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COMING OF HALLEY'S COMET

Dr. A. S. Mitchell Talks Interestingly of New Wonder in the Heavens. How It May be Seen, Etc. An Authority.

(Houston, Tex., Chronicle.)

Dr. A. S. Mitchell, adjunct professor of astronomy in Columbia University, whose generous words in The Chronicle of Monday threw new light on both the Cook-Peary controversy and the character of Commodore Peary, is one of the most noted of the younger school of astronomers America has produced. In his work on and study of eclipses and comets, Dr. Mitchell has made a wide reputation with an enduring foundation. He is a doctor of philosophy of Johns Hopkins University, a member of the Beta Theta Pi fraternity, and of the honorary fraternities of Phi Beta Kappa, Sigma Chi and Tau Beta Pi.

In 1900 Dr. Mitchell went as a member of the United States government party to Georgia to observe the total eclipse of the sun, best visible from that State.

In 1901, again as a member of the commission sent out by the United States government, he went to Sumatra, in the Dutch East Indies, to witness there to best advantage another eclipse, and in 1905 he was a member of the United States party—of which Admiral Colby M. Chester was also a member—which visited Spain and witnessed the total eclipse of the sun on August 30. The trip across the Atlantic was made on a United States cruiser.

This Spring Dr. Mitchell will go to Chicago to the Yerkes observatory, where by means of the largest telescope in the world, he will make a special study of Halley's comet.

In view of this fact, and of his own study of comets and his scientific achievements in his chosen field of astronomy, anything he may say about the coming comet is of vast interest, and regarding this comet he was questioned by a representative of The Chronicle prior to his departure Tuesday for Columbia University.

"When can the comet first be seen to best advantage with the naked eye?" he was asked.

"On May 19," he replied; "then no man will need to ask where the comet is, for it will likely be an object of surpassing brilliancy, flaming in the western sky immediately after sunset. At first it will be quite near the horizon, but each day when the sun sets it will appear higher and higher up in the western sky."

"How soon can it be seen with a small telescope?"

"It can be seen with a six-inch telescope now, and it is largely a matter of eyesight as to when it becomes visible to those possessing small telescopes."

"When can it first be seen with the naked eye?"

"Amateur astronomers not fortunate enough to possess a telescope must wait nearly three months, until after the comet passes by the sun in March and comes out from the sun's rays in April. The comet will then rise before the sun, and consequently can be seen only shortly before sunrise—a much less convenient time to observe it than will be acorded late in May.

"After April the comet will rapidly increase in brightness, and will reach a greater angle from the sun till May 15th, when it suddenly changes its position again and will draw in quickly toward the sun. The comet is due to cross the face of the sun on May 18, the 9 P. M. Eastern standard time. This will be 6 P. M. Pacific time, and the sun will not have then set. Whether the comet will be big enough to be seen in transit is an interesting question. There is no authentic account of a transit ever having been seen to have actually taken place, though many—notably the Biele comet in 1826—were calculated to have done so."

"What will be the apparent size of the comet in the heavens?"

"About the width of 50 full moons, probably—a most magnificent spectacle."

"Probably 100,000 miles across the head, and 8,000 times the bulk of the sun, but of such attenuated matter that its weight is so infinitesimally small it does not equal one hundred thousandth part of the weight of this earth."

"Of what does it consist?"

"The central nucleus of the head consists, perhaps of rock, possibly porous and sensitive to the sun's rays. The coma, or golden hair of the comet is either gaseous or finely divided matter. What constitutes the tail of the comet is one of the things that science is eager to investigate and hopes to discover as a result of this visit of the comet."

"How is the tail attached to the comet?"

"It is not attached, but is left behind in space. The tail is constantly a new tail; the comet consumes itself and constantly supplies the coma. It does not flow out behind exactly like the smoke from a locomotive, because the smoke from a locomotive always drifts backward, but the tail of the comet always points away from the sun. As the comet passes the sun, the tail will be to one side; and after it passes the sun the tail goes ahead, or it moves through space tail first. It will be in this position when we see it at its best."

"How close does it come to the earth?"

"The nucleus passes at a distance of about 14,000,000 miles, but so large is the bulk of the comet that the earth will pass through the tail of it on the night of May 19, beginning at 7 o'clock. There will probably be a beautiful display of what is known as 'falling stars.' The same night is the one when it will first appear gloriously in the evening sky."

"Is there any danger to the earth from contact with the comet's tail?"

"None. The atmosphere of the earth is so much heavier that it is practically impenetrable to the extremely attenuated and extenuated gases that compose the comet's tail. However, there will be no war, pestilence, death or scourge on account of the passing of the comet. Wars and comets often coincide, because there are about half a dozen comets discovered each year, most of them visible to the naked eye."

"Are comets influenced by the great planets near which they pass?"

"To some extent, the amount of perturbations by planets is one of the things that science will study from this appearance. The comet will pass very close to Venus and careful observations will be made to see if it disturbs, to an appreciable extent, the orbit of Venus herself. Comets have passed close to Jupiter at times but their weight is so remarkably small that any appreciable influence on the planets is hard to detect."

"Is a head on collision between a comet and this world possible?"

"It is not scientifically impossible but extremely unlikely, one in almost infinite ratio of chances."

"If such a comet as Halley's should strike the world what would be the result?"

"It seems idle to speculate on a contingency so remote, but the world would probably be much jarred up and life would doubtless be extinguished on it, certainly on the side receiving the impact of the comet."

"What are some of the questions that science wants to ask the comet?"

"Some of them are as to the character of matter that constitutes the tail, why its tail always points away from the sun, the effect of gravity on the comet, the amount of perturbation on the planets caused by it and many others. The orbit of this comet is well established."

"How do you hope to determine the composition of the comet?"

"By means of a spectroscope that has been highly improved since the last visit of a big comet. This will be one chance to test it."

"What do you think will be the explanation of the tails always flaring away from the sun?"

"It will perhaps be found due to some pressure exerted by the sunlight on the extended volatile tail of the comet."

"Tell me something about the course and movements of the comet."

"Halley's comet moves in a great ellipse, stretching out beyond the orbit of Neptune. Of all the comets with periods less than 80 years, Halley's is the only one which moves with a retrograde motion, that is, in the direction opposite to the motions of all the planets about the sun. This is the comet's own motion.

"What is its apparent motion as seen from the tiny earth, which itself is in motion about the sun?"

"The movement among the stars is the result of other two motions. At the present time the comet is traveling westward among the stars, the sun in the opposite direction, eastwards. The angle between them will continually decrease till about March 25, when the sun will pass between us and the comet. By referring to a diagram giving the paths of earth and comet, it will readily be seen that the comet becomes a moving object and increases its angular distance from the sun. On April 19 the comet is at perihelion and closest to the sun, and consequently is moving with its greatest speed in its orbit. Five days later it is headed in the direction of the earth, but the world slips by unharmed. The comet now ceases its retrograde motion in the sky, and begins to move direct or eastwards, at first slowly and then with quickened pace. On the evening of May 18 the comet comes within 14,000,000 miles of the earth, and this near approach causes a tremendous apparent motion among the stars, and in the next 24 hours and for several days thereafter it moves eastward as much as 15 per cent. each night. Consequently on May 19 there will be no need to ask, 'Where is the comet?' All may see it as a magnificent object appearing immediately after sunset. It will be higher up in the western sky each day when the sun sets. We have not had a brilliant comet in northern lattitude since 1882, and it is altogether probable that Halley's will be just as magnificent, though of this we can not be certain.

"The 'man in the street' has been rather disappointed with the comet because it has not blazed forth brightly long before this. The reason is not hard to find. At the first return since the 'prediction was made by an Englishman,' in 1859, the comet was discovered 78 days before it passed the sun, in 1835, a period of 102 days elapsed before discovery and perihelion passage. By long exposure with a sensitive photographic plate, Max Wolf found Halley's comet on Septem- perihelion passage. If the same number of days only were to elapse as in 1835, on January 1, 1910, Halley's comet would still be undiscovered. We must possess our souls with a little patience, for the comet will not disappoint us. During January the comet will move from the constellation of Aries into Pisces, and at the end of the month will set about 9 P. M.

"Halley's is not the only comet now visible. On December 6 Mr. Zaccheus Daniel, at Princeton, found the fourth comet of the year 1909, with a five and three-quarter inch telescope, and it is consequently visible in a small instrument. Though Mr. Daniel is but 30 years old, he has discovered three comets. The new Daniel comet, which is in the constellation of Auriga, is moving northward and has no tail."

"What is the history of the discovery of Halley's comet and of the discovery of its periodicity?"

"In 1680, Sir Isaac Newton, the greatest scientist the world has produced, as a result of the study of comets announced that comets obeyed the laws of gravitation and that they moved about the sun but with their tails always away from it, and said that the paths of comets could be predicted.

"In 1682 a bright comet appeared and Halley, the friend and pupil of Newton, took up a historical study of the records of the appearances of comets. He discovered records showing the appearance of 24 comets and that of these, three had the same path about the sun. The one then visible had appeared in 1531 and again in 1607. The path and the interval were thus indicated and Halley predicted that in the end of 1758 or the beginning of 1759, after a period of 75 years, the comet would appear again and called upon candid posterity to verify the truth that this claim had first been made by the Englishman.

"Halley died in 1742 and as the year 1759 approached the keenest interest was shown in the scientific world in the reappearance of the comet. The comet was observed in 1759 within one month of the predicted time, the first comet in the history of the world to appear on a foretold schedule. It was named for the man who discovered the fact of its periodicity and that of all comets. It returned again on schedule in 1835 and was discovered by photography again in September 11, 1909.

"Improved photography and the refined modern spectroscope should reveal much of interest to the scientific world from the near approach of Halley's comet this year to the earth."

Some U. S. Senators Who Are Candidates for Re-election.

BOONE'S TRAIL.

(Then and Now.)

One hundred and forty-one years ago,
At least history tells us so,
A hardy woodsman struck a trail,
About which hangs an inspiring tale.

'Twas on the balmy first of May,
When earth was wrapt in verdure gay,
And song birds sang in chorus grand,
Filled with rhapsody from nature's hand.

Fond ones stood in silent maze,
Untouched by the charm of the glad spring days,
For the hardy woodsman sought to roam
Among the hills, far, far, from home.

This woodsman was a hunter bold,
Who regarded neither storm nor cold,
And forest wolf, and mountain bear,
Heard his steps and sought their lair.

The cunning red skin with treacherous mein,
In the path of this woodsman was never seen,
But lurked with the stealth of his cowardly race,
Upon the woodman's trail, but shunned his face.

Across the hills the woodsman trod,
Amid the glad free wilds of nature's god,
Amid laughing rills, and roaring streams,
And danger-haunted wildwood dreams.

On toward the west, marched the woodsman plucky,
Until he stood on the banks of the rolling Kentucky,
There in wonder, he gazed and pondered,
Upon the beautiful landscape into which he had wondered

With nerves of steel and aim unerring,
No panther, wolf or red-skin fearing,
A glad, free life the woodsman led
For two long years without salt or bread.

Back at home in old Rowan,
Loved ones pined for the daring man
Trembling in fear, lest he had died
Victim of the red man's hate and pride.

But as they sat, and pined, and yearned,
The mighty woodsman, one day returned,
All aglow, with zeal and zest,
For the golden glories of the golden west.

With heroic hand he opened wide,
The western portals for the coming tide,
Of civilization, bold and strong
Its thought, its commerce, its story, song.

The Anglo-Saxon his wealth has piled
In this wondrous region once so wild,
No more do red men's yells affright.
The silent bosom of the tranquil night.

Now teeming millions march to and fro,
As about civilization's tasks they go,
Where once was heard the rifle crack,
Of the hardy woodsman in days far back.

Cities and towns now dot the plain
Where in those days the blue grass rain
In tiny rivulets sought the stream,
Gurgling on as in a dream.

But the mighty changes that have happened since,
This woodsman, of the woods was prince!
Affect not, his sleep profound,
As he reposes beneath his blue grass mound.

Pennsylvania gave him birth,
In Carolina he had his hearth,
Missouri claimed him when he died,
While in old Kentuck his remains abide.

To the Yadkin's banks, tomorrow we go,
Our regard for the memory of the woodsman to show,
To "Devil's Den," on the rocky hill,
(The tangled wildwood is wild there still.)

Proudly we go to commemorate,
The deeds of this woodsman of the old North State,
His name we'll honor at night and noon,
The brave old hero, Daniel Boone!

T. L. SPENCER.

[Daniel Boone was born in Berks county, Pennsylvania, August 22, 1734. The family moved to North Carolina and settled on the banks of the Yadkin river, in what is now Davidson county, May 1st, 1750. Boone started on his first trip west, into what is now Tennessee and Kentucky, May 1st 1769. He died in 1820 at the home of his son Major Nathan Boone, at Clarette, Missouri, aged 86 years. He is buried beside his wife, Rebecca, in Frankfort, Kentucky. His parents are buried in Joppa cemetery, Mocksville, N. C. Daniel Boone's wife and daughter were the first white women in Kentucky.—Editor]

—Cooleemee Journl.

DEATH OF MARK TWAIN.

Redding, Conn., April 21—Samuel Langhorn Clemens, (Mark Twain), died painlessly at 6:30 o'clock tonight of angina pectoris. He lapsed into coma at 3 o'clock this afternoon and never recovered consciousness. It was the end of a man outworn by grief and acute agony of body.

The burial will be in the family plot at Elmira, N. Y., where lie already his wife, his two daughters, Susan and Jean, and his infant son Langhorne. No date has yet been set as the family is still undecided whether or not there shall be a public funeral first in New York City.

Mr. Paine said tonight that Mark Twain had put his affairs in perfect order and that he died well off, though by no means a rich man. He leaves a considerablbe numbber of unfinished manuscripts in all stages of completion and of all characters, many of them begun years ago and put aside as unsatisfactory. Mrs. Gabriloswitsch will aid Mr. Paine in the final decison as to what use shall be made of these.

Samuel Langhorne Clemens, America's humorist and known the world over as Mark Twain, was born in the little town of Hannibal, Mo., on November 30, 1835.

His father, John Marshall Clemens, came from an old Virginia family and with his young wife, Elizabeth Lampton, a desctndant of the early settlers of Kentucky, he joined the sturdy band of pioneers who pushed west over the Alleganies in the early part of the last century and settled along the banks of the Mississippi river.

In the uncouth environment of the then little frontier town, Hannibal, the famous author spent his boyhood days. Here he fished, hunted and lounged along the river banks with his sturdy companions, living a healthy outdoor existence, which undoubtedly accounted for his long life in the face of his many afflictions.

He attended the little school, but not being of a very studious disposition, he learned far more from contact with the rough companions whom he immortalized in later years as Huckleberry Finn and Tom Sawyer, and others of their type.

At the agt of 12 his meager school education was brought to a sudden close by the death of his father.

His older brother, Orion S. Clemens, was the proprietor of a printing shop in the village, and young Sam Clemens began his journalistic career there as a printer's devil. In the course of a few years he learned the trade as a compositor, and in 1853, he left his native town and began a wandering existence. He joured from place to place, working at his trade in New York and the principal cites of the middle west.

But while he gained a vast amount of experience during his travels, which proved of the greatest value in the preparation of some of his works in later years, this period was rather unprofitable, from a financial standpoint, and he was finally compelled to return to his home along the bankks of the great river, in rathed straitened circumstances.

The idea of his becoming an author had never entered his mind at that time, but he absorbed enough of the pilot life to enable him to describe the difficulties encountered in guiding a boat along the great river in his "Life Along the Mississippi River," which he wrote many years ago.

At the outbreak of the civil war steamboating came to a standstill, and young Clemens enlisted in the Confederate army. A soldier's life, however, was not to his liking and after a few weeks service he joined his brother Orion, who had received an appointment as Secretary of the Territory of Nevada.

In March of 1867 Twain published his first book, "The Jumping Frog of Calaveras County." The book made quite a stir in that part of the country, but only four thousand copies were sold. It attracted the attention, however, of the editor of The Atla Californian, who sent the author out as a newspaper correspondent, on a steamship excursion of southtrn Europe and the Orient.

His letters were published from time to time, and in 1869 the author revised them and published them in book form under the title of "The Innocents Abroad." This work made Mark Twain famous, and compelled his recognition as America's foremost humorist. In tht first sixteen months, 35,000 volumes were sold, but many more subsequently.

During his last years, all of the humorist's writings were under the control of Harper & Bro. His autobiography, which appeared in serial form in a magazine, and several attacks on Christian Science were his latest important worksk.

He also wrote a book questioning the authenticity of Shakespeare's works, which caused considerable comment.

Where Mark Twain chose to spend his declining years was the first outpost of Methodism in New England and it was among the hills of Redding that Gen. Israel Putnam of Revolutionary fame, mustered his sparse ranks. Putnam park now encloses the memory of his camp.

Mark Twain first heard of it at the dinner given him on his 70th birthday when a fellow guest, who lived there, mentioned its beauties and added that there was a vacant house adjoining his own. "I think you may buy that old house for me," said Mark Twain.

Sherwood Place was the delectable name of that old house and where it stood Mark Twain reared the white walls of the Italian villa he first named "Innocence at Home," but a first experience of what a New Engand winter storm can be in its whitest fury quickly caused him to christen it anew Stormfield.

BRADLEY TO GO SOUTH.

But Cook's One Time Backer is No Longer in Pole Business.

(Asheville Citizen.)

Mr. John R. Bradley who is well known in this city and who is internationally well known also as the backer of Dr. Cook in his polar expedition has prepared to make an extensive hunting trip through the West and Mexico. He has purchased fifty horses for the expedition and is stocking up for a six months trip.

Starting at a poin in Northern Colorado Mr. Bradley and his party will go over the mountain range until the Mexican border line is reached. Mr. Bradley and his friends will go in quest of wolves and bears. He has invited six friends to accompany him and will leave New York the latter part of May.

Negotiations are now on between Mr. Bradley and the Valley Kennels, at Sanburn, Conn., for twenty wolfhounds for the hunting trip. Mr. Bradley has employed nine experienced guides, who are now in Colorado making all preparations for the trip which is to begin early in June. Mr. Bradley has spent considerable time on hunting trips in Africa, Asia, Alaska, and in the Arctic regions.

Does John Temple Graves imagine that the man can accomplish what the master failed in. The tender of the Hearst support of the Democratic party on condition that the Democratic party accept the Hearst policies is no new proposition. It has been made before and rejected, though the Democrats of New York did once accept Mr. Hearst's candidacy for the Governorship of that State. In that case, however, the Democratic party did all the supporting, but that was New York politics, and the national party will not stand for it.—Petersburg Index-Appeal.

Savannah, Ga., April 15.—Hon. Beekman Winthrop, assistant secretary of the navy, who reached the city yesterday afternoon is being well entertained in Savannah today. Accompanied by a large delegation of Savannah business men he took a trip down the harbor in the revenue cutter Yamacraw this morning. He was later given an automobile ride over the famous automobile race course

De'oman whar aint got a new Spring dress looks 'bout ez ole-fashioned ez las' yeay's bes' selluh.