

LOUIS PASTEUR, THE GREATEST BENEFACITOR OF THE HUMAN RACE

Centenary of the Birth of the Man of Genius Who Discovered Germs and Gave Us Our First Real Defense Against Death.

The whole scientific world celebrated the centenary of Pasteur's birth on December 27 last. He was born in France, the son of a tanner. He showed no special aptitude in his early youth in the study of chemistry, to which he was to devote his life. He at first met with but meagre success. But he, however, soon showed a predilection for the study of crystals and their formation. It was while observing the formation of paracrytic of magnesia under the microscope that he was attracted by a multitude of wriggling germs in the field of the microscope. Thinking that they were alive he asked himself what might happen if they were destroyed by heat. Having done so, he found that these germs no longer were killed, and the formation of crystals ceased. This was the first time that it ever dawned upon the mind of man that there exists about us a world of minute organisms that are directly concerned in the affairs of men.

Seeing an analogy between the phenomenon just observed and the fermentation of beer, he found that the yeast plant was a living organism, that it grew upon the wort, decomposing it and producing as a result a third substance or beer. It is the life of the growing yeast which produces the change and not the mere chemical decomposition. Pasteur was attracted by the similarity of putrefaction to the phenomenon of fermentation. He found that putrefying substances contained multitudes of germs, visible under the microscope. When these germs were killed by heat, the odor ceased and the putrefaction stopped. He then concluded that putrefaction was due to the development of germs in dead animal matter. Indeed, flasks containing bouillon, made sixty years ago, are still preserved to-day, having been carefully sealed at that time and, no germs having had access to them, no decomposition has set in. It was thereby proved that spontaneous generation does not exist, and that there cannot be any putrefaction with the accompanying growth of germs.

Antiseptic Treatment of Wounds.

The first direct application of this discovery was made by Joseph Lister, who found in foul wounds a great similarity with putrefactive processes due to germs. Hence Lister destroyed the foul odor in wounds by the application of a solution of carbolic acid, thereby destroying the germs; he then further prevented the access of germs to the wound by covering it with sterilized cotton. This constitutes the antiseptic treatment of wounds that has raised surgery to its high pinnacle of success, by eliminating suppurative and blood poison and by making possible the most daring intervention on the human body. Lister has freely acknowledged his entire dependence upon Pasteur for the development and success of his antiseptic treatment of wounds.

These researches soon established the germ theory of disease, which simply consists in destroying by heat the germs in various articles to be preserved, and then keeping them in sealed receptacles, effectually preventing the further access of germs.

Pasteur found that the silkworm industry in the South of France was seriously threatened by a germ found in the body of the silkworms and on the leaves of the mulberry trees upon which they fed. The silk worms were destroyed. The mulberry leaves died away in winter. A new importation of worms was made from China, and, the germs being destroyed, the silkworm industry started anew free from the contaminating germs. This was the first suggestion of preventive medicine, by quarantine, board of health, etc.

Anthrax is a virulent disease fatal to cattle. Pasteur found that this disease was due to a large germ. He made cultures of it, and reproduced the disease by injecting these cultures into sheep. Later he produced a weak culture of these germs whereby he successfully established a method of vaccinating animals against this disease and preventing them from developing it. Likewise he found the cause of chicken cholera. He isolated a germ from their excreta; after making pure cultures with it, he reproduced the dis-

ease with it. Later he allowed these cultures to stand during a period of two weeks, and found that they had so weakened that they failed to kill the chickens, but gave them a mild disease of which they soon recovered but remained thereafter protected from future attacks of the disease. This was the first scientific establishment of the principle of vaccination, so widely applied now to various diseases.

Protection Against Hydrophobia.

He then directed his attention to the study of hydrophobia. He communicated the disease to dogs by inoculating them with the saliva of a child that had died of hydrophobia. Later he communicated the disease from dog to dog. Then he gave it to rabbits and found that rabbits developed a more intense form of the disease. On drying the spinal cords of rabbits that died of hydrophobia he found that he could obtain cords of various degrees of virulence. By injecting these gradually from the weakest to the strongest, he protected dogs and later human beings against this dreaded disease.

Epitaph in Pasteur Institute.

Pasteur has discovered a new world. Future explorers will expand for him the time work which he started. France has already voted him the greatest Frenchman of all time. If the greatness of a man is to be rated by the good he has done for the whole human race, now and forever and always increasing, Pasteur stands alone, the greatest of human benefactors. Furthermore he has demonstrated that germs were absolutely necessary in order to destroy by putrefaction all dead animal matter, in order to make room for new animal life, otherwise dead matter would encumber the world and defeat the law of the perpetuity of life. On the other hand, Pasteur has taught man that disease was a sort of putrefactive process started in us by some of the germs. Pasteur has taught us how to keep them away from us. Nay, more, he has taught us, by vaccination, to snatch the prevention and cure of the disease by attacking the very germs that produce the given disease. Pasteur's work is sublime! It reaches the whole of humanity and by gradually ridding man of disease he must all the sooner reach his higher destiny. And withal Pasteur was the humblest of men! He saw a living god in wonders of chemistry and in the deepest problems of existence, so much so that his own words are now his epitaph in the crypt of the Pasteur Institute in Paris: "Happy is he who possesses within himself a God, an ideal of beauty, an ideal of science, an ideal of patriotism, and who obeys it—an ideal of all the virtues of the Gospel!"

Pasteur died on September 27, 1895.

Costly Curiosity.

The Indian medicine man of the old North-west was often an intentional deceiver who played upon the ignorance of his fellow tribesmen. Sometimes, however, as we learn from Mr. H. M. Robinson's Great Far Land, he proved himself as credulous as his followers.

One day in winter, says Mr. Robinson, a party of Indians came to our house to beg for food; among them were several noted conjurers. We were all curious to know how far their belief in the supernatural would carry them; and, since we had a large music box, we wound it up and, unnoticed, put it on the table. In a moment it began to play. The faces of the savages took on a wondering and dazed expression. But, quickly recovering their poise, they began to trace the sound to its origin. After several minutes of deep attention an old man raised his gun and fired at the box. It is perhaps unnecessary to mention that the instrument was ruined. The conjurer asserted that an evil spirit concealed in the box had caused the music, and that it could be driven out only with a gunshot. Our curiosity was satisfied, but at a considerable expense.

—AND THE WORST IS YET TO COME



The Tree Planter.

I saw a woman, bent and grey,
Planting trees by the bleak highway.
And seeds of grasses and seeds of flowers,
She scattered there through the hours.

She looked so fragile and old and worn
That, touched with pity, I spoke to her.
"Why toil, kind mother, the livelong day,
Planting trees by the bleak highway?
You have earned a home and an easy chair
In place of toiling and sweating there."

She answered, "I love the work, my son,
And rest comes sweet when the day is done."
"Why plant the flowers on the highway then?"
She smiled. "The children will gather them."
"But the trees you're planting, you'll pass away
E'er they cast a shade by the bleak highway."

"It matters little that I should die,
I can but plant them," she made reply.
"I love to dream that the birds will swing
On the topmost branches and gladly sing.
And happy children will gather here
To play 'neath my trees, from year to year;
Then, perchance a pilgrim will pass
And find a shade by the bleak highway."

—Richard Posey Campbell.

Civilization Going North.

The earliest civilization arose in the warm regions of Egypt and Mesopotamia. As man acquired the art of resisting cold by means of better houses and clothing and fire he was able to endure colder climates. Northward the star of empire made his way. Crete, Greece, Rome, Byzantium, and later Northern Europe. Tacitus considered the climate of Germany and England too cold for civilized man. A dense population in high latitudes was impossible so long as wood was the only fuel, for the forests had to be removed to give room to fields. But the introduction of coal enabled cities to grow to any size. Gil-Pillan traces the ridge of continental civilization along the isotherm of 50 degrees Fahrenheit mean temperature. The five leading cities, New York, London, Paris, Berlin, Chicago, are within a little more than a degree of this. He ventures to predict that in the year 2000 cities like Detroit and Copenhagen will be in the position of cultural leadership, and by A.D. 3100 it will be the turn of Montreal, Chhatlatante and Memel. Vilhjalmar Stefansson holds the same theory of the northward trend of civilization, and I do not know that he would stop short of the pole.

But such predictions are obviously based upon the course of the cultural movement in the past, and this is due to man's increasing control of heating appliances, by which he can fight the excessive cold in northern latitudes. If now, science should endow man with the control of cooling appliances by which he can fight the excessive heat of southern latitudes, might not the tide turn? When systems of cooling buildings become as well developed as heating systems are now many not even the tropics become habitable to the highest civilization? We are already, thanks to refrigeration, beginning to live off the tropics. Perhaps sometime, we may, by the same means, be able to live in them.

Preferred Earache.

Mrs. B. writes that her little boy remarked that he'd much rather have the earache than the toothache, because he didn't have to have his ear pulled out.

The Tyranny of Order.

What an excellent thing order is, the essence of accomplishment, the foundation of life! Plan your going and coming, plan your expenses, plan your clothing, plan your thoughts, on such a basis you will go a long way.

And some seem to be born with the instinct for it: when they are children their toys are in their places, their clothes are neat and tidy, their ideas are neat and tidy, with a spruceness that gratifies parents and teachers and that need not offend friends if it is accompanied by other amiable qualities. And some are born without it and could not acquire it if they lived a thousand years. Their lives drift; their souls drift. They are always a little late, always a little unmended, always a little in debt, and as a general thing they are frightfully unconcerned about the matter. It is their friends that have the concern—and endure the consequences. And some, again, achieve the sense of order by painful effort, their own or their parents'; and, though the instinct is never quite so perfect as when it is innate, it is all the more valued for the pains of acquisition and is even more likely to lead to fruitful accomplishment in the end.

Oh, yes, order is a splendid thing; but there may be too much of it, and those whose lives are fully subjected to it are too quick to make it a burden to others, says a writer in Youth's Companion. They not only come and go themselves with admirable regularity and precision but they demand that others shall do the same. Their lives are guided by the clock, and they feel that if they can't find a hundredth of a second's time to do as they please, it is a terrible loss. What is the use of having a house tidy and meals prompt and clothes well pressed and mended if careless fingers soil the paint, and forgetful appetites sully the meals, and hasty tardiness gets the clothes on awry and spoils the staid before they are two days worn? So order tyrannizes over others.

And it tyrannizes over itself. For when life is all planned you hate to break the plan. And after all, healthy life is nothing but a succession of breaks and interruptions to which you must adapt yourself with dreadful detriment to all preconceived system. So that the slaves of order are likely to have but an unhappy time of it, and they look pale and thin and anxious in a world that has endless possibilities of diversion if only you do not try to force it into your one rigid mould.

Order may be heaven's first law; very likely it is. But there are a lot of other laws.

Death and the Flying Man.

A flying man went trailing Death;
But his intrepid soul,
When at last they met and clinched,
Was left both gay and whole.

"There are other wings," said Death;
"Spread them in the light;
Drop the wood and drop the flesh;
Try a longer flight!"

"Good!" said the flying man,
"I'll go on with you."
But the shreds he left behind
Were all men had to view.

Something they laid in hollow earth,
With a box and shroud;
They could not hear the laugh that dropped
From a high, bright cloud.

—Marion Couthouy Smith.

Didn't Work.

Mr. Justjoined—"What on earth are you trying to do?"
Mrs. Justjoined—"I was reading about cooking by electricity, so I hung the chops on the electric bell, and I've been pushing the button for half an hour, but it doesn't seem to work."

Famous Fasters of History

Fasting, self-imposed, such as is now being practised by several of the inmates of Mountjoy Prison, Dublin, is by no means peculiar to modern times or to the present political conditions. All through the ages there have been persons who were willing and eager to demonstrate their capacity for doing without food or drink, and as early as the fourteenth century there is a case on record of the "hunger strike" pure and simple. Some of the details of these fastings are so extraordinary and so obviously exaggerated that we cannot help wondering how even the people of those times could have given them credit; but numerous cases are to be found where careful tests were applied and truly remarkable results vouched for by reliable witnesses.

In 1387 Cecelia, wife of John de Ryegway, was thrown into Nottingham Prison for the murder of her husband. Whether the lady was guilty or not cannot be ascertained, but she seems to have considered herself ill used, for on trustworthy authority she remained in the prison for a period of forty days, at the end of which time she was released and granted a pardon, her power to abstain from food being considered as a gift from heaven and a sign of her innocence.

Another very similar case was that of John Scott, who in 1581, having failed in a law case, abstained, presumably by way of protest, from all meat and drink for thirty days. The King having heard of this and being resolved to test the truth of the report, ordered Scott to be locked up in a cell in Edinburgh Castle with only a small quantity of bread and water. After thirty-two days it was found that the bread and water had not been touched, and from the fact that Scott immediately on his release went out and harangued the crowd that was awaiting his appearance he would not seem to have suffered greatly as a result of his ordeal. Later the same man, on being thrown into prison for declaiming against Henry's divorce from Katherine, fasted for a period of fifty days.

Among those cases in which it is difficult to believe that there has not been some exaggeration may be mentioned that of a young lady of Wigginton, Staffordshire, Mary Vaughan by name, who, having been from birth accustomed to only small quantities of food, became famous for the very meagre amount on which she was able to subsist.

It was said that her daily fare consisted of nothing more than a piece of bread and butter of the size of a fifty-cent piece, or, if it were meat, as much as a pigeon's egg at most. She drank only water or milk, or both mixed, and of these not more than a spoonful a day. Yet she was spoken of as a maiden of fresh complexion and healthy constitution, very religiously disposed and therefore the less likely to practice a deceit.

In confirmation of these remarkable statements it was further mentioned that any food in excess of this or any other liquids always made her sick.

Perhaps the most remarkable case of fasting as also one of the most tragic was that of the "fasting girl" of South Wales, who in 1869 was exhibited by her parents as having eaten nothing for two years. This statement being open to doubt and persistently maintained, certain zealous in the cause of truth arranged that four trained nurses should be in continuous attendance. This was done and after eight days of fasting the unfortunate girl died. The parents were tried and convicted on a charge of manslaughter; but we are not aware that any action was taken either against the nurses or those who employed them.

Miracle Complete.

"Nor had the smell of fire passed on them."—Daniel iii. 27.

In fiery furnace heated seven times,
Full many a Shadrach walks untouched by flame.

That leaves the fabric of the soul unscathed,
Yet leaves thereon no lingering trace behind.

These in the faithfulness of God have known
A sevenfold compensation for their own.

But friended, if e'er you've dared to play with fire,
Yet, by His boundless grace, not been consumed.

'Tis you who most will tune your thankful lyre
In praise for mercy's miracle complete.

When o'er the very vapor of the fire
No longer clings unto your soul's desire.

—Elda M. Piero.

Concert Audiences Are So Different.

A well-known American traveller and writer tells of his experience at a concert in an Italian centre of musical culture. A singer who had rarely passed her prime was on the programme. At the close of her number there was a chorus of hisses and jeers, then prolonged applause until the singer reappeared. As she bowed her way off the stage the applause continued, till she finally responded with an encore. This again was followed by hissing and jeering, which changed to applause till she reappeared and was booed off the stage. Apparently the public was getting fun out of mocking at the shortcomings of the singer and were recalling her for the pleasure of humiliating her by showing their disapproval.

In Great Britain things are quite the reverse. The singer who has risen to the state of artistry in her profession and who has won the approval of the public can count on its loyalty to the end. Though the brilliancy of years may have faded from the outer compass of the voice, so long as the artist selects songs suited to his or her remaining tones and interprets the composition with insight into its art, the public remains true to its old friend.

Builder of Great Pyramid Knew Figure of Earth to an Inch.

The designer of the Great Pyramid in Egypt must have had an absolute knowledge of the figure of the earth, an oblate spheroid flattened at the poles, according to Colonel A. O. Green, of the Royal Engineers in Egypt. This assertion is based on the fact that the pyramid stands at the true centre of the land surfaces of the globe, according to Mercator's projection.

It is truly oriented to the four cardinal points of the heavens with an accuracy apparently unattainable in any building at the present time. The "Great Circle," coinciding with the centre lines of the ascending and the descending passages, and the "Grand Gallery" must, at the date of building, have coincided with a wonderful stellar conjunction which can recur only once in every 25,826 years, the number of years in the precession of the Equinoxes. Hence, according to Col. Green, this establishes the date of the commencement of the construction of the Great Pyramid as 3170 B.C., at which period Egypt was ruled over by the hated Hyksos, or Shepherd Kings.

In carrying out the measurements of both space and time two units have been used, the "pyramid inch," which is equal to 1,001 British inches, and the "sacred cubit" of twenty-five pyramid inches, or 20,025 British inches, which has the same length as the cubit employed in the construction of the Tabernacle, the Ark of the Covenant and King Solomon's Temple, and is exactly one twenty-millionth of the earth's polar axis of rotation.

By dividing the length of one side of the Great Pyramid, which is 9,131,055 pyramid inches, by the sacred cubit, the product is 365,242, the exact number of days and fractions of a day in the solar year.

The two diagonals of the base added together are within a fraction of the number of years in the precession of the equinoxes—namely 25,826.6.

The estimated weight of the Great Pyramid is just one billionth of the estimated weight of the earth, or, roughly, 6,000,000 tons. There is enough stone in it to build a wall six feet high all around France.

Bears and Forest Fires.

Bears frequently find themselves in "hot water" during a forest fire, though it is not always the fire alone that causes the trouble. For example, there is the bear that fire once routed from his lair on a ranch in British Columbia. Perhaps his tail was singed; perhaps there was smoke in his eyes; at any rate in his dash for open country he collided with a mule.

Jack immediately played a double bluff with his capable hind hoofs, and brain promptly stretched out on the ground. Thoroughly angered, he picked himself up and cautiously approached the mule from a different angle. Down came the huge paw on the mule's ribs. But the mule shifted quickly, and the next instant was on his feet, and the bear stretched out again and this time closed his eyes.

The ranch owner, who had witnessed the unusual encounter, dashed to the house for a rifle, but before he could return the bear had got unsteadily to his feet, and was meandering back toward the forest fire. It was less exciting there!

During another forest fire a ranger came upon a cub with severely burnt feet and body. The youngster was whimpering pitifully, and so the forester put it into his automobile and made it fast with rope. But when he started on his way he discovered that the mother bear had appeared and was following in hot pursuit! Moreover, since the road ran uphill, she was gaining!

The forestry instructions do not cover a case of that kind, but the ranger was resourceful; he decided to throw the cub overboard. But his attempts to untie the knots were futile. He glanced back; the mother bear was only a few yards behind. He looked to the right and to the left, and just then with a mighty effort the old bear threw herself upon the back of the car. At that important moment the forester dived over the side. He regained his feet in time to see the automobile continuing its journey with a happy family reunited. Later he found it at the side of the road. Everything was intact except the side of the seat to which the cub had been tied; the old bear had torn it out to release her offspring.

All Will Be Fine.

"Sir," said the haughty lady who was holding up traffic, "I never hold a conversation with a man to whom I have not properly been introduced."

"That's all right, madam," replied the traffic cop, as he jotted down her number, "you meet me in the Police Court tomorrow morning at 10 o'clock and the Judge will attend to that little formality."

Too Much Tonic.

Mrs. Smith (thoughtfully)—"I'm afraid I shall have to stop giving Tommy that tonic the doctor left for him."

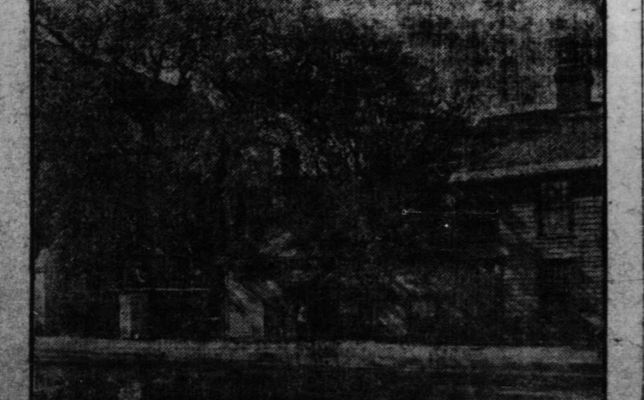
Mr. Smith (anxiously)—"Why, isn't he any better?"

Mrs. Smith—"Oh yes. But he has slid down the banisters six times this morning, broken the hall lamp, two vases, a pitcher, and a looking-glass, and I don't feel as if I could stand much more."



AN HISTORIC MYSTERY

Who carved the totems of British Columbia? How they did the work, their age and meaning, are questions of perpetual interest to those who have studied them. The picture shows a famous totem of the Vancouver Island Kwakiutl Indians. The mouth, nose and ears are carved in the shape of a bird, and the body is a human figure. Tradition tells that they invited a rival tribe to a "potluch" and as the men were admitted one by one through the mouth of the "Thunder Bird" they were murdered by their hosts.



UPPER CANADA'S FIRST COUNCIL CHAMBER
The historic house in Kingston in which the first council of Upper Canada conducted its deliberations.