

The Approach of Halley's Comet

Historic Celestial Marvel, With a Head as Large as the Moon, Recently Sighted at Heidelberg, Germany, Will Soon Be Visible to the Naked Eye the World Over.

Has Traveled Thousands of Millions of Miles in Its Journey Toward the Sun - Astronomical Expert Tells Why There is No Collision Possible With It.

By FREDERIC CAMPBELL.

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AFTER an absence of seventy-five years that monster of the sky, Halley's comet, is close to its return. Already it is sighted and photographed after being waited for for years and looked for for months. On Sept. 11 Professor Wolf of Heidelberg observatory, Germany, got his great telescope on the wandering son of the solar family and wired all the principal observatories to prepare to welcome the prodigal home.

They are few who have access to the great telescopes, but those who do may now sight this celestial marvel in advance of the rest of mankind, who will have to wait till December to gaze upon the wondrous spectacle. Even without a telescope it is of interest to know just where the comet now is. Most people who understand anything about the heavens are familiar with the curiously shaded and brilliantly studded winter constellation known as Orion. This now rises soon after midnight and by 2 o'clock in the morning is well above those mists that hang about the horizon. The bright whitish star at the west of the rectangular figure is Rigel. The bright reddish one at the east is Betelgeux. Looking off to the east of Betelgeux another bright star is seen. This is Procyon. In the constellation Canis Minor. A brighter star than either is seen southward - that is, Sirius - brightest of all the fixed stars. Draw imaginary lines connecting Betelgeux, Procyon and Sirius and you have a great equilateral triangle. One-third the distance along the line from Betelgeux to Procyon stands the comet. It will not remain there, for it is mov-

ing with ever increasing speed as it nears the sun, but there is where it is. There is yet another undiscovered planet beyond Neptune is that a certain comet shows a curve which reaches out to a distant point where a planet ought to be in order to account for its introduction into our system.

Naming of the Comet.

It has been ascertained that the period of Halley's comet is in general about seventy-five years, though it is sometimes a little less and sometimes several years more, the differences being due to the influence of the planets which it passes in going and coming. This is therefore a historic comet and by no means an upstart, for it has recently been traced back to more than 200 years before Christ. Considering how young the science of astronomy is, think of being able to identify appearances of this same comet in all the following years: B. C. 240, A. D. 451, 760, 1098, 1145, 1222, 1301, 1378, 1456, 1531, 1607, 1682, 1759, 1835, 1910. In 1096 William the Conqueror was terrifying England, and the comet was looked upon as an omen of terrible disaster. In 1456 all Europe was moved to terror by this enormous sword of light held aloft nightly in the sky, and the pope directed that to the Ave Maria should be added the prayer, "Lord, save us from the Turk, the comet and the devil." It was at this time that the noonday call to prayer by the ringing of church bells was introduced, which has never been aban-

Source of Comets Unknown.

It used to be believed that comets were entirely irresponsible bodies, not under the control of the same forces that control the planets. It was not perceived that the law of gravitation has them in its grip, as well as earth, Jupiter and Saturn, and that they follow definite and well known curves. A comet originally comes from we know not where. Something has shot it through infinite space, and it happens to pass within the range of our sun's gravitating power. At once it is attracted toward the sun and compelled to sweep down out of space and around the sun before it is released. Indeed, whether it shall be released altogether a question. If the curve on which the comet approaches is what is known as a parabola or a hyperbola it stands wide open at the farther end, and the comet, having paid us a single

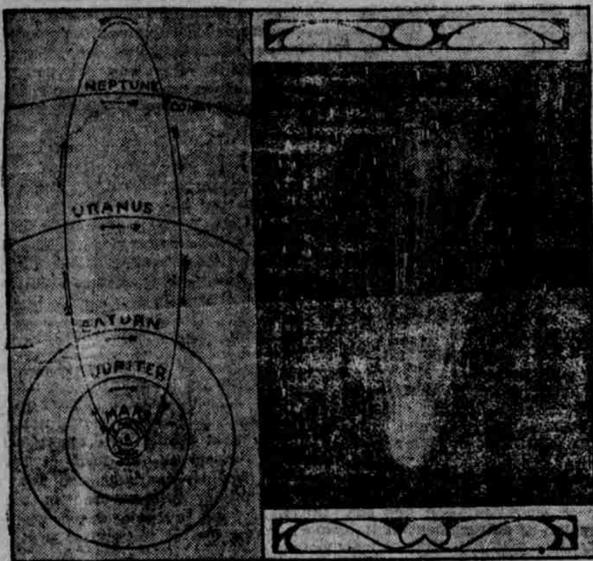
visit, sweeps back into space and never again appears in our sky. But if it be an ellipse it is closed at both ends, and, after a certain period of absence, back it comes as certainly as tomorrow's sunrise.

The truth is that all the planets, including the earth, are traveling about the sun, not on circles, but on ellipses, but their paths are only slightly eccentric, while that of the periodical comet is extremely so. A boy's round hoop when pressed out of shape becomes an ellipse, and the harder the pressure the more elliptical it becomes. Such is the path of the periodical comet. When the comet is as near the sun as the earth is, if its speed be more than twenty-six miles a second it will describe a parabola or a hyperbola and will never come back. If it be less than the same it will describe an ellipse and will return at regular intervals.

Peril in Its Head.

The head of a comet is the dangerous part, consisting probably of a mass of particles like stones, held together by their mutual gravitation. The increasing heat of the sun as it approaches that body develops vapors, which envelop the nucleus and are driven back into space in the form of the tail. It is noteworthy that the tail always streams away from the sun, going before the head when the sun retires into space. This, so long a mystery, is now believed to be due to the pressure of light from the sun, so great a force that not less than 70,000 tons of it ever rest upon the earth's surface. The tail is extremely thin, so that the faintest stars can be seen through a million miles of its thickness. The earth has once or twice passed through a comet's tail and suffered no harm. If, however, there should occur a head-on collision with the nucleus it would not only be the end of the comet, but might seriously damage if not ruin the earth. If nothing more, it would be likely to introduce noxious gases into our atmosphere, which would as swiftly produce death as the descending fumes of Mount Pelee. We have already shown that no collision is possible with Halley's comet, nor as long as we believe that human history is yet to be consummated and that a divine plan lies back of the universe can we indulge in now antiquated fears. Nothing is less probable, even astronomically, than a cometary collision. However, there is some ground for believing that in that strange curiosity of the plains, Coon Butte, Ariz., we have the evidence that just once a comet struck the earth, but if so, whether before or after the advent of man, we have no means of knowing.

Halley's comet will not be an apparition of a moment, like a meteor, nor of a week or two, like the moon. On its last appearance it was visible the larger part of a year, and certainly for months we shall have our sky, partly at night and partly in the morning, transformed by the presence of this not unwelcome stranger. It will be seen the world over. Peary at the north pole and Shackleton at the south pole would each be cheered by its radiance, and seventy-five years hence a very few very old men will tremblingly point to the heavens and say that in their youth they saw yonder spectacle once before.



ORBIT OF HALLEY'S COMET.

How Comets Are Captured. The periodical comets are believed to have been captured by some of the planets. A comet comes journeying through space under the influence of the sun, intending to pay us but a single visit. It passes so near great Jupiter, for example, that its speed is slowed down below the critical point. It is thereby compelled to change its orbit to an ellipse and stays with us for the rest of its life. Neptune is credited with capturing six comets, including Halley's; Uranus three, Saturn two, Jupiter about thirty. One reason for believing that

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Club of Baldheaded Men.

Members Agree to Go Hatless From April 1 to Oct. 1.

The Hatless Club of Baldheaded Men, which was organized in Omaha last spring, has become so popular that its scope is now almost national. Dr. Clark, the national president and originator of the movement, recently returned from Milwaukee, where 500 baldheaded men met in convention. Speaking of the results, he said:

"Delegates - all baldheaded - were present from all over the country. We adopted a rule that makes it compulsory for every member upon all occasions to go hatless between April 1 and Oct. 1 of each year. This may seem silly and like a joke, but if our members will go hatless inside of five years every one of them will have crowns covered with hair. Hats are enemies of hair."

Led Her Cow to School.

Miss Edna Cockrell, formerly a teacher in the Tonkawa (Kan.) public schools, is now assistant superintendent of the girls' industrial school at Clarkson, Miss. Writing to friends at Tonkawa, Miss. Cockrell said lately: "The girls are from fourteen to twenty years old. Most of them are very poor people, whom church people have given money to go to school. One poor girl came, leading a cow, twenty-five miles. She is going to milk the cow night and morning and sell the milk to pay her tuition."

FRIENDS OF CONSERVATION.

League Launched to Save Resources of the Nation.

TAFT APPROVES OF ITS AIMS.

President Joins National Association of Which Charles W. Eliot is Head. Preservation of Human Efficiency as Well as of Forests, Water and Mines Urged.

With President Taft's name among the first on its roll of members and with a fixed and radical policy with regard to the granting of water power rights announced, a new conservation league has been launched at Chicago looking to the care of all natural resources of the nation and taking a definite stand as to projects of conservation already under way.

The formation of the new body, which is known as the National Conservation association, was recently made public by Walter L. Fisher after he had received in a letter from President Taft permission to place the executive's name in the list of members.

President Taft's acceptance of membership is considered by the organizers as the placing of his stamp of approval on the declaration of principles incorporated in the constitution of the association.

Eliot is President.

Former President Charles W. Eliot of Harvard university is the executive head of the new league, and Mr. Fisher is a member of the executive committee. The final steps toward organization were taken in the latter part of July at Cambridge, Mass., but the fact was not made public until President Taft consented to become a member. The membership in the new league is to be composed of individuals, while membership in the organization of last year was limited to associations.

The most radical recommendations in the declaration of principles are those applying to grants of water power, which are:

- (a) The incorporation into all future grants of water power rights by state or nation of provisions to secure the following:
 - (1) Prompt development on pain of forfeiture of the grant.
 - (2) Payment of reasonable compensation for the benefits granted by the people, with periodic readjustment of the rates of compensation, so as to insure justice both to the investor and to the public.
 - (3) The limitation of all such grants to periods not exceeding fifty years and reservation of the right to terminate and reconvey the grant for proper cause and upon equitable compensation, together with proper inspection and publicity of records and accounts.
 - (4) Recognition of the right of the appropriate public authorities to make reasonable regulations as to rates and service.

The termination of all existing permits or grants for the development of water power and the substitution of new grants involving the foregoing principles as soon as may be consistent with the terms of the existing grants.

The support and extension of the irrigation of arid lands and the drainage of swamp and overflow lands.

Mr. Fisher said the plan which had been discussed in 1908 was outlined largely by President Roosevelt.

The purpose of the organization as announced is to unite in one great national organization all those who desire to give their personal influence and support to the movement. Its object is to advocate the adoption of definite measures to carry into effect the principles set forth. Each state and territory shall be represented in the board of managers.

Principles of Association.

The statement of principles declares it to be of the utmost importance that the natural resources of the nation shall be developed and utilized for the promotion of the public welfare without waste, destruction or needless impairment and subject always to their intelligent conservation and consequent preservation of the rights and interests of future generations. The first portion of the statement is a repetition of the declaration adopted by the conference of governors convened by the president at the White House in May, 1908.

In addition to the policy concerning the water powers the policy of the association includes:

- The directing of public attention to the need for preserving the fertility of the soils.
- The enactment of legislation whereby the title to the surface of public lands and to the minerals below the surface shall be granted separately.
- The protection of the source waters of navigable streams.
- The enactment and enforcement by the nation and by the states of effective laws to prevent spreading of fire in all forests.
- The regulation of timber cutting on forest land.
- The separation for purposes of taxation of the timber from the land on which it grows.
- The preparation by a commission appointed by the president of the United States of a plan for waterway improve-

ment, including the reclamation of arid lands, the drainage of swamp and overflow lands, the control of floods, the prevention of soil wash and the purification of streams for water supply.

The conservation and control of the unappropriated public range lands. The retention by the government of the title to all lands still in public ownership which contain phosphate rock, coal, oil or natural gas and the development of the same under conditions that will prevent extortion and waste.

The enactment of appropriate legislation to prolong the coal supply, to reduce waste in mining and to establish safeguards against the loss of life in mines.

One of the most advanced declarations of the association classes human efficiency, health and happiness as natural resources and makes them of equal importance with forests, waters, lands and minerals.

ENGLAND'S DANGER.

Lord Bessford Tells Why She Must Retain Supremacy at Sea.

Although Admiral Lord Charles Bessford did not mention Germany by name in a speech recently made at a luncheon given him by the Pilgrims of the United States at the Lawyers' club in New York, the men who heard him took it for granted that he had the Kaiser's country in mind when he intimated that he feared a war for his country in the near future. His most direct hit was in the following sentence, which came after a long argument in favor of an adequate British navy:

Personally I must confess that I am not at ease concerning the outlook for the immediate future. I can see red spots in the sky.

And this: If England loses the supremacy of the sea she is doomed. That will be the end of the British empire.

He supplemented that remark with this:

A European war will set back the progress of the world 100 years.

In his speech Lord Bessford said:

I am going to be very brief, for I realize that in this part of the town the time for some of you is worth \$100,000 a minute. First let me speak of my recent trip in Canada. One thing that delighted me was the cordial feeling I found among all classes toward the United States.

But the progress not only of Canada, but of the whole British empire, of the whole world, depends on the maintenance



LORD CHARLES BESSFORD.

of peace. England is the only country in the world which is absolutely dependent upon the certain and punctual delivery of food supplies and raw materials by ships. If we were at war and the trade routes were cut and there was any continued delay in the arrival of our water borne necessities of life, that would mean the end of the British empire.

All other nations can feed themselves out of their own fields or those of adjoining countries. For us everything is and always must be water borne. For us it is a necessity of life to have a navy that makes our trade routes sure. I do not speak of a navy big enough to win in war. I have in mind a navy so big that it will prevent war.

A country's naval budget is the rate of insurance which that country pays for the security of its commerce. But when the world notices that any one nation is paying a rate of insurance which on the face of it is far in excess of what is necessary to protect its coast line and trade and is borrowing money to get that high rate then the minds of other nations are naturally unsettled.

Personally I must confess I am not at ease concerning the outlook for the immediate future. I can see red spots in the sky. Many prominent statesmen of England have seen them, too, and have admitted the fact recently.

The best assurance of the peace and progress of the world would be an understanding among all the English speaking people and several nations of the British empire and the United States that there should be no war anywhere.

If England should have a war and should win, the victory would cost from a thousand to fifteen hundred millions of pounds sterling. That would mean loss here as well as in England. If we should lose, the United States would gain nothing.

Good Fellow, the Constitution.

An Italian applying for naturalization before Judge Adrian in the common pleas court at New Brunswick, N. J., the other day was asked:

"Do you know the constitution?"

"Yes," he said.

"What do you think of it?"

"Oh, he ver' good fella."

His application was refused.