

DIRECTORY
OF THE
FRATERNAL ORDERS
LA GRANDE, ORE.

M. W. A.
La Grande camp No. 7763 meets every Monday each month at I. O. O. F. Hall. All visiting neighbors are cordially invited to attend.
FRED B. CURREY, C.
CAL JORDON, Clerk.

G. E. S.
Hope Chapter No. 13, G. E. S., hold stated communications the second and fourth Wednesdays of each month. Visiting members cordially invited.
Pauline Lederlee, W. M.
Mary E. Warnick, Secretary.

I. O. O. F.—Encampment.
Star Encampment No. 31, I. O. O. F., meets every second and fourth Wednesday in the month in Odd Fellows' hall. Visiting patriarchy always welcome.
H. E. COOLIDGE, G. P.
W. A. WORSTELL, Scribe.

La Grande Lodge No. 169, W. O. W., meets every second and fourth Tuesday evening in K. of P. hall in the Corpe building. Visiting members welcome.
NERI ACKLES, Corpal Commander.
J. H. KEENEY, Clerk.

I. O. O. F.—Subordinate.
La Grande Lodge No. 16, meets in their hall every Saturday night. Visiting brothers cordially invited to attend. Cemetery plot may be seen at restaurant.
GEORGE GROUT, N. G.
I. R. SNOOK, Rec. Secy.
W. A. WORSTELL, Fin Secy.

Foresters of America.
Court Maid Marion No. 22 meets each Wednesday night in K. of P. hall. Brothers are invited to attend.
BEN HAISTEN, C. V.
LEO HERRING, C. S.
C. J. VANDERPOEL, F. S.

A. F. & A. M.
La Grande Lodge No. 41, A. F. & A. M., holds regular meetings first and third Saturdays at 7:30 p. m.
JNO. S. HODGIN, W. M.
A. C. WILLIAMS, Secretary.

Knights of Pythias.
Red Cross Lodge No. 27, meets every Monday evening in Castle hall (old Elk's hall). A Pythian welcome to all visiting knights.
J. F. BAKER, C. C.
R. L. LINCOLN, K. of R. & S.

B. P. O. E.
La Grande Lodge No. 433, meets each Thursday evening at 8 o'clock in Elk's club, corner Depot street and Washington avenue. Visiting brothers are cordially invited to attend.
H. E. COOLIDGE, Exalted Ruler.
HUGH McCALL, Rec. Secy.

REBEKAB.
Crystal Lodge No. 60 meets every Tuesday evening in the I. O. O. F. Hall. All visiting members are invited to attend.
Mrs. Cora Fitzgerald, N. G.
Miss Susan McIlroy, Secretary.

HALLEY'S COMET DESCRIBED
BY A LA GRANDE SAVANT

John S. Hodgins Goes Into Scientific Phases of Phenomenon Using Language Comprehensible to Amateurs

By Jno. S. Hodgins.
Several weeks ago I promised to give the Observer a paper on Halley's comet, which is beginning to create great interest throughout the country, and as I promised a popular article free from technical language, will say in the beginning, that I have in mind such readers as have some general elemental knowledge of astronomy, more especially high school students, and to such it is a pleasure to talk about something besides "shop", if one whose occupation, generally presumed to be very earthy, may aspire to discuss things celestial.

Of all heavenly bodies comets have created the most popular interest and are least understood, and it is natural that the return of Halley's Comet, after an absence of 75 years should arouse renewed interest, especially so, in view of the fact of the discussions that have been going the rounds of the press of more or less accurate and startling nature.

The comet has been in the field of view of the larger telescopes for several months. This comet has made 29 appearances recorded in history, from about 240 years B. C. and we have no way of determining how much longer, perhaps untold centuries. Some comets return every few years, and others require many centuries to make a revolution around their long elliptical orbits and return to where the sun and earth are. The beautiful comet seen in the spring of 1882, just before sunrise, will be back in about 800 years and Donati's comet seen just before the Civil War was here about 150 years before the Christian era, and will be here again about the year 3858, so we will have plenty of time to get ready and improve our present instrument for taking a peep at it. And still other comets that suddenly appear revolve in such curves that they never return, but pass on to other systems of worlds, that is, unless they should happen to come so near a big planet that their courses would be changed into ellipses and thus be captured and attached to our system.

Comets are composed of cloud-like or gaseous substances, and usually consist of three parts known as the Nucleus, coma and tail; though it is probable that there is solid matter scattered throughout the nucleus, like aerolites which are found wandering through space, and quite frequently are attracted to the earth, the smaller ones being consumed by the friction of the atmosphere before they reach the ground, and are called shooting stars, and the larger ones reaching the ground where we find them. While most of the comets are from five to ten times as large as the earth, their weight is exceedingly light—thousands of times lighter than the atmosphere at sea level—and the smaller stars are seen through the head of the comet, which is the denser part, their lightness is apparent from the fact that the largest comets exert no appreciable effect on the smallest asteroids, though they themselves are greatly disturbed by the influence of the planets, and sometimes have their orbits changed by such influences, often making it difficult to compute with any degree of exactness their revolutions.

Some shine by their own light, others by the reflected light of the sun, and some by both. Why so rare a gas as a comet's tail is luminous at such a distance, scientists and astronomers have not yet been able to determine.

It is only within the last few years (since most text books have been printed) that the scientific world has been able to reach any reasonable explanation of the phenomena accompanying the comets, and this has been due to the development and the use of spectroscopy and photography in the study of ce-

lestial bodies. The nucleus as it approached the sun from the far off distant parts of its orbit becomes heated on that side next the sun and streams of gaseous substance, called the coma, as if boiled out by the heat, are seen issuing, and, being driven back by the repellant influence of the sun's rays, envelope the nucleus and form the coma, and being further driven off into space by that mysterious influence from the sun called radiation pressure, the gas becomes more rare, and forms the tail or tails, which sometimes extend millions of miles and assume a variety of shapes before the gas becomes visible. The tail is always in the opposite direction from the sun—being behind the comet as it approaches, and before it as it recedes from the sun. The coma and tail are seen to develop as the comet comes into more heated region. A few weeks ago the Crossly Reflector at the Lick Observatory showed the beginning of a tail to Halley's Comet, and by this time, a good glass would show a considerable coma and tail, for it is rapidly approaching the sun and will soon be visible to the naked eye. The tails are constantly changing, like the water of a river—what we see today is gone tomorrow—and this constant expulsion of matter is gradually diminishing the size, so that each succeeding return will show a lessened bulk, until finally the whole mass will be disintegrated, for there is no doubt that Halley's comet will in time become extinct like Biela's. Perhaps, to my readers, it seems like a contradiction to speak of the sun attracting and at the same time repelling, yet such is undoubtedly the case—the gravity acting on the solid contents, and the radiation pressure on the surface of matter. It is a well known mathematical law that as matter is divided into extremely fine particles the solid contents diminish faster than the surface, and a point is reached where the repellant power acting on the surface will overcome the power acting on the solid; and this point is reached in gaseous substances driven off from comets, as has recently been shown by the great physicists, Perhenius of Sweden and Lebedew of Russia, through radiation pressure described as the electro-magnetic power of light, was shown to Clerk-Maxwell a half a century ago.

Just when Halley's comet will become visible to the naked eye is hard to determine, though it will not be long, and a good field glass ought to be able to pick it up now. According to the ephemeris made by Father Searle, and given in a recent number of the publications of the Astronomical Societies of the Pacific, the comet, on the 11th day of February, will have a right ascension of 50m and 29sec, and a declination of 8 degrees and 1 minute north, and by reference to a celestial chart I find this point near a cluster of three small stars a little east of the middle of a line drawn from Alpha Andromidae (Alpheratz) south to another bright star of the second magnitude 50 degrees from the first, and at 7 o'clock p. m., the comet will be about 40 degrees west of the meridian, and it is moving west about one degree a day, so it will set just after the sun, and then pass into the glare of the sunlight and become invisible for a season, and while swinging around will pass the closest to the sun about April 19 (its perihelion) and then will begin its return, reappearing in the morning, and rising before day; and at this time will approach within ten or fifteen million miles of the earth, and, no doubt, will be a magnificent spectacle. The inclination of the plane of its orbit to that of the earth's and the place of crossing (nodes) being inside the earth's path renders a collision between the two bodies impossible, yet it is possible,

and there is some probability, that the tail of the comet driven before it and extending millions of miles beyond the comet's path, will fall across the earth's path about the time of its arrival at that point, and the earth will pass through the comet's tail, for the computed ephemeris of the comet shows that it will be about that place on the 18th of May, two days before its nearest approach to us.

Naturally the question arises, what will be the effect on the earth? It is not probable that there will be any appreciable effect, if we pass through the comet's tail on the 18th of May. Possibly we will have a harmless shower of meteors or a glow in the atmosphere at night. The tail being a substance so attenuated that even if it did possess poisonous gases, as some predict the amount which would accumulate in the earth's atmosphere during its passage through it would hardly be sufficient to do much damage, though this is a medical question and I am incompetent to discuss it. It is hardly probable that any solid matter sufficiently large to do us much harm by a bombardment would be expelled this far from the nucleus. So far as I am aware the constituent materials of Halley's comet have not been determined, for when it was here before the science of spectroscopy was not sufficiently advanced to do such work, but no doubt they will be fully analyzed this time. On the whole I think we can rest easy so far as any danger is concerned, notwithstanding the attempt of certain newspaper reporters to write up something startling.

Who will be the first in La Grande to see it?

This is to inform the general public that the undersigned have purchased the Spokane restaurant in La Grande, Oregon, and we solicit from the public your kind patronage, assuring you of the most courteous treatment. This restaurant is open day and night.
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