MR. BRYAN IN EGYPT

He Visits the Relics of the Ancients and Finds a Wooden Statue of a Mark Hanna of Thousands of Years Ago.

BY WILLIAM JENNINGS BRYAN.

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We have been moving among the oldest monuments reared by man, and they make the rest of the world seem young.

In Japan a Buddhist temple built 1,200 years ago impressed us with the youthfulness of American institutions; in China we were shown temples that had stood for twenty centuries and were told of customs and laws even older; in India we found a pagoda some 2,500 years old and visited the site of a city whose foundations were probably laid more than 3,000 years ago; but here we see the mummied forms of human beings who lived 2,000 years before Christ was born, inspect the handiwork of men who laid down the chisel before Abraham appeared upon the earth, look upon colors that have withstood the changes and defied the elements for forty centuries and handle wheat that grew upon the banks of the Nile long before Joseph built the granaries for Pharaoh.

The guides count centuries as trippingly on the tongue as a treasury expert or an insurance magnate handles millions. They discuss dynasties that rose and fell when Europe was shrouded in darkness, before the light of history dawned upon the Ganges and the Yangtse; they decipher hieroglyphics that kept their secrets for ages, and lead one among ruins that astonish by their immensity as well as by the artistic skill which they reveal.

Back in the misty past—in the prehistoric period—there were two Egyptian kingdoms, one occupying upper and the other lower Egypt. This was prior to 2500 B. C., and from the stirring scenes engraved upon stone one can imagine the conflicts which took place along the fertile valley of the Nile before Menes, the earliest known ruler, united the two kingdoms, assumed the title of Lord of Both Lands, fashioned a double crown for himself and adopted the lily, or lotus, and the papyrus as symbols of his consolidated empire.

We are probably indebted to certain natural peculiarities of Egypt for the preservation of the unique evidences of ancient civilization found here. First, there is but a small area of tillable land stretched along the most wonderful of rivers and guarded on either side by a barren waste that offers greater protection than a wall.

Second, the climate of Egypt is dry and there are no drenching rains to deface and no violent changes of temperature to disintegrate. Third, the temples and tombs are so massively built as to discourage the vandal, and, fourth, the sands of the desert have drifted in and concealed for a hundred generations many of the most valuable of these relics of a bygone age.

There is such a wealth of archæological treasures here that one scarcely knows where to begin or how to condense the most important things into the space allotted to a newspaper article. I shall not attempt to describe things chronologically, because some of the temples have been added to by different kings and dynasties until they represent the art and life of many hundred years.

The temple at Karnak, for instance, bears the impress of Egypt's rulers from Thutmosis to the Rameses, and from the Rameses to the Ptolemies, a period of some 1,200 years, and the building of the numerous pyramids covered even a longer period.

A STUDY OF MUMMIES.

As the tourist usually begins a trip through Egypt with a visit to Cairo, he is likely to find the great Egyptian museum, the Museum of Gizeh, a fitting introduction to his subsequent investigations. Here one finds samples of all the antiquities of the country, excepting the pyramids and the temples, and there are mummies, sarcophagi, statues, carvings and hieroglyphics from these. A considerable space is devoted to mummies, some from the tombs of kings, but many of more humble rank.

The early Egyptians believed that man was composed of several different entities. First, there was the body, and, second, the double—a sort of invisible form reproducing the features of the body. Next came the soul, represented as a human headed bird, and then a spark of the divine fire, called Khu, which has been translated as "the luminous."

It was to prevent the departure of these attending forms that embalming was resorted to. By suspending the decomposition of the body, they thought that they could preserve the connection between it and the double, the soul and "the luminous," and by prayers and offerings these could be saved from the second death.

This is the explanation of the mummy given by archæologists. The double, it was supposed, never left the place where the mummy rested and the soul, while it went away to commune with the gods, returned from time to time and for this reason rooms were made for the reception of the soul and for the habitation of the double.

"PHARAOH OF THE OPPRESSION."

One can hardly believe as he looks upon the shrivelled forms that they were interred so long ago. I will inclose with this article a photograph of the mummy of Egypt's greatest builder, known as "the Pharaoh of the Oppression," who died more than 3,000 years ago. The hand no longer sways the sceptre, the eyes look no more upon the gigantic statues which he scattered along the Nile and the voice does not now demand the making of "bricks without straw," but the mortal remains of this famous ruler vividly recall the days of Israel's bondage.

With the mummies are many mummy cases, some covered with hieroglyphics, some ornamented with pictures in colors and most of them covered with a lid upon which are a face mask and an outline of the form of the occupant. The process by which these bodies have been preserved is still a mystery, but the fact that they have outlived dynasties and survived the countless changes of so many centuries gives to them a lasting interest.

The collection of statues and images of gods, human beings, beasts and birds runs up into the thousands. Some of these are heroic in size, others are not more than an inch in height; some are strong, some beautiful and some grotesque.

Granite, both red and black; alabaster, stone, iron, bronze and clay—all have been brought into requisition for this work. Some of the bronze has, upon analysis, been found to contain practically the same combination of metals as the bronze now used.

AN OLD EGYPTIAN LIKE SENATOR HANNA.

There are even statues in wood, and one of these—a photograph of which I secured—attracted my attention because the head and face bear a resemblance to the late Senator Hanna. It is called "Sheikh el Beled," or village chief; that it should have resisted decay for more than forty centuries is little less than marvellous.

While the excavators have been searching for historical records they have occasionally found treasures of great pecuniary value. A considerable quantity of gold and silver in the form of jewelry has been unearthed, and the museum contains specimens of exquisite workmanship which not only display the skill of the artificers but portray the habits and customs of the early Egyptians.

The museum also contains enough of cloth found with the mummies, and of pictures of looms, to show that weaving was an industry with which the people of those days were familiar.

We must leave the museum and proceed to those masterpieces which are too large for any roof save that formed by the vaulted skies. I am, however, constrained to offer one criticism of the museum in passing.

It is under the control of a French society, and the only catalogue obtainable is printed in French. While most of the exhibits bear a brief description in both French and English, some are labelled in French only, and a few not at all.

As there are no guides to show a visitor through the numerous rooms and point out the principal objects of interest, those who are unable to read French are at a great disadvantage. Considering the number of English and American tourists, it seems strange that more attention should not be paid to their accommodation.

But to the temples. We reached Egypt after the regular tourist season was over and could not visit all of the ruins. We selected the most famous, those of two ancient cities, Thebes and Memphis, and they alone would repay a visit to Egypt.

ON THE SITE OF THEBES.

The present city of Luxor, 420 miles from Cairo, covers a small part of the vast area once occupied by "Hundred Gated Thebes." In the very heart of the city a mammoth temple has been found where kings worshipped through many reigns. It was built during the eighteenth dynasty (B. C. 1500) on the site of a still older sanctuary and dedicated to Ammon, his wife Mut, and their son Khons, the moon god.

Some of the columns are 12 feet in diameter, more than 40 feet in height and support great blocks of red granite 20 feet long and 4 feet in width and thickness. Some of the columns represent clustered papyrus and have capitals shaped like the lotus bud.

In the temple are a number of statues of Rameses II., some sitting, some standing. One of these statues is 45 feet in height, and another of less dimensions was unearthed only about a year ago. When excavations were begun houses were serenely resting on the top of the temple, and it is believed that further excavations will disclose an avenue leading to other temples two miles away.

In front of the Luxor temple is an obelisk of pink granite, a part of which is still under ground. Obelisks were always erected in pairs, and the companion of this one was removed some years ago to Paris.

These great monoliths come down to us from the period when the Egyptians worshipped the sun, and they were intended to represent his rays. The oldest Egyptian obelisk is at Heliopolis, not far from Cairo, and is 66 feet in height. It is supposed to have been erected between 2200 and 2000 B. C., but it is in an excellent state of preservation and bids fair to bear testimony for ages to come to the reverence felt by the ancients for the sun.

At one time Heliopolis was a thriving city and is referred to in the Bible as "On" but to-day the obelisk stands alone in the midst of cultivated fields, all of the buildings having disappeared.

THE TEMPLE OF KARNAK.

While the obelisk at Heliopolis outranks all others in age, the one at Karnak, in the suburbs of Luxor, has the distinction of being the tallest one yet remaining. It is 8½ feet in diameter at the base and 97½ feet in height (8½ feet less than the obelisk at Rome).

The obelisks were cut in a single shaft, most of them from granite quarries near Assuan. These quarries are more than five hundred miles south of Cairo, and it is supposed that the obelisks were transported on the Nile to the places where they have since been found, but how they were handled or placed no one knows.

The temple of Ammon, at Karnak, is generally regarded as the most interesting of temple ruins in Egypt. It is the work of many kings, one adding a sanctuary, another a pylon, another a court, &c.—each placing his cartouche, or seal, upon his work.

This temple, which was officially styled the Throne of the World, covers an immense area. One pylon, or gateway, is more than 300 feet wide, nearly 150 feet high, and has walls 16 feet thick.

One court covers almost 1,000 square yards, and one aisle leads between pillars 69 feet in height, about 12 feet in diameter and supporting capitals of 11 feet. The stones used in this temple are of enormous size, and they were probably raised to their positions on scaffolding of earth—this being also the method employed where attempts have recently been made to restore fallen columns.

WORK OF ANCIENT EGYPTIAN ARTISTS.

The hieroglyphics upon the walls, the columns, the obelisks and the statues, after remaining a puzzle for ages, have been deciphered and woven into a consecutive history. This was made possible by the discovery, in 1799, of what is known as the Rosetta stone (now in the British Museum), at the mouth of the Rosetta arm of the Nile, by a French engineer named Bouchard.

This stone bears a decree inscribed in three languages—ancient Egyptian, modern Egyptian and Greek—and furnishes the key to the secrets of ancient history.

The pictures represent sacrificial ceremonies, domestic and industrial scenes, battles, triumphal processions—all phases of life, in fact. One wall contains, in hieroglyphics, the treaty of peace which Rameses II. concluded with the Hittites, while another wall represents Rameses III. holding a group of prisoners by the hair and raising a club as if to strike.

Close by the god Ammon is delivering to him chained representatives of different vanquished nations, the faces being so true to life that the Israelites brought from Palestine can be easily distinguished from the Ethiopians and Nubians of the south. One of the heads seen often in the drawings resembles the "yellow kid," and the donkeys are exactly like those seen to-day.

THE SINGING STATUE OF MEMNON.

Luxor and Karnak are on the east bank of the Nile, but Thebes required both sides of the river for her great population, and the west bank is also rich in evidences of ancient civilization. The Rameseum is here and would attract more attention if it were not overshadowed by larger temples. Here also are the Colossi of Memnon, one of them known to literature as the singing statue.

This is described by Strabo and Juvenal and bears many inscriptions in Latin and Greek made by those who visited it under the Roman rule. Hadrian looked upon it in 130 A. D., and a poetess of his day declares that the statue greeted the Emperor.

It is supposed that the sound which for many years issued from the head of the statue just after sunrise was caused by the change in temperature, the granite having been cracked. At any rate, the sound ceased when the statue was repaired. It now sits silent, and with its companion gazes upon the barley field that reaches out in every direction from their feet.

TOMBS OF THE KINGS.

More interesting than the Rameseum or the Colossi are the tombs of the kings, some forty-two of which have already been discovered. At this point the west side of the valley of the Nile is walled in by a range of limestone hills, one of which bears a striking resemblance to a pyramid. (Could have suggested the idea of a pyramid for a tomb?) Leaving the valley of the Nile about two miles north of this pyramidal hill there is a small, dry valley which wends its way back through the hills and terminates at the foot of steep walls just west of the hill mentioned.

Here are the tombs, hewn in the solid rock, the most elaborate of which is the tomb of Sethos or Seti, the father of Rameses II. This tomb burrows into the hill to the depth of 330 feet, a flight of steps leading down through different levels and different chambers to the final vault.

The walls are covered with figures in colors representing the king in the act of making offerings to the various gods. There are also drawings illustrating scenes in this world and life as it was supposed to be in the next. Some of these pictures portray a hell where the wicked are punished by fire, and there are also drawings which have been interpreted to represent the resurrection and judgment.

Not far away is the tomb of "the Pharaoh of the Exodus," which contains a granite image of the king, and close by this tomb is another in which the mummied form of a Pharaoh still reposes. Grave robbing, however, was so popular an amusement in those days that the bodies of nearly all the kings had been removed for safety to a secret vault which was so carefully concealed that they were not found until the nineteenth century.

THE LIFE OF LONG AGO.

At Memphis, which is only about eighteen miles from Cairo, there are tombs of less importance, colossal statues of Rameses II. and the sarcophagi of the sacred bulls. In one of the tombs, or mastabas, as tombs of this style are called, are some of the drawings that have been most widely reproduced.

In one place a boy is fattening geese by the stuffing process; in another, cranes are being fed; here, rams are treading in the seed, and there, cattle, horned and hornless, are being driven through a river. Agriculture, ship building, carpentering and other industries are minutely pictured.

While the human figures are stiff and angular, the birds and beasts are so exactly like what we see to-day that one could easily believe them to have been drawn by a modern artist.

The sarcophagi of the sacred bulls, twenty-four in number, are hollowed out from single pieces of granite and are covered with immense slabs of the same kind of stone. Each is large enough to contain a good sized animal, and some of them are covered with hieroglyphics giving the pedigrees of the blue blooded occupants. These caskets of the royal line rest in subterranean vaults hewn out of rock and connected by spacious halls.

UP AND INTO CHEOPS'S PYRAMID.

Still nearer to Cairo, only six miles away, in fact, are the great pyramids of Gizeh—Cheops and Khephren. These have been described so often that any elaborate comment upon them might weary the reader.

We climbed to the summit of the largest and by doing so not only gained an idea of the immensity of this 3,000,000 cubic feet of stone, but obtained an excellent view of the green valley on the one side and the yellow plain of shifting sand upon the other, for these pyramids stand upon the dividing line between Egypt's far famed fertile lands and one of the most barren of earth's deserts.

We also followed the narrow passage which leads to the centre of the pyramid and peered into the empty granite sarcophagus which for more than 4,000 years kept the body of the builder concealed from the sight of man, and when we came out, half crawling and half climbing, each assisted by two Arabs, our muscles as well as our memories testified that we had seen all of this stupendous pile.

THE SPHINX A LITTLE DISAPPOINTING.

At the foot of these two pyramids stands the silent Sphinx, and near it a granite temple almost as old. The Sphinx itself is a little disappointing, because photographs often show it in the foreground and the pyramids behind it, and if thus appears relatively larger than it really is.

It represents the body of an animal with a human head, and is cut from a huge stone that juts out into the valley. It was a grand conception of the brain of one long ago forgotten, and is the oldest product of the chisel of man. It has outlived unnumbered generations, and seems to mock at time.

Its position by the pyramids is a fitting one, and looking upon it and them one is awed by the sense of their antiquity and recognizes the appropriateness of the lines of the lecturer, Stoddard:

Eternal Sphinx!
The pyramids are thine;
Their giant summits guard thee night and day;
On thee they look when stars in splendor shine,
Or while around their crests the sunbeams play;
Thine own coevals, who with thee remain
Colossal genii of the boundless plain.
Eternal Sphinx!

MUMMY OF RAMESES II. THE GREAT PYRAMID AND THE SPHINX. WOODEN STATUE 4000 YEARS OLD, WITH FACE RESEMBLING THE LATE SENATOR HANNA'S

BABIES SAVED BY CLEAN MILK.

INFANT MORTALITY LOWERED ONE-THIRD IN ROCHESTER.

The Number of Deaths in Summer Among Children Under 5 Greatly Reduced—Result of Absolute Cleanliness on Dairy Farms—Triumph of Scientific System.

ROCHESTER, July 7.—A decrease of more than 30 per cent. in deaths among infants in the months of July and August has been brought about in the city of Rochester as a result of Health Officer George W. Goler's plan for providing pure milk for babies. This has been done at a cost of little more than $1,000 a year, and Dr. Goler says that what Rochester has done can be done by any city at a proportionate cost.

Until the city established summer milk stations the infantile mortality in Rochester constituted more than one-third of the total number of deaths, but it has now been greatly reduced. In the nine years from 1888 to 1896 there were 6,629 deaths of children under 5 years of age. For the nine year period from 1897 to 1905, during which the milk stations have been in operation, there were only 4,403 deaths, notwithstanding that the city's population has increased by 50,000.

Rochester was not exceptional in its high infantile mortality. The statistics show that in the cities of large population, and in those of small population, the number of deaths among young children were just as numerous and in some places even larger than here.

It is not pretended that the results accomplished are due solely to the improved quality of the milk that is fed to the babies. Improvement in the practice of medicine has perhaps had much to do with it, but it is believed that the milk has been the principal factor.

Pure milk, according to Dr. Goler and the Rochester health bureau, does not mean pasteurized or sterilized milk. It means, first of all, clean milk, and to secure this it is necessary to see that the cows, the stables, the milkers, the utensils and everything that the milk encounters from the time it leaves the cow to the time it reaches the consumer are absolutely clean and sanitary. If this is done, Dr. Goler contends, pasteurization is unnecessary.

When the work was first undertaken in Rochester pasteurization was resorted to, and this was followed for the first three years, but since that time such precautions have been taken to insure absolute cleanliness of the milk in the first place that it is not necessary to submit it to any process to free it from dirt or germs.

Dr. Goler's objection to pasteurization is that heat applied to milk alters it, makes it curd tougher and more difficult to digest, often giving rise to indigestion, diarrhœa or constipation in the infant. According to him, the application of heat to milk in the operation of pasteurizing it or sterilizing it leads people to think they cure a condition that is more easily prevented by care in the handling of milk used for food. Dr. Goler believes that pasteurization of milk is beginning at the wrong end to remedy the condition.

The Rochester milk work was begun in 1897. An examination of the mortality tables had shown what appeared to be an unnecessarily large number of deaths of children under 5 years of age. It was also noted that the larger number of these deaths occurred in July and August.

Looking about for a cause, it was soon concluded that the milk supply was the great cause for the mortality. Accordingly a systematic examination of stables and dairies was undertaken.

They were found to be probably no worse than stables in other places, but the health authorities were convinced that here lay the chief source of trouble. The stables were dirty, festooned with cobwebs and badly drained; the surroundings were sinks of mud and manure; the utensils dirty, often containing layers of sour milk with admixture of countless millions of bacteria; and the milk itself was so imperfectly cared for and cooled that it often soured before reaching the consumer.

When the milkmen were approached about the matter they replied that they were taking the same care of the cows and the milk that they had always taken of them and that they could not take better care of the milk for the price current at the time—five cents a quart.

As hope of improvement in this direction seemed futile the health bureau determined, at least during the summer season, to go into the milk business itself. In the summer of 1897 the first pure milk station was opened.

It was established in a vacant store in one of the most densely populated districts of the city. A trained nurse with a woman assistant was put in charge. Behind a rough counter a large sink was installed, and the necessary table, racks, &c., were erected. An oil stove furnished heat for the apparatus in use.

The milk was procured from what the milk inspectors thought to be one of the best farms in the vicinity. At the store the milk was diluted, sweetened and put up in four different mixtures of four, five, seven and eight ounce nursing bottles.

It was pasteurized at 180 degrees Fahrenheit for twenty minutes, cooled and sold at cost, varying from two four ounce bottles for one cent to one cent for eight ounce bottles. A deposit of three cents was required on each bottle and rubber cork.

In the first instance the mother or nurse was required to go to the station and take the baby where, in the absence of advice from a family physician, the baby was weighed and a milk mixture prescribed according to the weight of the child and not according to its age. The nurse talked with the mother about the air, water, food, sleep, recreation and clothing of her child.

A pamphlet was also printed in English, German, Italian and Yiddish, containing in the simplest form the chief points relating to the care and feeding of infants. It was entitled "How to Take Care of Babies During the Hot Weather." Across its face in large red letters was printed: "Give the Baby Water." In type large and distinct were these two sentences:

"No other milk, no other food, not even a wet-nurse, can take the place of milk from the child's own mother."

"Don't feed bananas, candy, popcorn, sugar or anything else but milk, unless told to do so by your physician."

The headings of the pamphlet were:

1. Give it pure air day and night.
2. Give it no food but mother's milk, milk from the bottle, or food directed by the physician.
3. Whenever it cries or is fretful do not offer it food; give it water.
4. Be sure that it gets enough sleep—two naps during the day at least.
5. Do not put too much clothing on it.
6. Bathe it in a tub every day.
7. Don't handle it; leave it alone.

These headings were briefly discussed in the body of the pamphlet, a copy of which was given to each mother who called at the station.

On August 1 a second station was opened, and both were run at their full capacity until September 1.

The following year four stations were required for the needs of the four quarters of the city. A trained nurse was in charge of each station. One of the stations was housed in a corner of a police precinct house, another in a school building and the other two in parts of stores.

In 1899 Dr. Goler came to the conclusion that it was better to feed clean milk than to feed cooked milk and cooked dirt together, so it was decided to stop pasteurization and to establish a central milk station on a farm where the effort could properly be made to keep the dirt and germs out of the milk. It was believed that clean milk, or milk approximately clean, having no more than 20,000 bacteria to the cubic centimetre, needed no application of heat to render it fit food for babies.

For the central station a farm where cattle, barn and surroundings are in good condition and where the farmer is willing to take more than usual care of his cows is selected. An extraordinarily fine appearing farm is not looked for, but one where the ordinary conditions existing may be improved upon so as to make them fit for the desired purpose. This central station has been placed on three different farms in six years.

An agreement is made with the farmer on whose place the milk laboratory is established to take all of his milk at a fixed price, from four and a half to five cents a quart, and to get all the ice needed from him at the market price. The laboratory consists of a portable wooden house, 16x22, built in sections, containing shelving, tables, milk utensils, bottles, boxes for shipping milk and the necessary cleaning utensils.

Besides this there are three tents, one where the bottles are washed, another for the sterilizing of the utensils and the other for the nurse to sleep in. A sink is erected to which running water is piped from a large cistern. The drainage from the sink is piped away in an open drain.

At this laboratory the most complete precautions are taken to keep the milk clean. After cans and utensils are washed they are sterilized and enclosed in cheesecloth bags until they are used the next morning.

The bottles are washed, rinsed, sterilized, placed in racks on the tables, their mouths being stopped with cotton batting to prevent dust from entering them, which is rather different from the customary way of rinsing bottles and standing them upside down to drain dry.

The nurse and her assistant superintend the milking, in which process every care is taken to see that no dirt or dust finds its way into the milk.

When the milking is completed the various mixtures are made, four in number, the sugar is added and the milk is racked off into nursing bottles. These are then corked with rubber corks, placed in wooden shipping trays, holding four dozen each, covered with broken ice and shipped to the different city stations.

Milk prepared in this manner, as shown by successive daily counts, contains on an average less than 10,000 bacteria to the cubic centimetre, while the ordinary milk contains more than fifty times as many bacteria. This milk will keep sweet for days at room temperature, and thus requires no ice in the house.

Not having been subjected to heat, it is asserted that it is more easily digested by infants than pasteurized or sterilized cow's milk and that it does not poison the baby by adding a large number of bacteria to a child's digestive apparatus, as does ordinary milk.

As the milk is given to the mother properly diluted and sweetened, it requires no addition of other substances. And as it is already in a sterilized nursing bottle, it is not necessary to do anything to it other than to remove the rubber cork, fit a clean nipple to the bottle, warm it, or, for older children, pour it into a cup. This, Dr. Goler believes, approximates the ideal milk for the hand fed baby.

Rochester's success in dealing with this problem is illustrated in the following table showing all the deaths under five years from all causes in the nine years preceding the commencement of the milk work and the nine years following:

	—July Deaths—		—August Deaths—	
Year.	Under 1 Year.	1 to 5 Years.	Under 1 Year.	1 to 5 Years.
1888	90	28	118	25
1889	133	18	83	24
1890	88	18	94	18
1891	81	15	93	17
1892	101	26	104	34
1893	99	16	85	19
1894	82	12	72	29
1895	92	16	56	11
1896	108	18	59	17
Totals	874	173	764	194

Total July deaths, 1,047. Total August deaths, 958.

	—July Deaths—		—August Deaths—	
Year.	Under 1 Year.	1 to 5 Years.	Under 1 Year.	1 to 5 Years.
1897	43	7	44	18
1898	47	11	47	10
1899	51	33	44	18
1900	50	16	54	14
1901	37	12	38	8
1902	36	5	43	20
1903	32	16	54	18
1904	15	11	43	6
1905	58	10	60	13
Totals	354	121	407	118

Total July deaths, 475. Total August deaths, 525.

In commenting on this report, Dr. Goler said:

"These figures show the deaths from all causes and not merely those from intestinal diseases alone; but we do assume that every death in a child under 5 years is, in part at least, due to the dirty character of its food. We cannot, of course, show the effect of this work on the health of the children whose lives have been saved."

While the milk stations were designed for the poor and people in moderate circumstances, it is a fact that all classes of people patronize them. To get milk from them men ride bicycles for miles and people send in from neighboring lake resorts.

Many are the expressions of gratitude that are heard as poor people are instructed by the nurses concerning a few simple rules in the booklet and obtain the milk at a cost of a few cents a day. As one mother anxious for living children said:

"May God bless you. I have lost three children with summer complaint, and I think the milk and the book kept my fourth baby."

Rochester's population is 185,000, and it is estimated that 75,000 quarts of milk are brought to the city daily to supply its needs. This comes from 700 farms within a radius of sixty miles in three directions, and is distributed by 225 retail dealers licensed at $2 each.

All of the dairy farms and venders' premises are inspected twice yearly, and oftener if required. If a producer's premises are found to be in an unsanitary condition he receives a letter warning him that unless the conditions are remedied his milk will be denied sale in the city.

For several years the health bureau has endeavored to insist upon a standard of not more than 100,000 bacteria to the cubic centimetre. No ordinance provides for this standard, nor is the attempt made to punish the vender whose milk does not unreasonably exceed this standard.

If a sample contains more than 500,000 bacteria the vender is warned that his license will be revoked if he again has so large a count. If such a number is found on a subsequent examination the license is revoked as a still further warning, though he is permitted to renew it if he promises to pursue more cleanly methods.

Every vender of milk must have a license and a sign on his wagon. The vender, not the producer, is held responsible for the quality of the milk he sells.

When an application is made for a license the chief milk inspector goes to the premises and inspects the conditions of the cattle, utensils and stables and returns a written report thereon. If the report is unsatisfactory the license is withheld until the conditions are ameliorated.

The bureau has also established what is called the Rochester milk commission, which is composed of three members of the Rochester Academy of Science and the city health officer, ex-officio. Up to the present time it has certified but one vender-producer whose milk meets all the requirements.

He sells milk at nine cents a quart. The condition of his premises is told in brief by the record of 105 consecutive bacterial counts of this certified milk which yielded an average of less than 4,000 bacteria to the cubic centimetre.

On the infectious disease register in the city health office is entered the name of the vender who supplies milk to a family wherein a case of contagious disease breaks out. If a vender is found to have more than three cases of any of the diseases named occur on his route in rapid succession the inspector immediately gets on the trail, following the suspicious milk from the farm to the consumer.

As a result of this system outbreaks of scarlet fever, typhoid fever and diphtheria have been discovered and cut short, limiting the cases to from four to eighteen in each outbreak. In each of the outbreaks one of the infectious diseases responsible for the outbreak was found upon the farm of the milk producer.

THE MOON AS WE NOW KNOW IT

LATEST IDEAS OF SCIENCE AS TO LUNAR CONDITIONS.

Maybe the Moon Came Out of the Pacific Ocean—Long Lunar Days and Cold Nights—On the Moon a Good Terrestrial Athlete Could Leap 120 Feet.

Millions of years ago the earth was not the land bound, sea swept globe so familiar to us, but a liquid mass on which floated crust some thirty-five miles thick.

At that period, says the *Strand Magazine*, it turned on its axis at a constantly increasing speed that finally shortened the day to three hours. When that terrific velocity was obtained 5,000 cubic million miles of matter were hurled off by the enormous centrifugal force and our moon was born.

The cleaving of so large a body must have left some scar on the earth's surface. It has accordingly been suggested that the great basin now occupied by the Pacific Ocean was once filled by what is now the moon.

Our moon has the distinction of being the largest of all planetary satellites; so large, indeed, that to the inhabitants of Mars it must appear with the earth as a wonderfully beautiful twin planet.

Because the moon rotates on its axis in exactly the same time that it revolves around the earth we are destined to see little more than one hemisphere. So slow is this rotation that the lunar day is equal to fifteen of our days. For half a month the moon is exposed to the fierce heat of the sun; for half a month it spins through space in the densest gloom.

Smaller in mass than the earth is, the moon's attraction for bodies must be correspondingly less. A good terrestial athlete could cover about 120 feet on the moon in a running broad jump and leaping over a barn would be a very commonplace feat. A man in the moon could carry six times as much and run six times as fast as he could on the earth.

Although separated from us by a distance that at times reaches 253,000 miles, and is never less than 222,000 miles, we know more of the physical formation of the single pallid face that the moon ever turns toward us than we know of certain parts of Asia and the heart of Africa. Powerful telescopes have brought our satellite within a distance of forty miles of the earth. Physicists have mathematically weighed it and fixed its mass at one-eightieth of the earth or 73,000,000,000,000 tons.

The moon presents aspects without any terrestial parallel. Rent by fires long since dead, its honeycombed crust seems like a great globe of chilled slag. Craters are not uncommon on the earth, but in number, size, and structure they bear, for the most part, little resemblance to those of the moon.

A lunar crater is not the mouth of a volcano having a diameter of a few hundred feet, but a great circular plain twenty, fifty, even one hundred miles in diameter, surrounded by a precipice rising to a height of five thousand or ten thousand feet, with a central hill or two about half as high.

Water cannot possibly exist as a liquid; for the temperature of the moon's surface during the long lunar night is probably not far from 460 degrees below the zero mark of a Fahrenheit thermometer, and the atmospheric pressure is so low that a gas under pressure would solidify as it escaped. Ice and snow are the forms, then, which lunar water must assume.

Because of the present paucity of water the moon's atmosphere is so exceedingly rare that startling effects are produced. Perhaps the most striking is that of the sunrise. Dawn and the soft golden glow that usher in terrestrial day there cannot be. The sun leaps from the horizon a flaming sickle, and the loftier peaks immediately flash into light.

There is no azure sky to relieve the monotonous effects of inky black shadows and dazzling white expanses. The sun gleams in fierce splendor, with no clouds to diffuse its blinding light. All day long it is accompanied by the weird zodiacal light that we behold at rare intervals.

Even in midday the heavens are pitch black, so that, despite the sunlight, the stars and planets gleam with a brightness that they never exhibit to us even on the clearest of moonless nights at sea. They shine steadily, too; for it is the earth's atmosphere that causes them to twinkle to our eyes.

In the line of sight it is impossible to estimate distances, for there is no such phenomenon as aerial perspective. Objects are seen only when the rays of the sun strike them.

At times there may be observed spots which darken after sunrise and gradually disappear toward sunset. They cannot be caused by shadows; for shadows would be least visible when the sun is directly overhead.

They appear most quickly at the equator; and invade the higher altitudes after a lapse of a few days. In the polar regions they have never been seen. What are they? Organic life resembling vegetation, answers Prof. Pickering of Harvard University; vegetation that flourishes luxuriantly while the sun shines and withers at night.

A single day, it may be urged, is not sufficiently long for the development and decay of vegetation; but sixteen hours on the moon is little more than half an hour on the earth; a day lasts half a month, and may be regarded as a miniature season.

WIRELESS IS TEN YEARS OLD.

Great Strides Made in a Single Decade of Experiment.

Wireless telegraphy is now ten years old. On June 2, 1896, there was filed in the British patent office a provisional specification "for improvements in transmitting electrical impulses and signals and in apparatus therefor," by one Guglielmo Marconi, residing at 71 Hereford road, Bayswater, England.

At the time this patent was applied for, says the *Scientific American*, the art of transmitting messages without wires was wholly unknown, in so far as its practice and utilization were concerned.

Marconi was perhaps the most persistent experimenter in the bridging of greater distances, while very early in the development of the new telegraphy Lodge turned his attention to the production of a selective system by means of electrical resonance.

The former succeeded so well in his task that from three miles in 1897 he was enabled to send and receive signals 3,000 miles in 1904, while the latter, although he failed to evolve a commercially selective apparatus, led the way for the timing of the sending and receiving circuits individually, and syntonizing them collectively.

Another important feature of recent date is the utilization of auto-detectors in connection with telephone receivers as receptors for the translation of incoming electric waves into the alphabetic code of dots and dashes.

De Forest was probably the first in the commercial field to use the auto-detector and telephone receiver, while Fessenden has conferred a lasting benefit upon science and humanity by his ingenious detector, the liquid barretter, an instrument that in its sensibility, its ruggedness and its simplicity is second only to the telephone receiver of Bell.

With these improvements, chiefly made within the past five years, wireless telegraphy is all that the most exacting critic could hope for, if we except selectivity, and in this especial branch of the work there is yet unlimited opportunity for the wireless inventor to exercise his ingenuity.

Pheasant's Brood of Chickens.

From the Ebensburg Mountaineer.

While travelling through the woods quite recently Isaac Rose, a pioneer of Jackson township, saw a pheasant brood a flock of little chicks. It is supposed a hen had laid in the pheasant's nest and that the pheasant hatched out the chicks, which hatch out a week earlier than pheasants, and then left her nest.