or, rather, become double. "This phenomenon appears to occur at a fixed time, and is produced simultaneously over the whole extent of the continents of the planet. No indication of it was shown in 1877 during the weeks which preceded and followed the southern solstice of the world. A single isolated case was presented in 1879; the 20th of December in that year (a little before the spring equinox, which occurred on the 21st of January, 1880), I remarked the dividing of the Nile between the Lake of the Moon and the Ceratonic gulf. These two regular markings, equal and parallel, caused me, I admit, profound surprise, the greater because some days before, the 23d and the 24th of December, I had observed with care this same region without perceiving anything of the kind. I awaited with curiosity the return of the planet in 1881 in order to present if any analogous phenomenon would appear the 11th of January, 1882, a month after the spring equinox of the planet (which occurred on the 8th of December, 1881); the division was still more evident at the end of February. On this same date, the 11th of January, another doubling manifested itself, that of the middle section of the Cyclops canal, on the side of the Elysée.

"Greater yet was my astonishment when, the 15th of January, I saw the canal of Janium, which was then in the center of the disk, divided very accurately into two straight, parallel lines traversing the space which separates the Nilæque lake from the Gulf of Aurora. At first I thought it to be an illusion, caused by fatigue to the eye and a sort of stratagem of a new kind, but one must needs yield to the evidence. After the 18th of January I simply passed from one surprise to another: in succession the Orontes, the Euphrates, the Phison, the Ganges and more of the other canals showed themselves very clearly and incontestably split in two. There were not less than twenty examples of doubling.

"In certain cases it has been possible to observe some precursory symptoms which are not lacking in interest. Thus the 13th of January a light and ill defined shade extended along the Ganges; the 15th and 19th only a series of white spots was distinguishable there; the 20th the Ganges showed itself in the form of two indistinct parallel lines, and the 21st the doubling was perfectly clear, as I observed it up to the 23d of February.

"These doublings are not an optical effect depending upon the increase of visual power, as happens in the observation of double stars, and neither is it the canal which divides itself in two lengthswise. Notice what it is that appears: to the right or left of a pre-existing line, without any change in the course or position of that line, one sees another line produced equal and parallel to the first, at a distance varying generally from 6 to 12 degrees, that is to say, from 350 to 700 kilometers; there even seem to be some produced still nearer, but the telescope is not powerful enough to enable one to distinguish them with certainty. Their tint is a rather dark reddish brown. These twin canals are rectangular or very slightly curved. There is nothing analogous in terrestrial geography. Everything points to the belief that it is a peculiar periodical phenomenon of the planet Mars, and intimately related to the course of the seasons.

"Here, then, are observed facts; the increase in the distance of the planet, and the prevalence of rains prevented the continuation of the observations after the end of February. It is difficult to decide quickly upon the nature of that geography, assuredly very different from that of our world."

—New York Sun.

LIFE IN JERUSALEM.

CHRISTIANITY AT ITS WORST, MOHAMMEDANISM AT ITS BEST.

A Returned Missionary's Interesting Account of the State of Affairs in the Holy City—Destitute Jews from Arabia—The American Colony.

Rev. T. F. Wright, who has returned from Jerusalem recently, talked with a reporter in regard to the condition of affairs there at the present time. "The state of religion in Jerusalem is very interesting. I remained five weeks in the city, and was brought into contact with persons of every class. It must be confessed that Christianity is seen at its worst there, and Mohammedanism at its best. The Mohammedans in the early morning hours of the day: God is great, prayer is better than sleep, arises, prepares himself, puts on his white outer garment and goes up into the mosque ground where Solomon's temple formerly stood, and there goes through with his devotions, bowing down before God and acknowledging that he may be guided through the day. This means to him that he must be strictly temperate, truthful in every statement, kind to all men, and that he will in no case bow down to any idol. In all Mohammedan lands, idols, images and pictures are utterly excluded. The single exception to this rule is an equestrian statue of Mehmet Ali in the great square of Alexandria in Egypt; and the erection of this statue was strongly opposed on the grounds that it might become a source of the people an object of worship. "The Christians in Jerusalem are in a state of bitter sectarian conflict. They are not agreed among themselves as to the sacred sites, and they have more than once come to bloodshed in acting together in the celebration of some of the Christian festivals. In the Cave of the Nativity at Bethlehem, where a silver star in the pavement marks the place where our Lord is believed to have been born, a Mohammedan soldier of the Turkish army stands always with loaded musket to keep the Christian worshippers from slaying each other. In the Church of the Holy Sepulcher, in Jerusalem, the traveler notices at once a group of Turkish officials who have no interest in the place, and spend their time smoking and drinking coffee and chatting with each other, but whose presence is needed to keep the monks from actual warfare. At the time of Easter the Turkish guards are increased to a whole regiment, so that it is difficult to make one's way through them to reach the interior of the church.

"VARIOUS RIVAL SECTS. "In the church the Latin, Franciscan, Armenian with the Greek monks in the performance of masses, and sometimes simultaneous masses are performed by priests standing within a few feet of each other. The lamps with which the shrines are decorated have been apportioned to the different bodies—Latin, Greek, Armenian and Coptic—so that they may not come into conflict in lighting the place. The greatest and most unpleasant contention is reached at the time of the descending of the holy fire, which is believed by the more ignorant to descend from heaven, and to be received by a priest. It always arrives at a certain hour of a certain day, and its arrival is waited for by a crowd which surrounds the place, waiting for many hours. When received, every one present seeks to light his candle in the flame; and runners immediately set forth to every part of the land, seeking to obtain the prizes which are offered to those who first arrive at the outlying villages.

"The bells on the Church of the Holy Sepulcher and on the Mount of Olives are rung by the rival sects, apparently only for the purpose of expressing their unkind feelings. They never sound in harmony; they never ring a chime, although they are fitted to do so, but they continually raise in the ears of the contentions Mohammedan their unpleasant sounds. "There is in Jerusalem at the present time a remarkable American colony, which it was my privilege carefully to examine. About twenty persons arrived in Jerusalem in the year 1881, having come mostly from the city of Chicago, where some of their number had been active Christian workers under Moody, and where they had been led to think that they could do more good by going to the Holy Land. On their way out they received some accessions from England. Among their number is Mr. H. J. Spafford, once a leading Chicago lawyer; another, Capt. Sylvester, was formerly the English consul in the city; a clergyman of the Church of England, who visited the Holy Land in company with the late Gen. Gordon, and who decided to remain with these people; another is a venerable lady, the widow of a colonel of the United States regular army. All are most deeply interested in their work, and share and have a common purse, and now have become known far and wide through the region, because they make no profession of faith, but simply acknowledge their allegiance to Christ and express by constant deeds their desire to love their neighbors as themselves.

"When they first arrived in Palestine an interesting migration of Jews had just taken place from Arabia. About 300 Jews, called Temenites, and believed by themselves to be the remnant of the tribe of Gad, had moved from the desert in which the tribe had long had its home, and had come to the Holy Land. They are small in stature, delicate in features, wholly free from the money changing disposition, grateful for every kindness, and eminently childlike in their characters. They were lying, when the Americans arrived, in the fields outside of the city with no one to care for them. The Americans immediately began to prepare daily rations of soup for them, to tend the sick and in every way to watch over them according to their ability. At the present time the Temenites have established themselves in a prosperous colony south of the village of Silwan, and in their synagogue every week they have a prayer in which Horatio Spafford and his friends are mentioned, and the divine blessing is invoked upon them for their many good deeds.

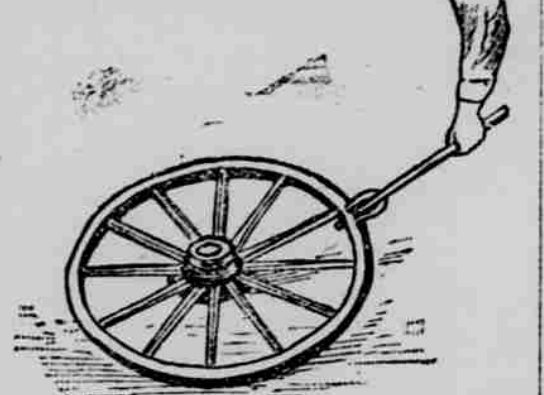
"The houses of these Americans is daily visited by persons coming from all parts of the land, to inquire into this wonderful phenomenon. The Bedouins of the desert lean their tall spears against the wall, and are cordially welcomed, and occupy a room in the house as long as they desire to remain; and the Americans, going fearlessly across the Jordan, have returned these visits and been received with the utmost kindness, and have had an influence over the lives of the Bedouins. They deal especially with the Aduan tribe, long known to be the finest class east of the Jordan. The fellahin, or peasant class of the country, find always here a cordial welcome. No evening passes without seeing its company of poor and rich, of peasants and Turkish officials gathered in the saloon, to listen to the hymns which the Americans sweetly sing; and every one, on leaving the room, expresses his gratitude for what he has come to regard as the greatest comfort of his life. In this way Mohammedans and all classes in Jerusalem are reached for good, and a lesson is taught as to the spirit in which Christian missions should be carried on."—Boston Advertiser Interview.

FARM AND GARDEN.

A GRAIN CHEST FOR POULTRY THAT PREVENTS WASTE.

A Double Begonia That Promises to Become Popular—For and Against Shoeing Farm Horses—A Clever Contrivance for Tightening Wagon Tires.

The extreme drought and heat of last summer caused much trouble with wagon tires, which would often get clear off the wheel before the driver suspected that they were loose. In the cut is represented a convenient device for replacing a tire when any amount of pounding with a stone or other weight will do the work, which was originally illustrated in Rural New Yorker, may be made as follows:



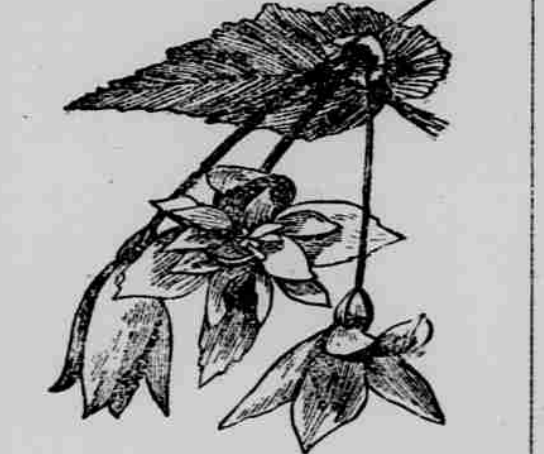
DEVICE FOR TIGHTENING A TIRE.

Procure a horseshoe with long heel calks to catch on the edge of the tire; after putting the tire on as far as possible with the hands, then put a strong stick or iron rod through the horseshoe and under the felloe of the wheel. By prying downward the tire is drawn on.

Country Made Soap. The alkalies for sale at the stores will make a very fair soap, with less trouble than the old time method with lye from wood ashes, but the product of the latter is much stronger and in every way more satisfactory. The ashes from hickory is the very best of all for soap making purposes, although ashes of any hard wood make excellent soap. In sections, therefore, where wood ashes are plentiful it will pay to make soap from their lye, as the leached ashes will still be of value for fertilizing purposes and all refuse grease utilized that would otherwise be wasted. When saving ashes for the leach be careful not to burn any decayed or unsound wood. Old barrels may be placed on an inclined platform for the leach or one can be cheaply made for the purpose.

Shipping Apples to England. The experience of T. S. Gould, secretary of the Connecticut Board of Agriculture, in shipping apples to England is not very encouraging to small shippers. The first cost of barrels, freight to New York and trucking expenses across the city, and the injury to the condition of the fruit in consequence of rough handling, are liable to consume the amount of sales in a market so fluctuating. The export trade may prove profitable to large shippers with good connections to small shippers. The time of the time to market it. Small shippers, however, Mr. Gould says, had better not engage in this rather venturesome business.

Fine Variety of Tuberos Begonia. The fine variety of tuberous begonia shown in the accompanying illustration is one which, as a window plant, the well known New York florist, Vick, thinks will soon be cultivated. It bloomed on his grounds at Rochester this spring for the first time, and proved very attractive. The plants are about a foot in height, quite bushy and neat in habit, and the flowers are borne in great abundance, on long, slender stems, by which they are usually pendant. The staminate flowers are double, while the female ones are single. The color is a bright scarlet.



BEGONIA LOUIS DUCHET.

Novelties as a rule are looked upon with incredulity. However, when Vick and the English florists who have been instrumental in introducing it to notice agree that the above named double begonia is the coming plant, and will, within a short space of time, be seen in every market and window, as is the fuchsia and geranium, it is time the public should be told something about it. All the culture it seems to require is propagation like dahlias. The begonia Louis Duchet has gained in England at the Royal Botanic shows first class certificates as a striking novelty, and connoisseurs, both abroad and at home, are encouraging the cultivation of begonia with increasing bloom, having grown tired of the ordinary blossoms.

Shoeing Farm Horses. Numbered with other questions that are argued by practical, sensible men, and likely never to come to any decided settlement, is the one, "Shall farm horses be shod or not?" That this controversy must be settled by each man for himself lies in the fact that some horses under certain conditions can go without shoes, and in truth are better without them; but that no horse under all conditions can work or travel barefooted. In an article upon this subject in The American Agriculturist appears the testimony of various individuals in different sections of the country.

A correspondent writing from Iowa considers it an unnatural proceeding to shoe a horse. He says: "If one examines the hoof of a colt that has never been shod it will be found that there is a sharp edge on the under side. The object of this is that the animal may go on smooth roads. If the horse is never shod this protection remains as long as the animal lives, but in shoeing it has to be cut off and it will never grow so perfect again as it was naturally. This correspondent believes that unsod horses can do all necessary farm work in both winter and summer. A correspondent from Ohio writes: 'My advice is don't shoe your horses. Keep the colt's feet properly trimmed while growing, as you would shape a fruit or ornamental tree, and when he is old enough to work he

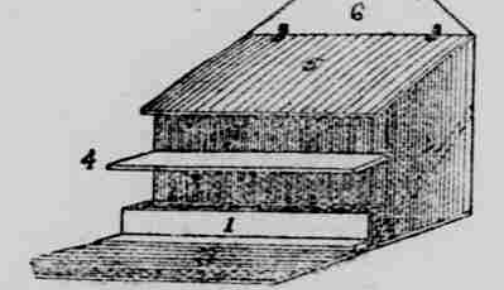
will be able to do without shoes, unless it be for some special purpose."

From Wisconsin a correspondent writes of his experience with both shod and bare footed horses: "Our roads are not very hard, being country roads, where gravel is not plentiful. My horses are sound and their feet good, but when I tried to work them without shoes I found it would not do; their feet soon became tender and sore. If I were obliged to use them every day, even in winter, I should have them shod; for there are days when the roads are in such condition that it would not be safe, neither could they draw a load without them."

Many farmers do not give sufficient attention to their horses' feet, though they may curvy and rub their hide well. The feet, however, should have close inspection and care, for if these become un-sound there is little work to be gotten out of the animal. To this end the floor and bedding should always be kept dry and clean, that manure may not become caked under the foot, and every morning the hoofs should be examined and freed from any such accumulations. A soft frog should be guarded against, for it causes an animal to go lame with very slight cause. A little corn meal and brine applied once a week hardens the frog.

Suggestions About Squirrels and Gophers. In Texas, we are told, the ranchmen kill prairie dogs by saturating balls of cotton rags with bisulphide of carbon, pushing these well down into the holes and firmly packing earth into the entrances. The preparation, being extremely volatile, quickly evaporates, and forms a heavy, fatal gas, which occupies every chamber and gallery of the dog's dwelling. The same course is pursued with rabbits in Australia, and with good success. Why not, asks Minnesota Farmer, try this on ground squirrels and gophers? The material is quite inexpensive.

Economical Contrivance for Poultry. In the cut here given is shown an economical grain chest for fowls, recently described and recommended in Stockman.



GRAIN CHEST FOR FOWLS.

It will be observed that the trough (1) is two inches high. The front of the chest extends downward no further than the top of the trough, thus leaving a free passage for the grain from the chest into the trough. The dotted line (2) shows the position of a board in the chest, placed there to conduct the grain into the trough as fast as it is eaten out by the fowls. The platform (3) is for the fowls to stand upon while eating. It should not be wide enough to induce them to form a habit of sitting upon it. A board (4) is fastened to the front of the chest and extends over the trough to prevent fish from falling into it. The cover of the chest (5) should extend a little over the front, that it be handily raised, and should rest on hinges to prevent fowls from roosting on it.

An extension of the back of the chest (6) with two holes in it, is provided so that it may be hung on corresponding wooden pins. If it is hung up in that way it will be necessary to put some kind of a key through each of the pins, to prevent the being jacked off from them. It should be hung so that the platform will be at least two feet from the floor. It may be made any length. A square chest, for a post in the yard, can be made on the same principle.

How to Use Fertilizers. There remains not a doubt about the economy of supplementing the manure pile of the farm with commercial fertilizers. On few if any farms in the older states is there enough manure made to keep the soil in good tillth, consequently resort must be had to green manuring and artificial fertilizers. In the use of the latter much money is saved by men who sit down and do a little thinking before ordering such fertilizers as are to be bought. First should be decided as nearly as is possible what elements are specially deficient in the soil; second, what elements of plant food are specially required for the crop; and third, what is the best kind of these lacking elements can be supplied from the manure heap and compost pile at home. Some crops, as Irish potatoes, for instance, thrive better in soil that is enriched by an artificial fertilizer than with barnyard manure; and these crops, therefore, are more securely fed by a commercial fertilizer, the manure being reserved for crops that needed more.

In green manuring the value of pea vines at the south and clover at the north, as an improver of soils, has been repeatedly proven. Pea vines and lime furnish a very effective means of improving and maintaining the productivity of soils in which phosphoric acid and potash are not too nearly exhausted. The suggestion is made that some gain is effected by utilizing as much as possible pea vines, clover or any other valuable forage crop as feed for stock first, by turning on the cattle to crop it, and then their droppings are saved along with the roots and stubble that are eventually plowed under for a fertilizer.

Things Told by Farmers. The honey crop is a poor one. Manitoba boasts of a big potato crop. Professor Beal advises skillful green manuring for sifting sandy soils.

F. D. Curtis, New York, says blue grass ought to be mixed in all pastures. Joe Harris regards clover as the great renovating crop of American agriculture. All experienced poultrymen aver that provisions for dust baths are a necessity to fowls.

P. H. Springer asserts that nothing on the farm can be raised with greater profit than swine. Professor Budd, of Iowa, advises planting the south side of all trees in this climate to the south. W. D. Philbrick, of Massachusetts, says that potatoes and roots of all kinds keep best in pits out of doors.

To dispute the excellence of milk made from good ensilage is to fly in the face of facts, says John Gould. Attention is called to the dairy school opened at Houghton farm, Mountville, N. J., by Mr. Valentine. It is a benevolent undertaking, and the first of its kind in this country. Mr. Cushman, of the Ohio Horticultural society, says: "There is no other berry that can be planted in our section of country that will bring as much money to the grower as the early harvest blackberry."

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