

心不慧星
平切拔虫
还明以

外務省

天文台
赤尾博士

明治四十三年六月十一日 受 書 通 商 局

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明治四十三年五月十九日

在赤尾博士

紅領事上野尊一



外務大臣伯耆小村壽太郎殿

ハル彗星観測ニ系ス新聞
切核送附一件

ハル彗星観測ニ系ス新聞
地布吐ハ観測上ハ適地ニ
在置ナリトノハ本年二月

在布哇ホノル、府日本總領事館

米國天文学會より派遣セシ

天文士博士元マコト氏

布早ニ当ホル市リ距離

東南ニ哩、タイヤモンド、ハフト

附近、カイムキ、一地ツト

善ク当地有志ノ者附金

ヲ募集シ、観測所

新設シ、本年四月月上旬

成ト同時、精巧、望遠鏡

ヲ振附ケ、熟心観測、

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又別種天文学會より派遣セ

and shining on freshly fallen snow.

We are not afraid of brilliant moonlight. The moon is only 240,000 miles away, while Halley's comet at its nearest will be sixty times as far from the earth. There is this difference, though. The moon's light is reflected sunlight, the comet's light is condensed and transmitted sunlight. The earth will be out of focus of this light this time. It would take a comet over a million miles in diameter, passing between the earth and sun much nearer than any comet ever has, to affect the earth by focused light.

This can be understood by putting some burnable object in sunlight and placing a magnifying glass between it and the sun. If the sunlight is not focused on the object the glass merely lights it up. The chance of any comet passing the earth so its rays will be focused on the earth is about one in a billion. Therefore we need not worry. Venus will practically anticipate our experience by eighteen days, so we will have ample time to quiet our fears before the comet reaches us.

Much has been written about the evil effects of comets on the earth. Much of it is "entozoism." The presence of an abnormal body moving at high speed through the solar system is bound to result in some slight disturbance, but the earth successfully resists each second of its existence greater strains than any comet could possibly cause. The earth is protected by a wonderfully resilient and elastic atmosphere weighing 20,000,000,000,000 of tons. This titanic shock absorber has withstood the centrifugal pressure of the solid earth for untold ages, and the centrifugal pressure of the earth can only be expressed in myriad multiples of millions. The passage of the comet will cause local disturbances. But there is a vast difference between an eruption like Krakatoa, in a comet year, or an earthquake like those of San Francisco or Messina and a universal deluge of water or fire or extinction by cyanogen gas. There has been and will be, unseasonable weather, auroral displays, magnetic disturbances, and other phenomena, but these are not to be feared as involving destruction of the human race or its planet.

There is grave doubt in the minds of some astronomers that this comet is all of Halley's comet. The comet of May, 1909, pursued the same path and passed very close to the earth. Halley's comet may have divided, as did Biela's. Even so, it was large, or compact, enough to throw a shaft of sunlight or "tail" two million miles long on April 17, the day before it passed perihelion.

在布哇ホルル府日本総領事館

cal Society, will make observations of a spectroscopic nature.

The great question which the scientists hope to solve is as to the composition of the comet. It is a question whether the nucleus is of sufficient solidity to be visible as it crosses the sun. The only other transit of a comet across the sun that has been observed was that of the great comet of 1882, said Professor Ellerman yesterday. "That comet was so near the sun, only about 300,000 miles away, that I think its head was vaporized and became too thin to absorb light."

Halley's comet is far enough from the sun so that it will not be vaporized.

(Continued on Page Two.)

AWAITING THE TRANSIT OF COMET

(Continued from Page One.)

by the sun's heat, and there is a chance that various parts of the nucleus are large enough to cast shadows on the sun's disk. The transit will take about an hour, and the comet will be in the center of the sun at 18 minutes past five this afternoon, according to a cable I just received from Doctor Hall, which is the result of the last observations and calculations, probably at Harvard observatory.

The exact time of the earth's being within the tail can not be stated with certainty, as it is impossible to say whether the tail is curved or not. If the tail is a straight line, of course, the earth will enter it some time before the comet's nucleus begins to cross the sun, as seen from here, the tail being much wider than the nucleus, and the earth will naturally be in the tail for some time after the transit of the nucleus is over. The time of earth's entering the tail may be any time between tonight, Tuesday, and Thursday morning.

I doubt whether there will be any visible effect of earth's passing through the comet's tail. On a clear dark night it would probably cause some illumination.

Professors Lord and Coddington are at Haleiwa, where they will use the spectrograph, hoping to get some photographs which will indicate the composition of the comet. The cable received by Professor Ellerman was transmitted to them yesterday.

The question of what comets are composed of has been long a subject of speculation and controversy among astronomers. The opportunity of today is the best that has ever occurred for settling it. A writer in Collier's says:

A year ago I made the announcement that comets' "tails" were sunlight, focused and transmitted through space by the heads of comets acting as huge, spherical lenses. In other words, the "tail" of a comet is practically the same as the beam of a searchlight. This has since been proven by observation at many observatories.

When Halley's comet passes between the earth and sun on May 18-20, the earth will merely be bathed in an extra flood of light. If the passage occurs in the day and the sky be clear, we shall have a hot, brilliant day. If at night, it will be bright, as if the moon, at that time just past first quarter, were at its fullest and brightest.

AWAITING THE TRANSIT OF COMET

Scientists the World Over on the Lookout for Today's Event

SOME HINTS OF DANGER

Professor Ellerman Gets a Cable Giving Hour of Transit.

Some time today or tonight, the earth is to pass through the tail of Halley's comet, and late this afternoon the comet's nucleus or head, will pass between the earth and the sun. A cable received yesterday by Professor Ellerman, of the Mount Wilson Solar Observatory, who is here as representing the Astronomical and Astrophysical Society of America, stated that final observations and calculations showed that the comet would be at the middle of its passage across the sun at 5:15:18 this afternoon. As it will take about half an hour to cross the sun, this means that the transit will begin at about a quarter to five. The exact time of the earth entering the comet's tail can not be stated.

All over the world scientists are waiting to see what the day will reveal. Some voices of alarm are heard, but an overwhelming majority of the authorities express the opinion that the passage of the earth through the tail of the comet will not have any effect at all, except upon scientific instruments used for purposes of investigation. The present headquarters of the Astronomical and Astrophysical society are in Madison, Wisconsin, to which place the scientists here and in scores of other places will send their reports. The result of Professor Ellerman's observations here will be known at once, while those of Professors Lord and Coddington, at Haleiwa, unless very decisive, may not be fully detected or appreciated at first sight.

The hour of transit is what Professor Ellerman and the other observers came here for, and it will afford them and Professor Donaghoe of the College of Hawaii an opportunity never had before in the history of astronomy. From Diamond Head, Professor Ellerman will watch the transit, while Professors Lord and Coddington, who also represent the Astronomical and Astrophysical

HAWAII WITHIN POSSIBLE DANGER ZONE OF COMET

If Its Nucleus Should Act as a Lens and Focus the Sun's Rays on the Earth.

Hawaii is within the zone of danger which would be swept by a focal point from the head of the comet, should it act as a great lens focusing the rays of the sun and with devastating effect, according to a contributor to Collier's Weekly, New York. He says:

The gaseous head of the comet, anywhere from twelve to twenty times the size of the earth, acting as a great lens, must bring to a focal point somewhere in space the rays of sunlight which it condenses.

If this focal point should reach the earth's surface, it would sweep a path of fiery destruction along the zone it traveled. Yet, as the comet and earth are moving in opposite directions and the earth's speed is roughly sixty-six thousand miles an hour, that of the comet being about ninety thousand miles an hour, the time of passage of this focal point over the earth's surface could not be more than six hours nor cover more than ninety degrees of longitude, or a distance of one-quarter of the earth's circumference.

Fortunately there are few centers of population in the zone traversed. Mexico City and Bombay, India, are almost in line, but the only heavily inhabited regions are those of India, Siam, Annam, Luzon, and Hawaii. This does not mean that any of these places are to be destroyed by the flaming focal point of the comet. Far from it. The comet would have to be many times its present size, much nearer the earth, and of greater density, to be able to condense sunlight in the manner in which, by using a lens of glass, the focalized rays of sunlight may be made to volatilize metals.

Invisible Rays of Solar Force.
From the rays of sunlight forming the tail of the comet there is no danger to the earth. The only effect of those rays will be to cause an extra brilliant day or light night. But in the extra rays of invisible solar force, transmitted to the earth by the comet, may be a cause for earth tremors, storms, and other phenomena.

The passage of every comet between the earth and sun is always accompanied by such disturbances. The list is too long to be here cited, but any one who cares may note the remarkable coincidences of 1811, 1844, 1882. That little trouble was caused in 1835 by Halley's comet is explained by its smaller size as compared with the comets of 1811, 1844, 1882.

A French astronomer of note in March, announced that the great floods (Continued on Page Two.)

HAWAII WITHIN POSSIBLE DANGER

(Continued from Page Nine.)

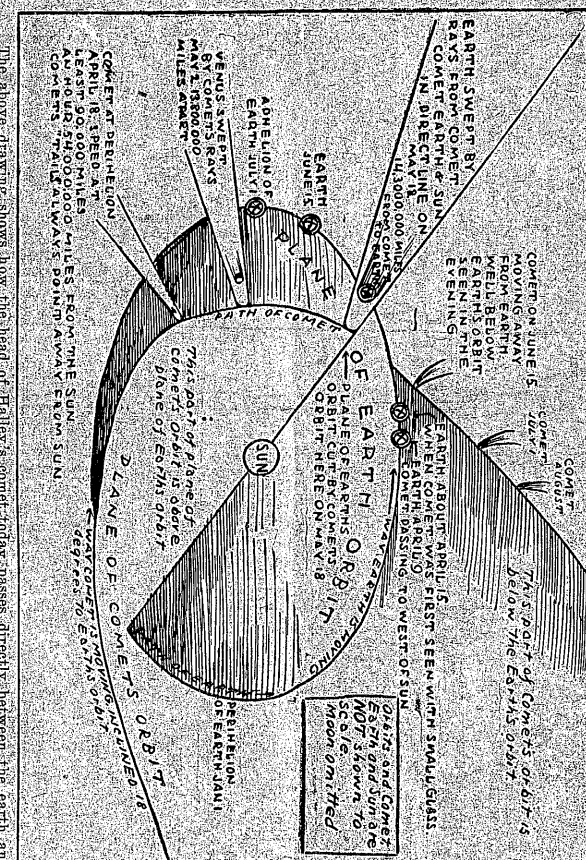
in France might have been due to the transmission of X-rays or other invisible rays of solar force by the comet of January, 1910; and his point of view has been sustained by many other observations. Since in solar force, radiating from the sun, is contained all the elements of energy of every sort, whether it be manifest as electricity, magnetism, positive or negative electrification, centripetal or centrifugal force, X-rays, Becquerel rays, or any form of energy or motion, it is quite clear that a body such as that of the head of a comet, if of sufficient size, could cause disturbance of the stable situation and condition of these forces transmitted ordinarily to the earth.

The Sensitive Condition of the Earth.

If we compare the solar system to a watch, of which the sun is the main spring and the planets the works, it is quite evident that any abnormal body entering this solar watch would be bound to disturb its regular motion, and this disturbance would depend solely on the size and density of the abnormal body. The comparison is crude, since it refers only to motion, and it is a well-established fact that comets have no effect on the motion of the earth on its axis or orbit.

Ordinarily, the earth receives only an infinitesimal amount of the energy radiated from the sun, but if between the sun and earth is interposed a rapidly moving sphere of gas, acting as a lens, and capable of focusing extra solar force on it, it is quite evident that the earth must adjust itself to absorb this extra force in some manner. The atmospheric vapors may do it by condensing into clouds, haze, or fog, thus shielding the earth from the extra light rays; but if the invisible solar force rays pass through the earth as X-rays through opaque substances, the only adjustment possible to the earth is a rearrangement of its molecular parts, equalizing in energy the extra solar energy in which the earth is temporarily bathed. Thus come earth tremors and quakes, auroras, disturbances of the atmospheric shell resulting in storms, fogs, strong winds, magnetic and electrical disturbances, and an unusually sensitive chemical condition in which potentially explosive compounds, having their slight stability upset, blow up without apparent cause.

POSITIONS OF THE EARTH, THE SUN AND HALLEY'S COMET, CROSSING THE SUN TODAY



The above drawing shows how the head of Halley's comet today passes directly between the earth and the sun and as the tail always points away from the sun, causes the earth to pass through the tail. Here are shown the orbits of the comet and the earth with the imaginary plane of both orbits. The earth and comet are moving in opposite directions as shown by the arrows. The varying size of the comet is comparative only to show how it appeared and will appear at different times. The curve in the tail is due to the way it is seen through the convex lens of the earth's atmosphere. By looking toward the sun from the plane of the earth it will be seen why the comet appears to be approaching the sun when it is really departing.

在布哇ホルル府日本総領事館

ained a small party at dinner, picnic style, on the picturesque slope above the sea, the party afterwards being treated to some fine opportunities to view the heavens through the big glass. Professor Donaghio, fresh from his work at Kaimuki, was a caller between six and seven o'clock. The two observers each laughingly expressed satisfaction that their observations, or lack of observations, were the same.

Just Normal.

"The sun was just the same as on any normal day," said Professor Donaghio. "The comet made no appearance." (Continued on Page Four.)

JAPANESE ON HAWAII WERE MUCH ALARMED

(Special by Wireless.)

HILLO, May 13.—The Japanese laborers on the Olan plantation at Wainaku, and generally throughout this section, refused to go to work today, remaining panic-stricken in their houses. They are terrified at the report that the comet was likely to run into the sun and bring about the end of the world.

COMET'S HEAD IS ONLY GAS

(Continued from Page One.)

ance at all in our telescope, which was as I expected. This proves, of course, that there is no very large solid body in the head of the comet.

The comet has not yet reached its nearest approach to the earth. It will be nearest some time during the twentieth of this month, Greenwich time, after which it will rapidly depart. It will be an evening spectacle from now on, but the moon will so light up the sky that it will not be seen again as large appearing or brilliant as on recent mornings. But for the moon, its largest appearance would be this evening and tomorrow evening.

Rain at Haleiwa.

Intense disappointment was the lot of the two scientists at Haleiwa, Professor Lord and Professor Coddington of the Ohio State University, who have come here with all their instruments to carry out special experiments in connection with the transit of the comet across the sun. Yesterday, at Haleiwa, throughout all the period of transit, the sky was heavily overcast with clouds and rain prevailed, making the work of taking any observations at all impossible.

Last night Professor Lord telephoned in to The Advertiser announcing the dismal finale of his long trip. He appeared philosophical over the situation, however, saying when condolences were extended:

"Well, it could not be helped."

COMET'S HEAD IS ONLY GAS

1915

Astronomers at Kaimuki Could Detect Nothing Solid When Transit Occurred.

IT RAINED AT HALEIWA

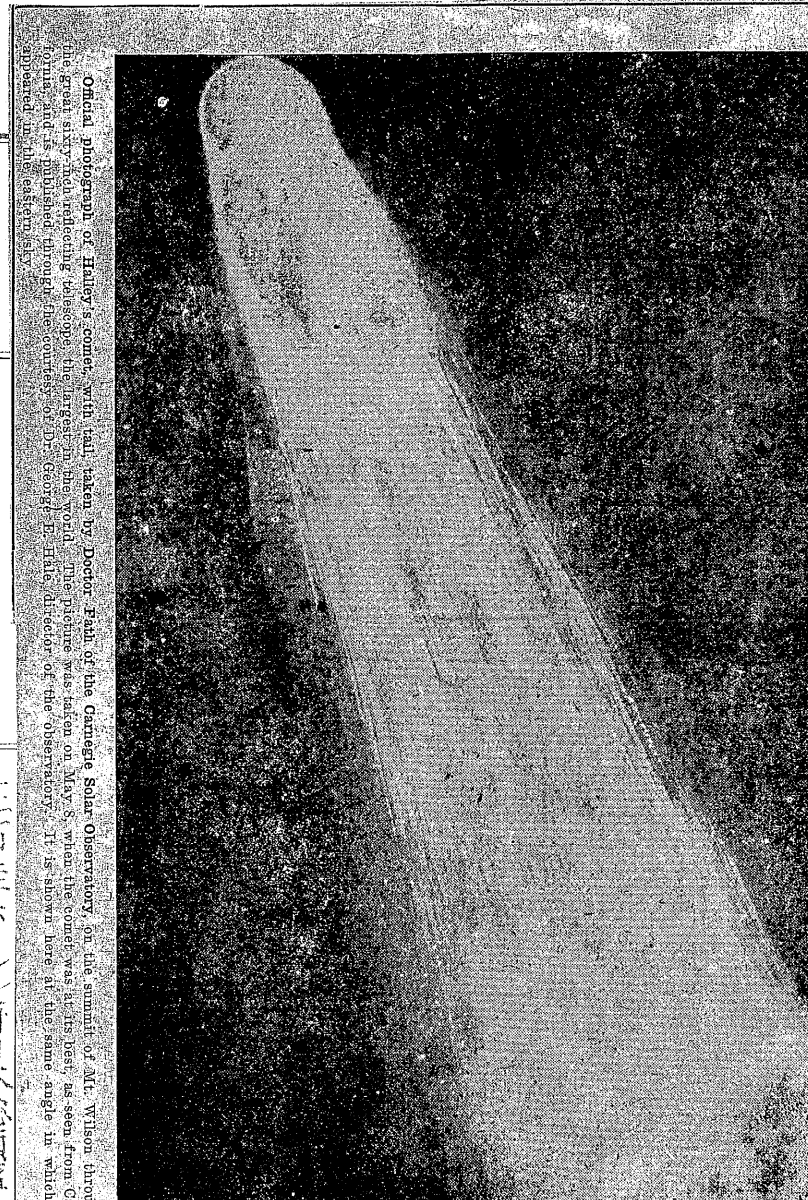
Weather There Made Abortive All the Preparations of Mainland Scientists.

The nucleus of Halley's comet has no body of solid matter large enough to be visible through a six or six and four-tenths inch telescope, with the sun as a background. This was the conclusion reached yesterday as a result of the observations made at Diamond Head and Kaimuki, by Prof. F. Ellerman of the Mount Wilson Observatory and Professor Donaghio of the College of Hawaii. Both saw the sunspots reported by mainland observers. But Halley's comet, passing between here and the sun, showed absolutely no impression at all—the sun with the comet in front of it looked just as if there was no comet there.

This was what Professor Ellerman, Lord and Coddington came all the way here from their mainland institutions to observe. Yesterday afforded an unprecedented opportunity to find out whether the comet had a solid nucleus, and settle a question that has occupied astronomers ever since comets have been studied. The telescopic observations of yesterday do not prove that there is no solid matter in Halley's comet, but they do prove that there is no large solid body constituting the head or nucleus of the comet.

It is possible that other, larger telescopes may show some different results. Professor Ellerman stated after his observations were over, that a different report might come from the larger instrument employed in Manila. "All there is to be said about my observations here," he said, "is that the result was negative. There is nothing to report. I had had some idea that perhaps we might see something of the comet in transit, but not the faintest trace was to be seen."

The Mount Wilson astronomer had a small observatory on the slope of Diamond Head, just beyond the light-house, in which was a 6.4-inch telescope. After his work was over yesterday, he and Mrs. Ellerman entered

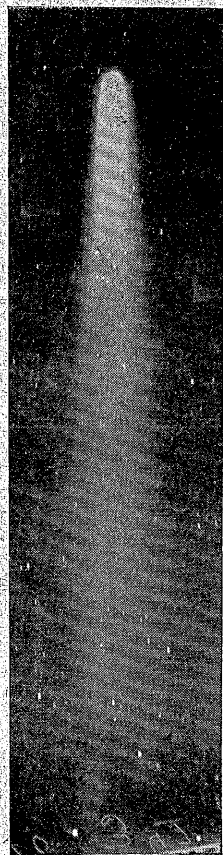


Official photograph of Halley's comet, with tail taken by Doctor Fish of the Carnegie Solar Observatory on the summit of Mt. Wilson through the Great Solar reflecting telescope. The picture was taken on May 13, when the comet was at its best, as seen from California, and is published through the courtesy of Dr. George D. Hale, director of the observatory. It is shown here at the same angle in which it appeared in the eastern sky.

REMARKABLE VIEW OF THE GREATEST CELESTIAL VISITOR OF GENERATIONS

在布哇ホルル府日本総領事館

CELESTIAL VISITOR LOCALLY PHOTOGRAPHED



HAILEY'S COMET, FROM DIAMOND HEAD.
This photograph, taken by Professor Eberman on the morning of May 10, was secured with a 6-inch portrait lens after an exposure of forty-one minutes. The length of the star trail shows the motion of the comet during exposure.

Hanging Around the Churches

Many people took an unwanted interest in the churches yesterday, particularly the Roman Catholic cathedral. No one would acknowledge it, but the impression given was that there would be some very large congregations gathered very quickly if anything happened to drop during the afternoon.

Saw Sun Spots

From Waialua came the report last evening from Mr. Irwin that at four minutes past six o'clock, when the rain clouds lifted, the sun was brilliant, and across its face could be seen a filmy substance, with spots jiggling across, easily seen with a smoked glass or with regular glasses. This was observed for eighteen minutes, when the clouds again interposed.

Observations from town could not be made, as the Waialua range and towering racks of clouds intervened and blotted out all view of the sun.

No Wireless Effects

Contrary to expectations, the Kahuku wireless suffered no ill effects and experienced no abnormal phenomena. Operator Maddams was prepared for magnetic disturbances such as were expected, but none whatever were felt or heard, and the wireless was disturbed by nothing except the routine reports from the ships at sea and the inter-island messages bearing assurances that the population of each was still alive.

The only sign of irritation the scientist displayed was when the buzzing in the telephone receiver grew extra loud.

Sisal May Have News

The United States magnetic observatory at Sisal is looked to for some important results in the general study of Halley's comet. It is the theory of many astronomers that the comet's tail is an electric phenomenon, in which event it might be expected to have a marked effect on such instruments as those at Sisal. O. H. Gardner, in charge of the magnetic station, kept special watch of his instruments yesterday, but no report has been received yet from his observations. It was the expectation of many scientists that such instruments would show violent disturbance during the period of the earth's passage through the tail of the comet.

Just a Little Nervous

Disguise it as they majority tried, there was considerable apprehension among the citizens yesterday over the approaching transit of the comet and the sun. Just what was to have been expected, few knew and although there were very few who actually gave up and acknowledged that they were "scared to death," there were very many who heaved a sigh of relief when six o'clock came and the world was the same old green spot, with Diamond Head where it ought to be.

Hawaiians Disturbed

Among the Hawaiians, in the morning, there was considerable uneasiness, not because of any general catastrophe that might be feared, but because the coming of comets always means woe to the alii. Just when or on whom the blow would fall, they knew not, but they expected something to happen.

It did, according to tradition, and there was much head-shaking and "I told you so's" among them.

Yesterday, from Washington, came the news that Queen Liliuokalani had lost in her suit against the government. That was the blow that fell upon the alii. That was the catastrophe to a chief that the comet portended.

Japanese on Oahu Quiet

Reports from Hilo were to the effect that the plantation laborers were disturbed by comet reports and in many cases had refused to go to work, preferring to die under the shadow of their own fig trees. The various plantations on this island were telephoned to yesterday and all reported that the laborers were at work as usual, preferring to take chances on the comet than to lose a day's pay.

Nothing Happened

There was quite a run on smoked glasses in the various opticians' stores during the day, people preparing to see what might be to be seen in the afternoon. When five o'clock came, many eyes strained through smut to watch developments and there was much disappointment and considerable relief when the sun smiled at everyone impartially and refused to be obscured even temporarily by Halley's pet.

Undoubtedly the comet sailed between us and the sun yesterday. We have the word of the whole scientific world for it. But the fact has to be taken on trust by the majority, for there was nothing to show that anything was going on out of the ordinary.

在布哇ホノルル府日本総領事館

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文書部長 呈

明治四十三年六月十三日接受

明治四十三年六月十三日
同 年 月 日
日發達

通商局長

主任

寺尾天文甚長宛

東京通商局長

送第一二五號

公一替是組則言と新印切後

送百一印

立ホル、お前事、公一替是組則：言え

新印切後、お前事、送百一印切後

外務省

及中切送丁也

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付局新印切後