

HALLEY'S COMET BRIGHTEST IN FORTY-EIGHT YEARS

Appears Every Seventy-Six Years and Will Be Conspicuous Object in This Winter's Sky.

Halley's Comet has now come within the range of astronomical photography, and in the course of a few weeks it will be a conspicuous object in our heavens.

This comet takes about seventy-six years in which to travel the elliptic path around the sun. Halley, who was the second Astronomer Royal, first traced its orbit and set forth the time taken to traverse it, and that under circumstances constituting one of the most interesting chapters in astronomical annals.

Sir Isaac Newton, having set forth the law of gravitation and demonstrated that by its operation the planets move around the sun in elliptic paths, set himself to explain the motions of comets. A great comet appearing in 1680, he availed himself of all the observations made of that body, and of other similar bodies recorded in earlier times, and calculated this comet's path, showing that it moved in a long ellipse. At the same time he showed that it was possible not only for a body to move in a path of elliptic form, but also along a parabolic curve. In other words, that it might come from an infinite distance on the one side, pass round the focus, and pass off to an infinite distance on the other side, and so never return. Thus, some comets move in a closed path and some in an open one.

Halley then set himself to gather together all the reliable records of such comets as had been carefully observed and to apply to them the Newtonian theory. The result was that he set forth the paths of twenty-four of these heavenly bodies.

Halley's investigations.

In 1682 a large comet appeared, and Halley at once investigated its phenomena and entered into its history. In so doing he found it to be very similar, both in appearance and in the orbit along which it traveled, to a comet which had appeared in 1077, and to another which had appeared in 1531. It therefore seemed to him probable that these three comets were one and the same body. This hypothesis he tested in every way at his command, and, assured in his own mind, he predicted its return about the year 1758. Knowing that he himself would have passed away long before that time, he wrote: "Wherefore if it should return, according to our prediction, about the year 1758, impartial posterity will not refuse to acknowledge that this was first discovered by an Englishman." On Christmas Eve, 1758, the comet was detected, and passed the sun at its nearest at midnight of the 12th of March. No wonder the name of this great astronomer has been given to this comet. It appeared again in 1835, and is at this very time rushing once more into visibility.

Let it not be supposed that the calculation of a comet's path is at all an easy matter. It is not simply a question of the attractive power of the sun. Many other considerations have to be taken into account. As a comet passes thru the solar system it is exposed to attractive forces on every side. Take this comet. It journeys beyond Jupiter and Saturn and Uranus almost to the orbit of Neptune. Halley failed to take these disturbing influences into account. But as the time for the comet's return drew near other astronomers carefully recomputed the path, and possessing improved methods made allowance for the attractive forces exercised by the planets Jupiter and Saturn. Clairaut estimated that the comet would be retarded by Jupiter 18 days and Saturn 100 days, and fixed the time of nearest approach to the sun, called the perihelion, at about the middle of April, 1759. This calculation was only a month out. It is noticeable that the astronomer stated that as the comet traveled so far into space it

might be subject to disturbance from some planet too remote to be perceived. At that time neither Uranus nor Neptune had been discovered.

Appearance Recorded in B.C. There are many records of the appearance of this comet. One of these was in B.C. 12, in the reign of the great Augustus. Another was in A.D. 86, shortly before the destruction of Jerusalem, and was regarded as a grave portent. It was very conspicuous also in the reign of Justinian, A.D. 531. The Bayeux tapestry preserves a quaint representation of its appearance in 1066, the year of the battle of Hastings, when it filled the minds of the people with superstitious dread.

It seems as tho it has become shorn of some of its early splendor, but in all probability it will form a conspicuous object in our winter sky. If so, it will be a matter for general gratification. The youth and early manhood of this generation, indeed all on the younger side of forty, have never seen a large comet. In the last century there were five of the very largest to be seen. These were the comets of 1811, 1843, 1858, 1861 and 1882. The last, however, was not so distinct as the earlier four, and did not rise in these latitudes until after midnight, but it was a glorious sight in the southern hemisphere. The comet of 1811 was perhaps the largest comet ever observed; that of 1843 was remarkable for the rapidity of its movement and for the closeness of its approach to the sun; that of 1858 for three months was one of the most magnificent of cometary displays, while that of 1861 is famous for the suddenness of its appearance and for the fact that the earth passed thru the centre of the sweep of its tail.

This leads to the remark that the substance of a comet must be of the most tenuous kind. The great comet, known as Donati's passed between the earth and the noticeable first-magnitude star Arcturus, and that very near to the nucleus. The writer remembers to the nucleus. The star suffered no diminution in its brightness. Sir John Herschel carefully observed, as Biela's Comet came between the earth and a cluster of very minute stars only to be seen by a powerful telescope, that it made no difference in their brilliancy. We have, however, no observations as to the effect of the passing of a comet of a large comet between the stars and our earth. In that case there would no doubt be light refraction, even if not a total eclipse of such stellar light.

What Comets Are Made of.

The spectrum shows that comets consist of hydrocarbons. Now the heat to which comets are exposed at the time of perihelion must be beyond all human conception. Newton calculated that the 1680 comet actually grazed the sun's surface, coming within half a million miles of its centre, and that its temperature must have been 2,000 times that of red-hot iron. In the same way the temperature of the comet of 1843 must have been raised to a heat in which the most infusible substances of earth would have vaporized. Accordingly, as a comet approaches the sun the hydrocarbons break up into free carbon; and as there is no air, and this free carbon cannot burn into gas, it exists in the form of incandescent particles of an infinitesimal size. These particles are so fine that the mechanical pressure of the solar light (a force only recently understood) far exceeds the force of the sun's gravitational pull, repels the tail must not be overlooked that the comet is not a solid body, but an atmosphere. The ethereal medium is imponderable, and there is nothing to sweep the tail in the direction of motion. Understanding these things we are no longer surprised that Newton's comet in 1680 should have emitted in two days a tail 20,000,000 leagues in

length. Accordingly, the matter of the tail is continually being drawn from the nucleus so long as the comet remains sufficiently near to the sun; and being finally dissipated, to the extent the cometary bulk is lessened. May we not, then, say that every return to the sun marks a definite abbreviation of a comet's life? This mode of formation at once explains how it is that a comet's tail is always turned away from the sun, flowing behind the nucleus as the comet approaches the sun, then swinging clear round and streaming before as the comet recedes. Its return journey into those depths of space out of which it came. It will thus be seen that whatever

may be the weight of the comet's nucleus, which would seem to be made up of lumps of solid substances held loosely together, as a snow, and subject to vaporization by the action of the sun's heat, the weight of the tail is altogether inappreciable. The consequence is that while a comet's motion may be seriously affected by planetary attraction, the planets themselves are absolutely unaffected by comets. In spite of the existence of hundreds of thousands of cometary bodies travelling in all directions, most of them invisible to the naked eye, they are the cause of no planetary disturbance. In this we have a guarantee for the stability of the solar system.—London Daily Mail.



LA PRESSE.

Canada's Great French Newspaper.

Montreal and La Presse—speak of either and you naturally think of the other, so closely have these two been identified for the past 25 years. The distinction of being the first and only Canadian daily newspaper whose circulation has reached the 100,000 mark is perhaps less than that of having been, for almost a generation, the national newspaper of a large and important part of the population of Canada.

La Presse has been identified, from its earliest days, with almost every movement for the betterment, physical, social and intellectual, of the French population of Canada. It was the pioneer in the French field, and one of the first papers in all Canada, to introduce modern ideas of journalism into its make-up. Its policy has been to furnish the public, of all ages, classes and occupations, with the most entertaining and instructive reading, the highest class of illustration, Saturday literary supplements, colored pictorial sections, dramatic reviews, information column, and all those other features

THE DAILY NEWSPAPER JUST 200 YEARS OLD

An Institution That Has Kept Step With the Progress of the World.

Two hundred years ago the good people of London awoke to find themselves the possessors of what no people ever before had possessed—a daily newspaper. The Daily Courant was a tiny, single-sheet publication, appearing six times a week. Like all its suc-

cessors, living and dead, it was intended to supply "a long-felt want." The particular demand existing at that time was the desire of the people of London to obtain news of the campaigns being waged on the continent by the Duke of Marlborough, for in the good year 1709 Europe was bleeding in the war of the Spanish succession. The history of daily newspapers from that day until this is the history of the world, but there is a particular trade history which is of interest even to those not engaged in journalism.

The United States and Canada, now boast 2500 daily journals and the rest of the world has about as many. There are 60,000 newspapers and other periodicals in the world, 23,000 of which are published in the United States and Canada. More than half of all the periodicals in the world appear in the English language. The development of modern journalism has been the peculiar mission of the English and American nations. It is fitting, therefore, that London should have the honor of being the birthplace of the daily newspaper and that it should now be the home of the most powerful of all daily journals, the United States.

The First Newspaper. The newspaper, however, is an Italian invention, leaving aside the Chinese antiquities and reckoning only the western world, the first newspaper editor was Julius Caesar. The Roman did not possess the facilities of the 20th century, but he had the soul of a press agent. He used the dead walls of Rome to display bulletins of the news—news carefully ordered to suit the political desires of Caesar. This early effort at publicity is barred, still the Italians have the honor to the first newspaper. In the latter part of the 16th century the first regular publication of a bulletin containing information for the public was undertaken in Venice. These bulletins were printed, but were written on "gazetta," from which comes the English newspaper title "Gazette."

The popular clamor for news of the war between the Venetians and the Turks was the "long-felt want" supplied by the appearance of these "gazettes." The files of 60 years of its issues are preserved in a museum in Florence.

The first printed paper was the English Mercure, a religious publication which appeared in London in 1588. The earliest real newspaper was the London Weekly News, born in 1639. For 90 years the London press led a varied life, more than 300 newspapers were published. But in the fullness of time several weeklies were firmly established, and there were seven three-a-week journals in England when the Daily Courant made its bow to the public in the autumn of 1709.

Early Muckraking Suppressed. The first newspaper venture in America was a trade feature, Richard Pierce, of Boston, in 1690, began the publication of Public Occurrences. He declared in his salutatory that there were no rumors floating about Boston and that the mission of his paper was to record them and then trace them to their source. Mr. Pierce appears to be entitled to the honor of being the first time the newspapers had depended altogether upon official sources for news.

pressed the sheet after its first issue, solemnly declaring it to be a "pamphlet which came out contrary to law, and contained reflections of a very high nature."

A generation later Benjamin Franklin confided to his mother his intention to start a newspaper. The worthy woman exclaimed: "What can you be thinking of; there are two newspapers in America!" As a matter of fact there were five, but three of them were so far away that Mrs. Franklin had not heard of them.

The first daily newspaper in the United States, the American Daily Advertiser, appeared in Philadelphia in 1784, three years after England had acknowledged the independence of the States and five years before the beginning of the government under the constitution. The New York Daily Advertiser followed in 1785, and in 1786 the Pittsburgh Gazette began its prosperous career.

Our Century Old Newspapers. The United States now has 85 newspapers more than a hundred years old, and in this respect at least America is quite as old and quite as mature as her European sisters. Many of the 35 members of the "newspaper century club" are still weeklies, but most of them, weeklies in 1809, are now dailies. The Baltimore American and the Charleston News and Courier are the most venerable. The majority of the century-old publications are in the eastern States, of course, Pennsylvania leading the list with 18.

The growth of the newspaper business was so great by 1830 the United States, with 13,000,000 population, had more newspapers than all Europe, with 190,000,000 people. The American record was surpassed in 1850 when the United States still has more newspapers than all Europe, and until the rise of newspapers in Asia it had more than all the rest of the world.

The New York Herald, founded by James Gordon Bennett in 1835, was the first of the modern school of newspapers. In December of that year a great fire in New York destroyed property worth \$20,000,000. Mr. Bennett wrote a report of the fire, with "human interest" embellishments. The people were astounded and the story was repeated in the Herald on the second day in response to popular demand. That time newspapers had devoted practically all their attention to politics and political news, and to news from other cities. Local news was ignored. If a fire occurred it was supposed that everybody knew about it; already and that it would be silly to print anything about it. Mr. Bennett wrote all about the great fire and made the great discovery that the people who see a thing are the very ones who most want to read about it. He made another discovery at the same time, that "human interest" is quite as much a feature of the news as is "importance."

Rise of Special Correspondents. In England the Times became supreme in the journalistic field in the latter part of the 18th century. In 1807 the Times sent a special correspondent to the continent to report the Napoleonic wars. Before that time the newspapers had depended altogether upon official sources for news.

Within a year the Times demonstrated the usefulness of the special correspondent by sending an important news to the government days in advance of the official dispatches. From that day until this the special correspondent has been an increasingly important factor in international affairs, and the Times has occupied a position of commanding influence in the world of journalism. But the English idea, as exemplified in the Times, had to fall before the more catholic American idea, and the English newspapers of the largest circulation do not fail to realize the importance of "human interest."

These beginnings of the newspaper compared with the journalism of today. The invention of the locomotive and the telegraph, each in turn, aided enormously in the development of the press. In the time of the American Revolution the newspaper was the most powerful factor in the evolution of the newspaper of today. During that conflict the American newspapers began the use of the telegraph for gathering news, they illustrated their dispatches with drawings and maps, and they learned how to write headlines and turn out extras.

The next great event in the development of the American press was much of war, as we see now, but it seemed to be the biggest thing in the world just then. And the newspapers did the largest impossible things every day, which have continued to do every day since.

What wonders will be developed in the next century no man may say. It appears that war has been a most potent influence upon journalism. If there shall be a great war in Europe, what then? What with aeroplanes, having wireless apparatus attached, telephones, and with things not now unfolded to the gaze of man, it is safe to say that the newspapers would set a new mark for themselves and fill every "long-felt want."

Respect for the Music Makers. Philip Hale quotes from Mrs. Landowska's book on old-time music, a story that bears retelling: Mrs. Landowska happened to play with a string quartet. The train was late that night, and the quartet and they had no time to don the conventional concert dress. A well-known public man came to talk with them in the intermission. "I did not miss your dress coats and skirts," he said, "but one thing always shocks me in a concert: to see true artists after the performance of a masterpiece of Beethoven or Mozart, come forward to bow in answer to the applause. It seems to me more just, more dignified, if the audience rose to salute the artists or the masterpiece."

Proper Style. Homer—"Say, is it true that they eat horse meat in Paris?" Trotter—"Yes." Homer—"And how is it served?" Trotter—"A la cart, of course." Chicago News.

Keeps Her Suspicious. "Mrs. Clousemore has lots of trouble with her laundry." "Is that right?" "Yes, if the bills are small she thinks they're keeping her clothes, and if they're big she thinks she's overcharged."—Puck.

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Explorer Stanley Was Too Bashful To Make Speech

William H. Rideing tells in the December McClure's of a dinner of the Papyrus Club in Boston at which Henry M. Stanley, the explorer, was the guest of honor.

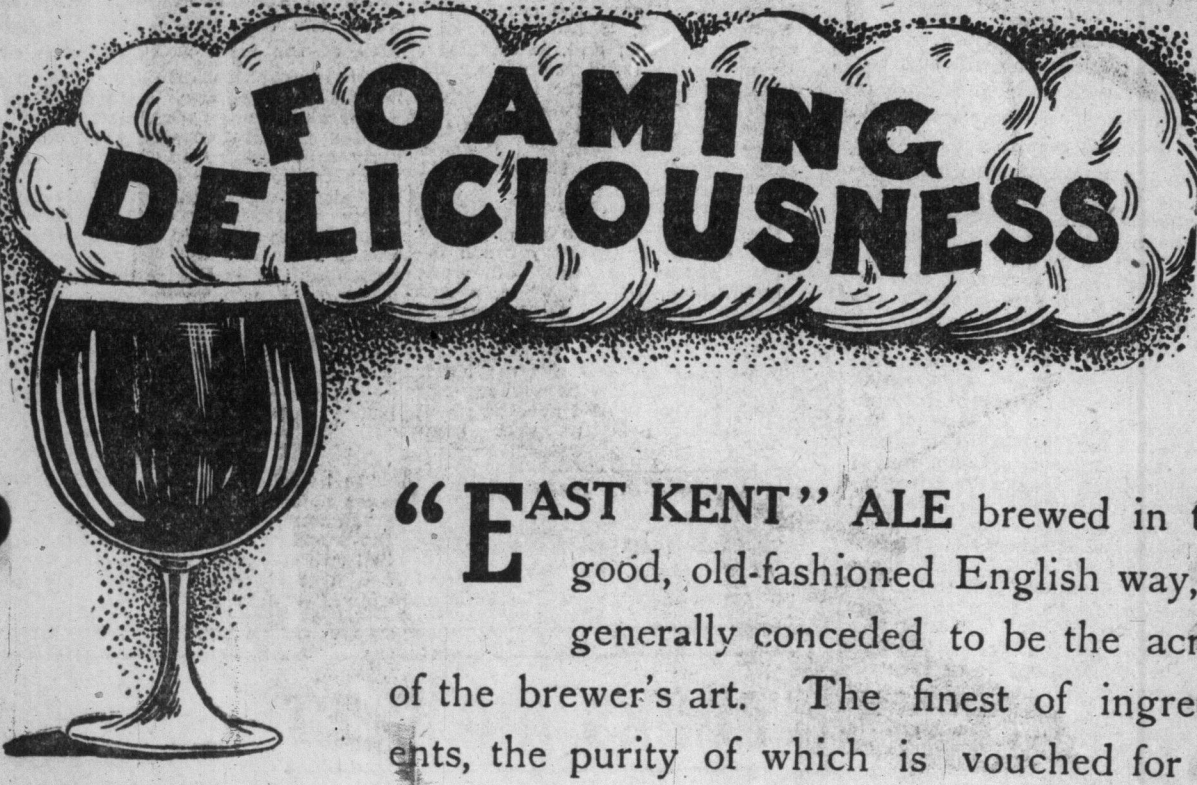
"Whether he (Stanley) sat or stood, he fidgeted and answered in monosyllables, not because he was unamiable or unappreciative, but because he—him, of iron, God's instrument, whose word in the field brooked no contradiction or evasion, he who defied obstacles and danger and pierced the heart of darkness was bashful even in the company of fellow-craftsmen."

"His embarrassment grew when, after dinner, the chairman suggested that he should address the assembly. He stood up, but he did not speak. He looked at the audience, he quivered and averted his face as cheer after cheer confirmed the speaker's rhetorical ebullience of praise. 'Gentlemen, I introduce to you Mr. Stanley, who, etc. The hero stood up slowly, painfully, reluctantly, and, with a gesture of deprecation, he stumbled in first and then another of his pockets without finding what he sought."

"It was supposed that he was looking for his notes, and more applause took the edge off the delay. His mouth twitched without speech for another awkward minute before, with a more erect bearing, he produced the object of his speech, a book on his head. It was not paper, but a rag of a cap; and, with that on, he faced the company as one who by the act had done all that could be expected of him, and made further acknowledgment of the honors he had received superfluous. It was a cap that Livingstone had worn, and that Livingstone had given him."—Newark News.

Medicine in China. From The North China Herald. Much is heard in these days of the awakening of China, and undoubtedly progress is being made in various directions. But medical science, as it is known to the native practitioner, remains pretty much in the condition described in the memoirs of Le Comte, published in the seventeenth century. For centuries medical knowledge has been at a standstill, and the population has been at the mercy of the ignorant charlatans who pass themselves off as doctors. In spite of over half a century of close contact with Europeans the Chinese doctor of to-day remains ignorant of the rudiments of anatomy and physiology, and has the most ludicrous notion of the functions of the internal organs and the causes of disease.

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