

No.

NAME

12

129

ms

years

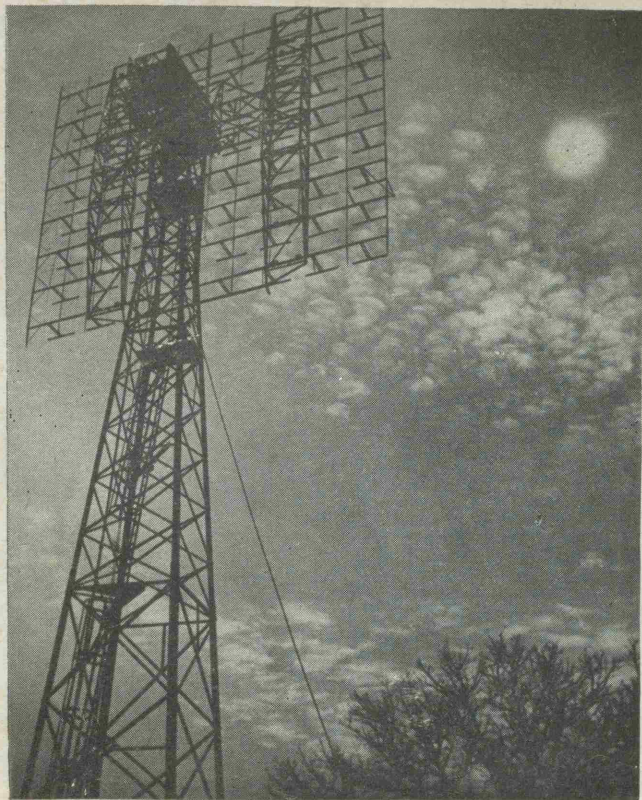
(ec.)

TES

2303.9

Box 2

File 34



$\lambda = 283 \text{ cm}$ $\nu = 106 \text{ megacycles}$
 $= 9.3 \text{ ft} = 3.1 \text{ yds}$

The "Cosmic Broadcast" and Its Possibilities

By JAN SCHILT

Professor of Astronomy, Columbia University

MAN'S first radar contact with the moon a revolutionary technique opening way for discovery of "unknown physical phenomena" and exploration of regions "hitherto blotted out by cosmic clouds."

1946 Jan. 10.

Radar antennae at Evans Signal Laboratory, Belmar, N.J., aimed for contact with the moon.

nique of range findings by radar has in a few years become exceedingly accurate, and certainly for terrestrial objects, distances can be obtained with an accuracy of at least 20 feet. One might, therefore, reasoning that a similar accuracy could be obtained in the case of the moon provided only that a beam of suf-

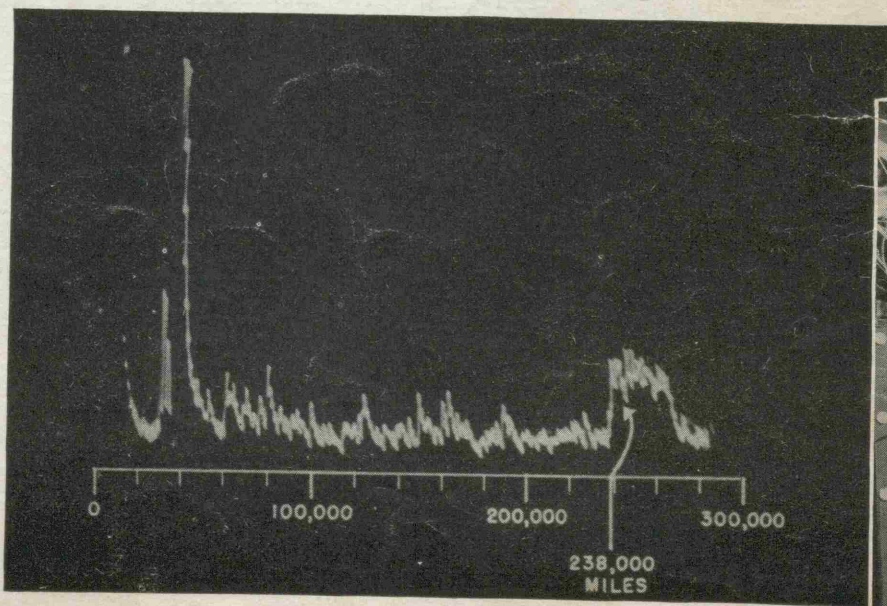
THE radar contact with the moon has stirred the imaginations of thousands, as it should. Somehow it seems that a deliberate contact made from the earth with another celestial body for the first time in the history of mankind must be a memorable event, one of which we cannot possibly foresee the consequences for civilization in centuries to come. The stars have been watched for thousands of years. Their study was a patient contemplation and analysis of phenomena not influenced or planned by man, and the army experiment is significant in that it represents the first one made by man on a heavenly body. Its real import cannot be comprehended by studying the question of what the immediate consequences for astronomy will be. Still, this is a question worth considering and one that has already aroused a good deal of interest.

The first thing that comes to our mind is the distance to the moon. Is radar going to tell the astronomer exactly how far away the moon is? First of all, then, let us see about how accurately this distance is known at the present time.

When speaking of the distance to the moon, astronomers generally have in mind a certain average distance; this is because the distance varies, not only on account of the eccentricity of the moon's orbit but also because of the several perturbations caused by the planets. The average distance, roughly 240,000 miles, is known to four parts in one million, or about one mile, which is a very respectable accuracy for this distance. Let us now see whether the radar echo will be likely to improve on this. The tech-

ficient power and sharpness can be generated, expect that its distance could be found to the nearest 20 feet. This would be a few hundred times more accurate than the astronomers have been able to do.

There is, however, a serious snarl in this reasoning, and it is the following. If we stop to think that the basic principle of radar sounding is the recording, on an oscillograph screen, of the time interval between the sending of a signal and the reception of its echo, it is obvious that the percentage accuracy of the range cannot surpass the percentage accuracy with which we know the velocity of the waves, namely, the velocity of light, and this is now known to only one part in one hundred thousand. For terrestrial distances this is sufficient, but in the case of the moon it gives an uncertainty of some 2.4 miles. It seems, therefore, that, before a far greater accuracy has been obtained in the determination of the velocity of light, the radar method will not improve our knowledge of the distance to the moon. There are other



Radar-scope showing contact made with moon $2\frac{1}{2}$ seconds after initial impulse, at a distance of 238,000 miles from the earth.

status of all political parties. In previous negotiations agreement was impossible on the question of which should come first: unification of the military command or broadening of representation in the National Government. The PCC solved the irreconcilable problems by approaching both simultaneously.

On government reorganization the proposal of the Nationalists to make the present State Council a supreme governing body during the interim period, pending the introduction of a constitutional democracy, was accepted by all the other parties. However, the Nationalists insisted on the retention of the emergency and veto power of the President, and the Communists advocated that only one-third of the seats on the State Council should go to Nationalist representatives. The compromise was that the Nationalists shall occupy half of the forty seats of the State Council, the other half to be assigned to the other parties and non-partisan representatives; that the emergency power of the President can only be exercised with the approval of the State Council, and that a three-fifths vote by the State Council can override the veto power of the President. The new State Council and the reorganized Executive Yuan or cabinet, with seven or eight non-Nationalist members, will come into power in March.



CONCERNING military problems it was agreed that the army belongs to the state and not to any party, and that active servicemen cannot take part in party activities. After reorganization, the government and Communist troops will be under the unified control of the Ministry of National Defense. The nationalization and reorganization of the national forces will go through two stages: first, the Communists will reorganize their own troops into twenty divisions while the government troops will be reorganized into ninety divisions; as a second step all these forces will be merged into fifty or sixty divisions.

With regard to the National Assembly the other parties gave in at the insistence of the Nationalists that the Assembly should be called on May 5 and that the delegates elected almost nine years ago shall remain valid. On the other hand the Government consented to add 700 new non-Nationalist delegates, and to limit the power of the forthcoming National Assembly to that of adopting a constitution.

Furthermore, the Government agreed to revise the Draft Constitution along these lines: to restrict the power of the President; to adopt a cabinet and bicameral system of government; to grant provincial autonomy or home rule. Finally the PCC formulated a program of peaceful national reconstruction. China will be governed according to this program during the interim period pending the inauguration of the constitution.

In evaluating the result of the PCC it is to be noted that the Communists won a strong minority position in the new coalition government and the right to carry on political activities in all China; also

that its armies will remain in control of the present Communist territories for some time. The good faith of all the political parties concerned will determine the success of the new coalition government. If the Communists use the coalition merely to gain power, the agreements reached at the PCC will be vitiated from the beginning. Any recurrence of civil war in China may mean the end of her political independence and territorial integrity.

But the present development of events points to a good prospect for the success of the new coalition government. President Chiang Kai-shek is confident of its success and he has pledged that "all the resolutions reached at the conference will be fully respected and carried out." On February 1, General Chu Teh, Commander of the Communist Army, declared that the Communist Party "will carry out all these resolutions most sincerely . . ." More than ever before the leaders of these two parties realized that it would be difficult, if not impossible, for the one to destroy the other.

Furthermore, since it is the common and urgent demand of the Chinese people to maintain peace and unity, neither of these two parties can afford to alienate the support of the people by breaking their promises. Lastly, the concern and support of China's Allies, which was an important factor in the background of the PCC, will remain a contributing force to the success of the new coalition government. As long as the policies of the Soviet Union and the United States toward China remain in good accord, peace and unity in China will not be easily disturbed.

The success of the new coalition government will foster genuine democracy, hasten the establishment of constitutional democracy, and bring about agrarian reforms and the industrialization of China. China will need foreign capital and machines, and the dream of a vast China market will be realized. It is conceivable that within a generation or two China will become a front-ranking nation. Such a strong and democratic China will not only be a progressive force in Asia but also a stabilizing factor in world peace.

GENERAL MARSHALL, *special U. S. envoy*, watches as GOV. CHANG CHUN, *Chinese Government representative*, signs cease-fire order. Left: GEN. CHOU EN-LAI, *who signed for Communists*.



The Great Ripper

in

Ursa Major

A. Douglas

Phy
Astronomical Society of the Pacific

Merchants Exchange Building, San Francisco

McGILL U. LIBRARY

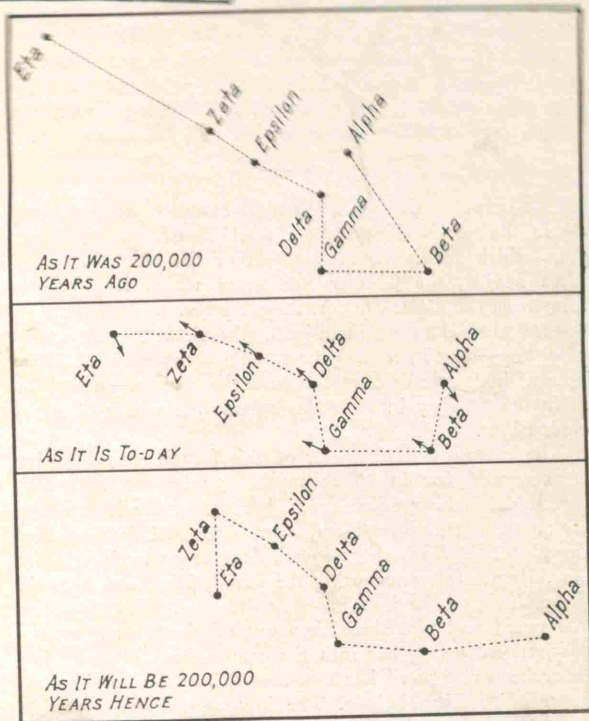
LEAFLET 28—May, 1930

JUN 10 1930

THE GREAT DIPPER

PERIODICALS

Dr. Frederick C. Leonard
Of the University of California at Los Angeles



Editor's Note — The foregoing diagrams illustrate the respective configurations of the "Great Dipper": as it was 200,000 years ago; as it is today; and as it will be 200,000 years hence.

The small arrows in the middle diagram represent the

relative directions of "proper motion" of the individual stars. These motions, *across* the line of sight, are nearly equal and parallel, except those of *alpha* and *eta*. The radial velocities (in the line of sight) of the other five stars are nearly alike; hence the reality of their common space motion is beyond doubt. As here shown, the stars of the "Bowl" of the "Dipper" are approaching "lower culmination", in their diurnal motion; that is, they are near the meridian and below the Pole Star.

The Greek alphabetical designations and the Arabic names of these stars are as follows: *alpha*—Dubhe; *beta*—Merak; *gamma*—Phecda; *delta*—Megrez; *epsilon*—Alioth; *zeta*—Mizar; (g-Alcor); *eta*—Benetnasch.

Alcor (or g) the companion of Mizar, is not shown on these diagrams, because of its relative faintness. Its position there would be very close to and slightly above, (its proper motion being similar to that of), Mizar or *zeta*.

THE most familiar and the most conspicuous star group in the northern sky is the asterism of seven brilliant stars which forms the hinder part of the constellation of Ursa Major, the Greater Bear, and which is popularly known as the Great Dipper. At all places north of the 40 degree parallel of north latitude, the Great Dipper is circumpolar—that is, it swings around and around the celestial pole without ever descending below the horizon—and so remains continually in view throughout the whole of every clear night.

The circumpolar character of this famous configuration is accounted for in Greek mythology by the following legend. Zeus, king of the gods, because of the jealousy of his queen, the goddess Hera, metamorphosed the beautiful nymph Callisto, whom he loved, for her protection, into a bear. Hera, after discovering the fraud, persuaded Artemis, the goddess of the hunt, to slay the bear. Zeus, however, intervened and placed Callisto out of danger among the stars, transforming her into the constellation Ursa Major. Later he transmuted her son, Arcas, into the neighboring constellation Ursa Minor. The indignant Hera, resenting the high honor thus done Callisto and Arcas, induced Oceanus, the god of the sea, and his wife Tethys, to pre-occupy Callisto and Arcas ever from resting beneath the ocean billows; hence the Bears were compelled to swing perpetually around the north celestial pole.

The Great Dipper is composed of the stars *alpha*, *beta*,

gamma, delta, epsilon, zeta, and eta. The names of which are given in the adjacent paragraphs 147 and 148. The latter paragraphs 147. All of the stars are bright, with a color (not given) that is red, blue, or the single exception of alpha, which is yellowish (not given) class II.

The stars alpha and beta are called "the Pointers" because of an imaginary line he drawn through them, it will pass nearly through the North Star, Polaris (alpha Cassiopeiae). The angular distance between the Pointers is a little more than 5 degrees, or ten times the apparent diameter of the Sun or Moon, while that between alpha Cassiopeiae, called Dubhe, and Polaris, is 41 degrees, hence the angular distance from Dubhe to Polaris is between five and six times that between the Pointers.

A most interesting fact about the stars of the Great Dipper is that five of them, namely, beta, gamma, delta, epsilon, and zeta, and also the fourth magnitude companion to zeta (or Mizar), namely, Alcor (or g, Ursa Majoris), are moving across the face of the sky at approximately the same regular rate and in a direction nearly parallel to that from beta to gamma and from gamma to delta. The stars alpha and eta are moving in roughly the opposite direction of motion of these stars. The stars alpha and eta formed a Dipper, as is illustrated in the adjacent diagram, which show the asterism as seen as it is today, and as it will be seen in the future. This line of the stars of the Dipper moving group or "cluster" of stars in the entire heavens, and a number of other stars, are separated regions of the sky, according to the history catalog of stellar radial velocities. The stars of the Great Dipper, including Alcor, are moving in the solar system with speeds ranging from 10 miles per second, in the case of epsilon, to 70 miles per second in the case of delta and eta.

All of the stars of the Dipper are of the same order of absolute brightness, being what are termed "main stars" and they are at distances from the Earth of not less than 70 or more than 150 "light-years." They are particularly much more luminous than our Sun, alpha and zeta, for example, each being fully 100 times as brilliant as the Sun.

By far the most interesting

gamma, delta, epsilon, zeta, and eta Ursae Majoris, of which epsilon is the brightest (magnitude 1.7) and delta the faintest (magnitude 3.4). All of the stars are bluish-white in color (of spectral class B or A), with the single exception of alpha, which is yellowish (of spectral class K).

The stars alpha and beta are called "the Pointers," because, if an imaginary line be drawn through them, it will pass nearly through the North Star, Polaris (alpha Ursae Minoris). The angular distance between the Pointers is a little more than 5 degrees, or ten times the apparent diameter of the Sun or Moon, while that between alpha Ursae Majoris, called Dubhe, and Polaris, is 28 degrees; hence the angular distance from Dubhe to Polaris is between five and six times that between the Pointers.

A most interesting fact about the stars of the Great Dipper is that five of them, namely, beta, gamma, delta, epsilon, and zeta, and also the fourth magnitude companion to zeta (or Mizar), namely Alcor (or g Ursae Majoris), are moving across the face of the sky at approximately the same angular rate and in a direction nearly parallel to that from beta to delta, while alpha and eta are moving in roughly the opposite direction with comparable angular speeds. On account of this difference in direction of motion of these stars, they have not always formed a Dipper, as is illustrated in the accompanying figures, which show the asterism as it was 200,000 years ago, as it is today, and as it will be 200,000 years hence. Thus, five of the stars of the Dipper are members of a moving group or "cluster" of stars, the so-called "Ursa Major group," which includes also Sirius, the brightest star in the entire heavens, and a number of others in widely separated regions of the sky. According to the Lick Observatory catalog of stellar radial velocities (1928), the stars of the Great Dipper, including Alcor, are approaching the solar system with speeds ranging from about 5 miles per second, in the case of epsilon, to 10 miles per second in the cases of delta and eta.

All of the stars of the Dipper are of the same order of absolute brightness, being what are termed "giant stars," and they are at distances from the Earth of not less than 50 or more than 100 "light-years." They are intrinsically much more luminous than our Sun, alpha and zeta, for example, each being fully sixty times as brilliant as the Sun.

By far the most interesting star in the Great Dipper is

THE most familiar and the most conspicuous star group in the northern sky is the asterism of seven brilliant stars which forms the hinder part of the constellation of Ursa Major, the Great Bear, and which is popularly known as the Great Dipper. In all places north of the 40-degree parallel of north latitude, the Great Dipper is complete—that is, it always appears and around the celestial equator without ever descending below the horizon—and is visible continuously in view throughout the whole of every clear night.

The astronomical character of this famous constellation is accounted for in Greek mythology by the following legend: Zeus, king of the gods, because of the jealousy of his queen, the goddess Hera, metamorphosed the beautiful nymph Callisto, whom he loved, for her persistence into a bear. Hera, after discovering the fraud, persecuted Demeter, the goddess of the hunt, to slay the bear. Zeus, however, intervened and placed Callisto out of danger among the stars, transforming her into the constellation Ursa Major. Later he transferred her son, Arcas, into the neighboring constellation Ursa Minor. The indignation Hera, seeing the high honor thus done Callisto and Arcas, induced Oceanus, the god of the sea, and his wife Tethys, to prevent Callisto and Arcas ever from rising beyond the ocean hollows, hence the Bears were compelled to swing perpetually around the north celestial pole.

composed of the stars alpha, beta,

zeta, or Mizar, the one at the bend in the "handle." As has been appropriately remarked, this star, in every sense of the word, was the first double star to be discovered. With its fourth magnitude companion, Alcor, distant 11.5 minutes, it makes a wide and readily distinguishable naked-eye pair, popularly known as "the horse and the rider." Mizar was the first double star to be discovered with the telescope, when, in 1650, at Bologna, Riccioli found it to consist of two components of the two and one-half and fourth magnitudes, respectively, some 14.5 seconds apart. It was the first double star to be photographed and measured photographically (by Bond, in 1857); and the brighter component, which was the first spectroscopic binary to be discovered (by Pickering, in 1889) was one of the earliest double stars to be measured (by Pease, in 1925) with the 20-foot beam interferometer attached to the 100-inch Mount Wilson reflector.

As previously stated, E. C. Pickering, in 1889, discovered that the brighter component of Mizar is a spectroscopic binary, whose period of revolution was subsequently found (by Vogel) to be 20.5 days. The two members of this close spectroscopic pair revolve around their common center of gravity in nearly equal orbits at a mean distance from each other of some 20,000,000 miles, the mass of each star being equal approximately to twice that of the Sun. In 1908, Frost and Lee announced that the fainter component likewise is a spectroscopic binary, and in the same year Frost determined that Alcor also is a spectroscopic double.

Mizar and Alcor, together with the eighth magnitude star (sometimes called the "Sidus Ludovicianum"!), located between and making a triangle with the two, constitute a favorite and beautiful group for observation with a small telescope. In contemplating this field of stars, it is of never-failing interest to recall that each of the telescopic components of Mizar is itself a spectroscopic binary; that these two pairs in turn are probably in slow revolution around a common center of gravity; that Alcor, at a distance from this quaternary system of the order of 15,000 times the distance from the Earth to the Sun, is in reality also a couple of suns so close together and so far removed from us that they can be resolved only by spectroscopic aid; and that Mizar and Alcor, in company with four other stars of the Great Dipper, are, like a squadron of mighty airplanes, ceaselessly plying their way through space in the same direction, with the same speed.

Ernest Rutherford — larger than life

After editing a book on *Nature Mathematized* earlier this year, Professor William Shea from the Philosophy department has just edited a volume on *Otto Hahn and the Rise of Nuclear Physics* (Dordrecht and Boston: Reidel, 1983) which provides an account of the development of Hahn's pioneering work in radioactivity and atomic physics, especially in Canada where he became an associate and friend of Ernest Rutherford.

Hahn was 26 when he arrived at McGill in the autumn of 1905. He had already discovered a new element called radiothorium (actually a new isotope of thorium with mass number 228) whose existence Rutherford doubted until Hahn was able to provide him with conclusive evidence in his own laboratory. This was, of course, the Macdonald Physics Building (now the Macdonald Stewart Library), which had been endowed by tobacco king Sir William Macdonald. In Rutherford's own words, it was the best of its kind in the world, but at the turn of the century this meant little more than the availability of decent facilities. Instrumentation was still primitive and had to be constructed by the experimenters themselves. For instance, beta-ray and gamma-ray electroscopes were made of large sheet metal cans on which tobacco or coffee cans were mounted.

Boyish delight

Hahn became a close friend of Rutherford, whose energy and enthusiasm made life in his laboratory a constant challenge. Like many of Rutherford's students, Hahn often recalled Rutherford's laughter and the boyish delight he took in repeating the *bons mots* of fellow scientists. While Hahn was in Montreal, H. Marckwald, a German chemist who had independently discovered polonium and christened it tellurium, published an article in which he acknowledged the priority of Marie Curie's discovery and withdrew the name he had proposed. He ended his paper with a quotation from *Romeo and Juliet*, "What's in a name? That which we call a rose, by any other name would smell as sweet." This literally enraptured Rutherford, who went

around the Macdonald Physics Building making the walls echo with these lines.

Shortly before Hahn's arrival in Montreal, John McNaughton, who taught classics at Queen's University and tried for a year to teach the same subject at McGill before fleeing back to the quiet haven of Kingston, penned an amusing, if somewhat satirical, description of Rutherford: "The lecturer seemed himself a large piece of the expensive and marvellous substance he was describing. Radioactive is the one sufficient term to characterize the total impression made upon us by his personality. Emanations of light and energy, swift and penetrating, cathode-rays strong enough to pierce a brick wall, or the head of a professor of Literature, appeared to sparkle and coruscate from him all over in sheaves."

Informality

Rutherford was always larger than life, and he never departed from his native informality both in his manner of address and in his way of dressing. One day a photographer came to McGill to take a picture of Rutherford and his apparatus for *Nature*. When the plate was developed, the photographer was not satisfied with it: Rutherford was not even wearing a long-sleeved shirt with cuff-links! For the second picture, Hahn obligingly lent him the detachable cuffs that he, like many others, wore in those days. But the photographer was still dissatisfied. The cuffs did not show enough. In a third picture they were prominently displayed and Hahn recalls that he had the satisfaction of seeing his cuffs immortalized in *Nature*.

Hahn was also amused by the occasional visits of Sir William Macdonald. Although he had made all his money out of tobacco, Macdonald considered smoking a filthy habit and would allow no one to smoke in his presence. Rutherford was a chain smoker, seldom to be found without a cigarette or a pipe in his mouth, and when Macdonald called to say that he was coming round Rutherford would rush into the laboratory with stentorian cries of "Open the windows! Put away your pipes! Hide your tobacco, Macdonald is

coming!"

Hahn spent most his days as well as his evenings in the laboratory, but he was a frequent visitor at Rutherford's house. There they invariably talked shop, somewhat to the annoyance of Mrs Rutherford, who would have been gratified if her husband and his guests occasionally listened to her performing on the piano. Hahn was also invited to the home of Professor Cox, the director of the Macdonald Physics Building. Here science took a more entertaining turn. A gas-burning candelabrum hung from the ceiling of the living room, and when a guest knocked on the door the

stopcock was turned, the guest was asked to scuff across the carpeted floor to accumulate a static charge, and then to reignite the candelabrum by means of the electric spark that jumped from his extended finger.

Life in Montreal was expensive. A room with breakfast and dinner could be had for five dollars a week, and lunch at the University cost 25 cents. But Hahn and his friend Max Levin found that meals at the boarding house hardly provided the energy needed by a research student and they made a point of dining out at the Windsor Hotel, then the best in town, every Sunday. This cost

them a dollar apiece. After a while Hahn and Levin decided to economize on the food, but they would not forsake their Sunday evening beer. When they ordered only beer, they were told that alcoholic beverages could not be served without food. "How about ordering a ham sandwich?" the waiter suggested. They complied and the waiter picked up a sandwich, slightly yellow with age, from a neighbouring table and brought it to them before fetching their beer. The two German scientists watched with amusement, as many have watched since, as "their" sandwich subsequently moved from

table to table as new customers arrived.

Hahn left Montreal in the summer of 1906 to take up an appointment at the University of Berlin. He returned to Germany not only with a greater knowledge of radioactivity but also with much fondness for the ease and informality of relations between younger and older research scientists at McGill. In Rutherford's laboratory plain words were encouraged, and the young were not expected to keep their peace. The pomposity of the world of academe had been pricked forever.



A QUALITY SIGN
FOR SCIENCE TOOLS

Equipment for:

Electrophoresis

Chromatography

Conductometry

Ultra-Microtomy

Beta-Ray Spectrometry

Medical Radiology

High-Vacuum Measurement

come close enough to warrant a continuous watch. On the desk where Erik is sitting is an old adding machine, which he bought in an antique shop in Lakobia, the capital of Neptune, where the ship had yesterday stopped over to re-fuel. The machine was said to have been brought there from Earth on one of the first trips ever made to Neptune by man, and Erik has decided to give it as birthday present to his old mathematics instructor, now retired from his chair at the Space Navigation Institute. Apparently in good working condition, the adding machine has a keyboard including keys for 0, 00, 000, 1, 2, 3, 4, 5, 6, 7, 8, and 9 (see figure), as well as a number of keys for addition, subtraction, totalling, etc.

Erik, who in his younger days was an ardent chess player, lets his fingers run over the keys, trying to cover all twelve by the knight's move in chess, landing only once on each key. After a while he finds that there are several different ways of doing this, all of course giving different totals when printed out on the machine's tape. "Which is the highest total attainable?" he thinks. "And which are the lowest, a) when all twelve keys are used, and b) when jumping over the keyboard until you get stuck?"

These problems keep Erik happily occupied for some time — so long that he very nearly forgets to correct the ship's course for the drag of an approaching asteroid. "A miss is as good as a mile" he mumbles, when the event is over, like the inveterate jay-walker he was on earth. We are, Dear Reader, therefore in the fortunate position of being able to pass on to you the tale of Erik's musings over the old adding machine. Can you answer his questions about the highest and lowest totals attainable on the keyboard of the old adding machine?

Answers are requested on or before Febr. 28, 1961.

*With Our Best Wishes
for A Happy New Year!*

LKB-PRODUKTER AB

STOCKHOLM 12 · SWEDEN

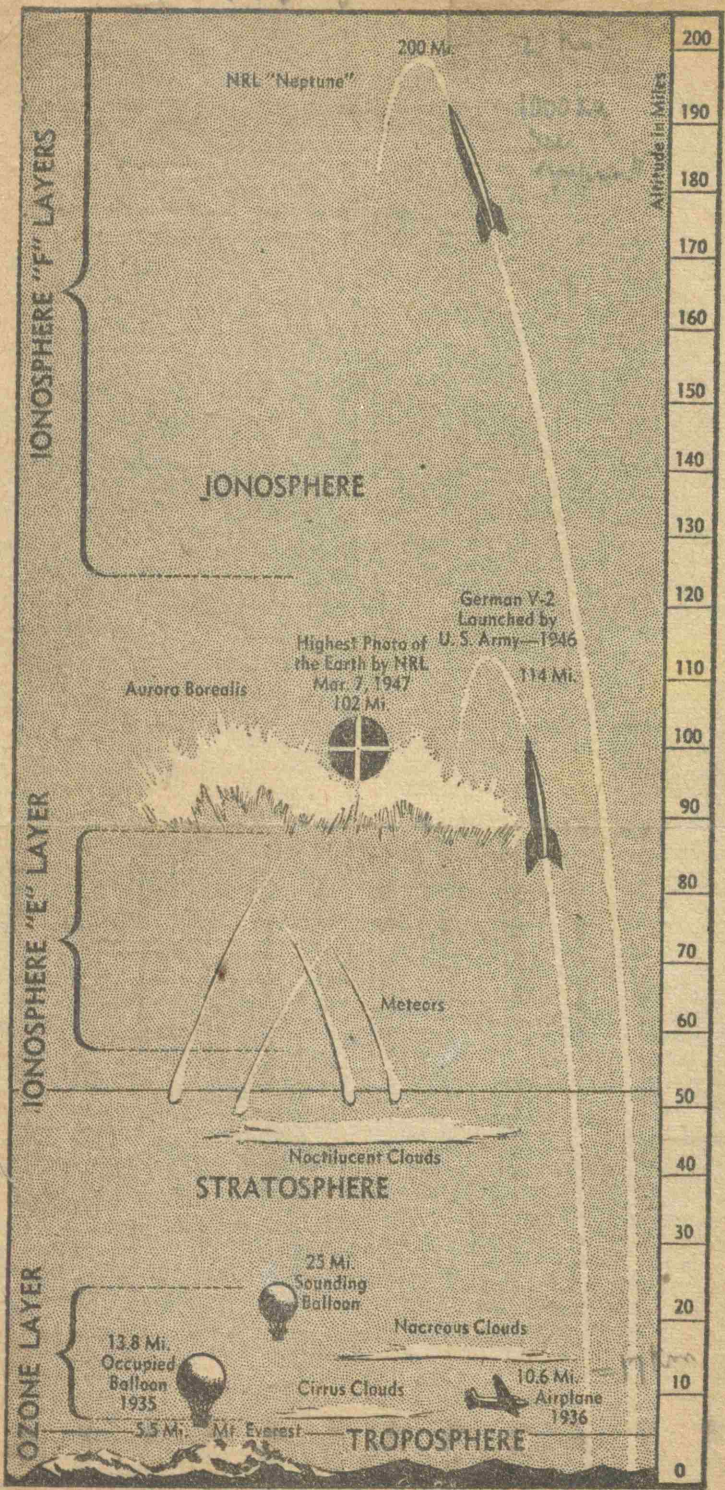


Here's a problem for you!

7	8	9
4	5	6
1	2	3
0	00	000

Homeward bound from outer space, the S/S (for Space Ship) "Stella Viking" follows a steady course past Saturn. Erik Eriksson, on duty in the ship's computer-filled navigation cabin, has just checked that the programmed compensation for the attraction of Titan is once again correct, and the cloud-covered satellite, the biggest of Saturn's nine moons, is rapidly fading away in the wake of the ship. Meteors excepted, which will be traced by radar and, having a very small mass, can be automatically by-passed, no celestial bodies are expected in the ship's path for a couple of hours when some of the outer asteroids

1947



AN IDEA of the tremendous height to which the U.S. Navy's new rocket missile "Neptune" is expected to soar is given by this diagram, comparing its projected flight with altitudes previously attained by various missiles, balloons and planes. Chart was prepared from data obtained by Glenn L. Martin Company, builders of the Neptune, from the Naval Research Laboratory.

ties in continuing, nearly two years from VJ-Day, forms of taxation which originated in wartime conditions. If persisted in, he said this would result eventually in defeating the efforts of manufacturers to produce in quantities at a price that would enable Canadian goods to be sold in foreign markets which the general public can afford to pay.

"The principle of imposing various forms of income taxes on the earnings of a company, then of following through and imposing them again on dividends in the hands of that company's shareholders, is economically unsound," he declared. "If insisted on, it will eventually defeat the purpose for which it was intended. How can capital be found for new enterprises or for expansion of old industries if there be practically nothing left of earnings in the hands of the many shareholders from whom venture capital is expected to be obtained?"

* * *

REFERRING to private companies he said that for many generations Canadian families have built up their own businesses which have been handed down from father to son.

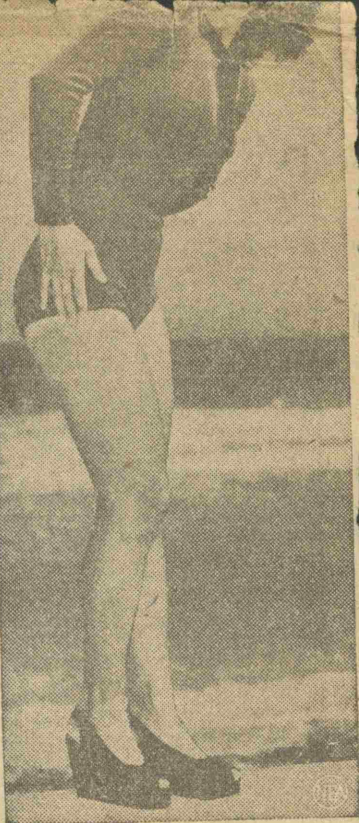
"How are such businesses to continue and, incidentally, to produce an annual revenue, by way of income tax to the government if, eventually, as the result of one or two deaths, their very livelihood, the capital on which their operation depends, disappears in the payment of succession duties?" he queried.

Mr. Tobin made a strong plea for those returned servicemen, who, because of their age, were finding it difficult to obtain employment.

"It is asserted," he said, "that employers are reluctant to hire men who are too old to bring along in their organizations. As a result, deserving veterans in many cases with adequate training for a position, are passed over and left unemployed. Your help, in the circumstances, is a patriotic duty."

Two Arrested After Chase

SIMCOE, June 2 — (CP) — An 80-mile-an-hour chase by police in which revolver shots were fired resulted in arrest of Wesley



RED PEPPA—Wearing a red flannel suit to good advantage, Pepper Donna, "Miss Miami Beach of 1947," practices a rhumba routine she'll show the judges during "Miss America" contest finals at Atlantic City, N.J.

Tel

HARVEY S. FIRE
FIRESTONE TIR

I WON 500-MILL
ON FIRESTONE
SAFETY AND R
VICTORY.

Richard D. ...

EARTHS
IN OUR
SOLAR SYSTEM

BY
EMANUEL SWEDENBORG

Rotch Edition

B. A. WHITEMORE
134 BOWDOIN STREET
BOSTON, MASS.
1937

*1940 Jan 11
from X.*

EARTHS
IN OUR
SOLAR SYSTEM

BY
EMANUEL SWEDENBORG

Revised Edition

B. A. WHITTEMORE
134 BOWDOIN STREET
BOSTON, MASS.
1937

PRINTED IN U. S. A.

INTRODUCTION

"Earths in the Universe" was published in the year 1758, and presumably was written in that year. The full Latin title literally translated is "Concerning Earths in the Solar World, which are called Planets: and concerning Earths in the Starry Heaven: and concerning their inhabitants; and likewise concerning the Spirits and Angels there; from Things Seen and Heard. At London: 1758." This, we see, is quite properly covered by the title "Earths in the Universe". It is well to note that the book contains two accounts: one of earths of our solar system; and one of earths of the starry heaven outside the solar system. The latter seems to be copied almost *verbatim* from the chapter ends in the *Arcana Coelestia*, which we find in the last four volumes written from 1752 to 1756, though the book account is more extended and contains additional matter. In other words, Swedenborg rewrote the account of Earths in the Starry Heaven, and incorporated the *Arcana* material.

"Earths in the Universe" may be read from two very different points of view, and in the light of two very different contexts or mental equipments. In either case the book is a very serious intellectual and psychological problem. We are called upon to understand conditions strangely different from those of our ordinary experience, and to interpret details exceedingly unlike the objects of our familiar natural world.

If read by an informed student of Swedenborg, what

is said about visiting and conversing with the spirits of other planets will be accepted as matter of fact, in view of his teaching about the nature of the spiritual world and man's relation to it.

But if read from the point of view of traditional thought, especially in the light of the mental equipment of modern times, the whole account must seem unbelievable and in large part inconceivable. The achievements of modern science in mechanics and theoretical physics have been so marvelous that they have disposed and habituated the minds of men to think only in terms of material bodies and in terms of the abstract ideas derived from the study of bodies and their behavior. These habits are so ingrained, and these standards are so exacting, that for such minds a separate and distinct spiritual world is entirely excluded from the field of reality. Accordingly when Swedenborg tells of conversing with the spirits of other planets, he is to such minds using meaningless, and of course incredible, language.

But granting the existence of the spiritual world, and of the conditions peculiar to that world, Swedenborg's account becomes veracious and intelligible. It would be quite apart from our purpose to enter into the details of the account, and to try to explain the difficulties involved. But it seems pertinent to refer to some principles of interpretation which would relieve the reader's task of some inevitable obstacles.

In the first place, Swedenborg explains that he did not go through space to visit the spirits of other planets. But it was accomplished by change of state, and by passing through series of changes of state. According

to the law that similarity of state in the spiritual world brings presence, these changes of state brought him into the presence of the spirits of the various planets. Such changes are permitted by the Lord in response to the spirit's desire to know about the spirits of other planets.

Another serious, though superficial, obstacle to belief in the account is the almost unanimous conviction in scientific circles that the planets are not inhabited, for the simple reason that the conditions there make life impossible. It would take too much space to show that this conviction lacks a solid basis, but it is pertinent to remark that the conviction rests upon the assumption that we can predict and prescribe the necessary conditions of life, and that these conditions must be identical with those on the Earth; it also rests on the assumption that we have exact and full knowledge of the conditions on other planets. Both of these assumptions are questionable; both are complicated inferences from observed data to remote conditions; for example, the temperatures and the atmospheres of the planets.

The credibility of these accounts must rest in the first place upon Swedenborg's competence and veracity, and finally upon the consistency of the accounts with informed reason. It must be admitted that Swedenborg's experience was unique. He says that at the time this book was written he had enjoyed for twelve years the privilege of being constantly in the spiritual world as to his mind, while yet in the body. He had conversed with all kinds of spirits and occasionally with angels. He was permitted to have this prolonged experience in order that he might learn the nature of the spiritual

world, as a preparation for opening the spiritual meaning of the Bible, so that men, by the spiritual enlightenment this meaning would give, might rise from the level of Nature to the level of spiritual thought and life.

This book is to a considerable extent self-explanatory, but it should be read in the light of his teaching on the nature of the spiritual world. That other planets were inhabited Swedenborg learned through the spirits of those planets; but he also maintained that it was a valid conclusion of reason, the reason being that it would be inconsistent with the purpose of creation that only this small planet should be inhabited. The purpose of creation is revealed in the nature and position of man as a free rational being, and as the highest recipient of Divine Love and Wisdom.

The book should be read as far as possible free from prejudice, and with a mind open to new knowledge. Read in this spirit, it will lead into a new world.

Lewis Field Hite

LEWIS FIELD HITE, A. M. (Harvard),
*Professor of Philosophy at the
New-Church Theological School.*

EARTHS IN THE UNIVERSE

CONTENTS.

	Nos.
The Earths in the Universe	1-8
The Earth or Planet Mercury	9-45
The Earth or Planet Jupiter	46-84
The Earth or Planet Mars	85-96
The Earth or Planet Saturn	97-104
The Earth or Planet Venus	105-110
The Spirits and Inhabitants of the Moon	111-112
The Reasons why it pleased the Lord to be born on our Earth, and not on another	113-122
Earths in the Starry Heavens	123-126
First Earth in the Starry Heavens	127-137
A Second Earth in the Starry Heavens	138-147
A Third Earth in the Starry Heavens	148-156
A Fourth Earth in the Starry Heavens	157-167
A Fifth Earth in the Starry Heavens	168-178

THE EARTHS IN THE UNIVERSE.

1. SINCE, by the Divine mercy of the Lord, the interiors of my spirit have been opened, and thereby I have been enabled to speak with spirits and angels, both with those who are near our earth and with those who are near other earths, and since I had a desire to know whether there are other earths, and what is their nature and that of their inhabitants, therefore it has been given me by the Lord to speak and converse with spirits and angels from other earths — with some for a day, with some for a week, and with some for months — and to be instructed by them concerning the earths from which and near which they were, and concerning the life, the customs, and the worship of the inhabitants, as well as various other matters worthy of narration; and since it has been granted me to learn these things in this way, I am permitted to describe them from what I have heard and seen. It is to be known that all spirits and angels are from the human race;^a and that they are near their respective earths,^b and know what takes place there; and that man may be instructed by them if his interiors are so opened that he can speak and converse with

REFERENCES TO WHAT MAY BE FOUND ON THESE SUBJECTS IN THE AUTHOR'S "HEAVENLY ARCANA."

^a That there are no spirits nor angels who are not of the human race, n. 1880.

^b That the spirits of every earth are near to their own earth, because they are from its inhabitants and of similar genius, and that they are of service to these inhabitants, n. 9968.

them. For man in his essence is a spirit^c and together with spirits as to his interiors ;^d wherefore he whose interiors are opened by the Lord can speak with them, as man with man ;^e and this has been granted me daily for now twelve years.

2. That there are many earths, and men upon them, and spirits and angels thence, is very well known in the other life, for there every one who desires it from a love of truth and thence of use, is allowed to speak with spirits of other earths, and thereby to be confirmed concerning the plurality of worlds, and to be informed that the human race is not from one earth merely, but from innumerable earths ; and also to be informed what is their genius, their manner of life, and their Divine worship.

3. I have occasionally spoken on this subject with spirits of our earth, and it was said that any man of good understanding may infer from many things that he knows, that there are very many earths, inhabited by men ; for it may be concluded from reason that such great masses as the planets are, some of them exceeding this earth in magnitude, are not vacant masses, created only to be borne along and revolve around the sun, and to shine with their scanty light for one earth, but that their use must needs be a much more important one than that. Whoever believes, as every one ought to believe, that the Divine Being has created the universe for no other end than that the human race

^c That the soul, which lives after death, is the spirit of man, which is the real man in him, and also appears in the other life in perfect human form, n. 322, 1880, 1881, 3633, 4622, 4735, 6054, 6605, 6620, 7021, 10594.

^d That man, even when here in the world, as to his interiors, consequently as to his spirit or soul, is in the midst of spirits and angels of such quality as he is himself, n. 2379, 3645, 4067, 4073, 4077.

^e That man is able to speak with spirits and angels, and that the ancients on our earth did frequently speak with them, n. 67-69, 784, 1634, 1636, 7802. But that at this day it is dangerous to speak with them, unless man is in true faith and led by the Lord, n. 784, 9438, 10751.

may exist, and thence heaven — for the human race is the seminary of heaven — he cannot but believe that wherever there is an earth, there are men. That the planets which are visible to our eyes, because within the boundaries of this solar system, are earths, may be clearly known from this, that they are bodies of earthy matter, because they reflect the light of the sun, and when seen through the telescope, they appear, not as stars radiant from flame, but as earths variegated with darker portions. The same may further appear from this, that they are borne like our earth around the sun, advancing by the way of the zodiac, and thus make their years and the seasons of the year, spring, summer, autumn, and winter; and that also like our earth they rotate on their own axis, from which they have their days and times of day, morning, noon, evening, and night, some of them also having moons, called satellites, revolving in their appointed times around their earth, as our moon revolves around our earth; the planet Saturn, because farthest distant from the sun, having also a large luminous ring, which gives that earth much, though reflected, light. Who that knows these things and thinks rationally about them, can ever affirm that these are empty bodies?

4. Moreover, in conversing with spirits I have said that men may believe there are in the universe more earths than one, from this, that the starry heaven is so immense, and the stars therein so innumerable, each of which in its place, or in its world, is a sun like our sun, but varying in magnitude. Whoever duly considers, concludes that so immense a whole cannot but be a means to an end, the ultimate end of creation, which end is the kingdom of heaven, wherein the Divine may dwell with angels and men; for the visible universe, or the heaven resplendent with stars so innumerable, which are so many suns, is only a means for the existence of earths, with men upon them, of whom is the kingdom of heaven. From these things a rational man must needs be led to conceive, that so im-

mense a means for so great an end was not constituted for a race of men, and for a heaven thence, from one earth only ; for what would this be to the Divine, which is infinite, and to which thousands, yea, ten thousands of earths, all full of inhabitants, would be but a small matter and scarce anything.

5. And further, the angelic heaven is so immense that it corresponds to all the particulars of a man, myriads corresponding to every member, organ, and viscus, and to every one of his affections ; and it has been given to know that this heaven can in no way exist as to all its correspondences, except from the inhabitants of very many earths. *f*

6. There are spirits whose sole study is to acquire for themselves knowledges, in which alone they find delight, and who are therefore permitted to wander about, and even to pass out of this solar system into others, in order to extend their knowledge. These spirits declare that there are earths inhabited by men, not only in this solar system, but also beyond it in the starry heaven, to an immense number. They are from the planet Mercury.

7. As to what in general concerns the Divine worship of the inhabitants of other earths, those of them who are not idolaters all acknowledge the Lord as the Only God ; for they adore the Divine, not as invisible, but as visible, for the reason, too, that when the Divine appears to them, He appears in a human form, as He also formerly appeared to Abraham and others on this earth ; *g* and they who adore

f That heaven corresponds to the Lord, and that man, as to the whole and every part corresponds to heaven, and that hence heaven before the Lord is a man in large form, and to be called the Greatest Man, n. 2996, 2998, 3624-3649, 3741-3745, 4625. Concerning the correspondence of man, and of all things pertaining to him, with the Greatest Man, which is heaven, in summary, from experience, n. 3021, 3624-3648, 3741-3750, 3883-3895, 4039-4054, 4218-4227, 4318-4330, 4403-4420, 4523-4533, 4622-4633, 4652-4659, 4791-4805, 4931-4952, 5050-5061, 5171-5189, 5377-5396, 5552-5573, 5711-5726, 10030.

g That the inhabitants of all the earths adore the Divine under a

the Divine under a human form, are all accepted by the Lord.^k They say also that no one can rightly worship God, much less be joined to Him, unless he comprehends Him by some idea, and that God cannot be comprehended except in human form; and that if He is not so comprehended, the interior sight, which is of the thought, concerning God, is dissipated, as is the sight of the eye when looking upon the boundless universe; and that in this case the thought cannot but sink into nature, and worship nature as God.

8. When they were told that the Lord on our earth assumed the human, they mused awhile, and presently said that this was done for the salvation of the human race.

THE EARTH OR PLANET MERCURY, ITS SPIRITS AND INHABITANTS.

9. That the universal heaven has the form of one man, which is therefore called the Greatest Man, and that all things and everything pertaining to man, both exterior and interior, correspond to that Man, or heaven, is an arcanum not yet known in the world; but that it is so, has been abundantly shown.ⁱ To constitute that Greatest Man, spirits are required from many earths, those who come from our earth into heaven not being sufficient, being com-

human form, consequently the Lord, n. 8541-8547, 10159, 10736-10738. And that they rejoice when they hear that God actually became Man, n. 9361. That God cannot be thought of except in a human form, n. 8705, 9359, 9972. That man may worship and love what he has some idea of, but not what he has no idea of, n. 4733, 5110, 5633, 7211, 9267, 10067.

^k That the Lord receives all who are in good, and who adore the Divine under a human form, n. 9359, 7173.

ⁱ That spirits enter into all things of man's memory, but not from their own memory into man's, n. 2488, 5863, 6192, 6193, 6198, 6199, 6214. That angels enter into the affections and ends from which, and for the sake of which, man thinks, wills, and acts in his manner, and not otherwise, n. 1317, 1645, 5854.

paratively few ; and it is provided by the Lord that whenever and wherever there is a deficiency in the quality or quantity of correspondence, those are summoned at once from another earth who may supply the deficiency, so that the proportion may be preserved, and thus heaven be kept in due form.

10. It has also been disclosed to me from heaven, to what in the Greatest Man the spirits from the planet Mercury have reference, namely, to the memory, but to the memory of things abstracted from those that are terrestrial and merely material. But since it has been granted to speak with them, and this during many weeks, and to learn the quality and mode of life of the inhabitants of that earth, I will make known what I have thus learned by experience.

11. Some spirits came to me, and I was told from heaven that they were from the earth nearest the sun, which in our earth is called the planet Mercury. They began as soon as they came to explore my memory in search of all that I knew — which spirits can do most dexterously, as when they come to a man, they see in his memory everything there is in it. While they were searching for various things, and among others for the cities and places in which I had been, I observed that they did not care to know of temples, palaces, houses, or streets, but only of what I knew to have been done in those places, and of whatever related to the established order there and to the genius and manners of the people, and such like matters. For such things cling to the places in man's memory, and so when the places are called up, these come up also. Wondering at this nature of theirs, I asked them why they disregarded the magnificence of the places, and only attended to what had been done in them. They said they took delight in looking, not at what was material, corporeal, and earthly, but only at what was real. Thus it was made clear that the spirits of that earth, in the Greatest Man, have relation to the memory of realities abstracted from all that is material and earthly.

12. I was told that such is the life of the inhabitants of that earth, namely, that they care nothing for things earthly and corporeal, but only for the customs, laws, and rule of the peoples there, as also for the things of heaven, which are innumerable. I was further told that many of the men of that earth speak with spirits, and that thus they have knowledges of spiritual things, and of the states of life after death, and thence also a contempt for corporeal and earthly things. For they who know of a certainty, and believe, that they shall live after death, are concerned about heavenly things, because these are eternal and happy, but not about worldly things, except so far as the necessities of life require. And since this is the nature of the inhabitants of Mercury, it is also that of the spirits who come from it.

13. How eagerly they inquire into and appropriate such knowledges as are of the memory elevated above the sensuals of the body, was made evident to me from this, that when they looked into those things which I knew respecting heavenly subjects, they passed hastily through them all, saying continually that this and that were so and so. For when spirits come to man, they enter into all his memory, and call forth from it whatever suits themselves; indeed, as I have often observed, they read what is in it as out of a book.* These spirits did this the more dexterously and quickly because they did not stop at such things as are heavy and sluggish, and which confine and consequently retard the internal sight, as all earthly and corporeal things do, when regarded as ends, that is, when they alone are loved; but they looked to the realities themselves; for realities not clogged by earthly things, bear the mind upward, and thus into a broad field; but mere material things bear the mind downward, and limit it and close it up. Their eagerness to acquire knowledges and to enrich the memory, was manifested also in this way. While I was

* That the spirits who are with man, are in possession of all things of his memory, n. 5853, 5857, 5859, 5860.

writing something about things to come, and these spirits were at a distance, so that they could not look into those things from my memory, they were very indignant because I was not willing to read them in their presence, and, contrary to their usual behavior, they were ready to inveigh against me, saying that I was one of the worst of men, and such like things. And to show their anger they caused a kind of contraction, with pain, on the right side of my head even to the ear. But such things did me no harm. Yet as they had done evil, they removed themselves still further away; but presently they stood still again, wishing to know what I had written — so great is their desire for information.

14. The spirits of Mercury, above all other spirits, possess a knowledge of affairs, not only those that are in our solar system, but also those that are outside of it in the starry heaven; and what they have once acquired, they retain, and also recollect as often as anything similar occurs. From this also it may be plainly evident that spirits have memory, and much more perfect than the memory of men; also that what they hear, see, and perceive, they retain, and especially such things as they delight in — as these spirits delight in the knowledge of realities. For whatever brings delight and love, flows in spontaneously as it were and remains. Other things do not enter, but only touch the surface and glide by.

15. When the spirits of Mercury come to other societies, they ascertain from them what they know, and then depart; for there is such communication among spirits, and especially among angels, that when they are in a society, if they are accepted and loved, all things which they know are communicated.¹

16. In consequence of their knowledge, the spirits of

¹ That in the heavens there is given a communication of all good things, inasmuch as heavenly love communicates all its possessions with others; and that from this the angels have wisdom and happiness, n. 549, 550, 1390, 1391, 1399, 10130, 10723.

Mercury are exceedingly proud. They were therefore told that although they know innumerable things, yet there are infinite things which they do not know ; and if their knowledges should increase to eternity, they could not even come to know all that is general. They were also told of their pride and their elation of mind, and that this is unseemly. But they answered that it is not pride, but only a glorying because of their powers of memory — so able are they to make excuses for their faults.

17. They are averse to vocal speech, because it is material, and therefore, when no intermediate spirits were present, I could not speak with them except by a kind of active thought. Their memory, because it is of realities, not of purely material images, supplies objects that are nearer to the thought ; for the thought, which is above the imagination, requires for its objects things abstracted from what is material ; but notwithstanding this, the spirits of Mercury have little power of judgment, finding their delight, not in matters of judgment and of conclusions from knowledges, but in bare knowledges.

18. They were asked whether they wished to make any use of their knowledges ; for they were told that it is not enough to delight in knowledges, because knowledges have respect to uses, and uses ought to be the ends ; that from knowledges alone no use results to them, but to others with whom they are willing to communicate their knowledges ; and that it is by no means fitting for any one who wishes to be wise, to rest in mere knowledges, because these are only instrumental causes, to serve in the investigation of things appertaining to life. But they replied that they delighted in knowledges, and that knowledges to them are uses.

19. Some of them also are unwilling to appear as men, like the spirits of other earths, but would rather appear as crystalline globes. The reason why they are desirous to appear so, though they do not, is, that the knowledges of

things immaterial are represented in the other life by crystals.

20. The spirits of Mercury differ altogether from the spirits of our earth, for the spirits of our earth do not care so much for what is real, as for what is worldly, corporeal, and earthly, that is, material. For this reason the spirits of Mercury cannot be together with the spirits of our earth, and so whenever they chance upon them, they flee away; for the spiritual spheres exhaled from the two are almost contrary. The spirits of Mercury have a saying, that they do not wish to look at a sheath, but at things stripped of their sheath, that is, interior things.

21. There appeared a whitish flame burning briskly, and this for about an hour, by which was signified the coming of spirits from Mercury, who in discernment, in thought, and in speech, were quicker than those who came before. When they came, they immediately ran through what was in my memory, but so quickly that I could not perceive what they observed. I afterward heard them making their comments. In respect to what I had seen in the heavens and in the world of spirits, they said that they knew all that before. I perceived that there was a multitude of spirits consociated with them, behind, a little to the left, in the plane of the occiput.

22. At another time I saw a multitude of such spirits, but at some distance from me, in front a little to the right, and they spoke with me thence, but by means of intermediate spirits; for their speech was as quick as thought, which does not fall into human speech, unless by some intermediate spirits. And what surprised me they spoke in a body [*volumatim*], and yet so readily and rapidly. Their speech, being that of many together, was perceived as undulatory; and, what is noteworthy, it passed toward my left eye, although they were to the right. The reason was, that the left eye corresponds to the knowledges of things abstracted from what is material, and thus to such as are of

intelligence ; while the right eye corresponds to such as are of wisdom.^m They also perceived and judged of what they heard with the same quickness with which they spoke, saying that this was so, and that not so. Their judgment is as it were instantaneous.

23. There was a spirit from another earth, who could speak with these dexterously, because he spoke readily and quickly, but who affected elegance in his speech. Whatever he uttered they passed judgment on at once, saying that this was too elegant, this too polished ; so that all they cared for was whether they heard anything from him that they had not known before, thus rejecting such things as caused obscurity, especially affectations of elegance of speech and of learning ; for these hide the real things, and in their stead put words which are the material forms of things. For he who speaks keeps the attention fixed on the words, and desires that they should be regarded more than their meaning ; and thus the ear of the hearer is affected more than his mind.

24. The spirits of the earth Mercury do not stay long in one place, or in the company of the spirits of one world ; but wander through the universe. The reason is, because they have reference to the memory of things, which memory must be continually enriched. Hence they are permitted to wander about, and to acquire knowledges everywhere. When they are thus travelling, if they meet with spirits who love what is material, that is to say, corporeal and earthly, they shun them, and betake themselves where such things are not heard. From this it may be evident that their mind is elevated above things of sense, and thus that they are in interior light. This was also given me actually to

^m That the eye corresponds to the understanding, because the understanding is internal sight, and the sight of things not material, n. 2701, 4410, 4526, 9051, 10569. That the sight of the left eye corresponds to truths, and thus to intelligence ; and the sight of the right eye corresponds to the goods of truth, and thus to wisdom, n. 4410.

perceive, whilst they were near me and spoke with me. I then observed that I was withdrawn from the things of sense, insomuch that the light of my eyes began to grow dull and obscure.

25. The spirits of that earth go in companies and troops, and when assembled together, they form as it were a globe. They are thus conjoined by the Lord that they may act as one, and that the knowledges of each may be communicated with all, and the knowledges of all with each, as is the case in heaven.² That they wander through the universe to acquire knowledges of things, was evident to me also from this—that once when they appeared very remote from me, they spoke with me thence, and said that they were then gathered together, and were going out of the sphere of this world into the starry heaven, where they knew such spirits existed as did not care for what was earthly and corporeal, but only for what is elevated above these things, and that they wished to be with them. It was said that they themselves do not know whither they are journeying, but that they are led by the Divine guidance where they may be instructed concerning such things as they do not yet know, and which agree with the knowledges they have. It was also said that they do not know how they find the companions with whom they are joined, and that this also is done under the Divine guidance.

26. Because of their thus journeying through the universe, and thereby being enabled to know more than others respecting the worlds and earths beyond the sphere of our solar system, I have spoken with them on this subject also. They said that in the universe there are very many earths inhabited by men, and they wonder that any, whom they called men of little judgment, should suppose that the heaven of the Omnipotent God consists only of the spirits and angels from one earth, when these are so few that in respect to the Omnipotence of God they would be scarce anything, even if there should be myriads of worlds and

myriads of earths. They said further that they knew of earths existing in the universe up to some hundreds of thousands; and yet what is this to the Divine, Which is infinite?

27. Spirits of Mercury who were with me while I was writing and explaining the Word as to its internal sense, and perceived what I was writing, said that what I wrote was very gross [*crassa*], and almost all the expressions appeared material; but it was given to answer that to the men of our earth what was written seemed subtle and elevated, and many things incomprehensible. I added that many on this earth do not know that it is the internal man which acts into the external, and causes it to live; and that they persuade themselves from the fallacies of the senses, that the body has life, and therefore those who are wicked and unbelieving, make question about the life after death; also that they call that part of man which is to live after death, not the spirit, but the soul; and that they dispute what the soul is, and where is its abode, and believe that the material body, though scattered to all the winds, is to be joined to it again in order that man may live as man — with many other such like things. The spirits of Mercury, on hearing these things, asked whether such men could become angels, to which it was given me to answer that they become angels who have lived in the good of faith and charity, and that then they are no longer in what is external and material, but in what is internal and spiritual; and that when they come into that state, they are in a light superior to that in which the spirits from Mercury are. That they might know that it was so, it was granted that an angel should speak with them who was in heaven from our earth, and who had so lived in the world — regarding which something will be said in what follows.

28. At another time there was sent me by the spirits of Mercury a long uneven sheet of paper, consisting of several sheets pasted together, which appeared as if printed with

types like those on our earth. I asked whether they had such printing among them. They said they had not, but they knew that on our earth we had such printed papers. They were not willing to say more; but I perceived that they thought that knowledges in our earth were upon our paper, and not so much in the man, thus insinuating that the papers knew what the man did not. But they were instructed how this really is. After some time they returned and sent me another paper, also printed as with types like the former, yet not so pasted together and rough, but neat and handsome. They said that they were further informed, that on this earth there are such papers and books made of them.

29. From what has now been said, it is very manifest that spirits retain in the memory what they see and hear in the other life, and that they can be instructed just as well as when they were men in the world, consequently in the things of faith, and thus be perfected. The more interior spirits and angels are, the more readily and fully do they absorb, and the more perfectly do they retain; and as this is so to eternity, it is plain that their wisdom increases continually. With the spirits of Mercury the knowledge of things continually increases, but not wisdom therefrom, because they love knowledges, which are means, but not uses, which are ends.

30. The genius of the spirits who are from the planet Mercury, may be still further apparent from what follows. It should be known that all spirits and angels whatsoever were once men, for the human race is the seminary of heaven; also that spirits are altogether such, as to their affections and inclinations, as they were when they lived as men in the world, since every one's life follows him.* Be-

* That every one's life remains with him and follows him after death, n. 4227, 7440. That the externals of life are kept closed after death, and the internals of life opened, n. 4314, 5128, 6495. That then all and each of the things of the thought are made manifest, n. 4633, 5128.

cause this is so, the genius of the men of every earth may be known from the genius of the spirits who are from it.

31. Inasmuch as the spirits of Mercury in the Greatest Man have reference to the memory of things abstracted from what is material, therefore when any one speaks with them concerning things earthly, corporeal, and merely worldly, they are altogether unwilling to hear; and if they are forced to hear about those matters, they transmute them into others, and for the most part into their opposites, to avoid them.

32. That I might know for certain that such was their genius, it was allowed to represent to them meadows, fields, gardens, woods, and streams—to represent such things is to present them to another's imagination, which is done in the other world to the life; but they instantly transmuted them, darkened the meadows and fields, and by representations filled them with snakes; the streams they made black, so that the water no longer appeared limpid. When I asked them why they did so, they said that they did not wish to think of such things, but of those that are real, which are the knowledges of things abstracted from what is earthly, especially of such as exist in the heavens.

33. Afterward I represented to them birds, both large and small, such as there are on our earth; for in the other life such things may be represented to the life. When they saw the birds represented, they wished at first to change them, but afterward they were delighted with them and were satisfied. The reason was, that birds signify the knowledges of things, and the perception of this then flowed in also;^o thus they desisted from transmuting them, and so from averting the ideas of their memory. Afterward it was allowed to represent before them a most pleasant garden

^o That birds signify rational things, intellectual things, thoughts, ideas, and knowledges, n. 40, 745, 776, 778, 866, 988, 993, 5149, 7441. And this with variety according to the genera and species of the birds, n. 3219.

full of lamps and lights. Then they paused and their attention was fixed, for the reason that lamps with lights signify truths which shine from good.[♯] From this it was plain that they could be held to viewing material things, if only the signification of them in their spiritual sense was insinuated at the same time ; for the things of the spiritual sense are not so far removed from material, since these are representative of them.

34. Again I spoke with them concerning sheep and lambs, but of such things they were not willing to hear, because they perceived them as earthly. The reason was, that they did not understand what innocence is, which lambs signify, as was seen when I told them that lambs represented in heaven signify innocence,[♯] for they then said that they did not know what innocence was, but only knew it by name. The reason is, that they are affected only with knowledges and not with uses, which are the ends of knowledges ; and so they cannot know from internal perception what innocence is.

35. Some of the spirits of the earth Mercury came to me, being sent by others to learn what was going on with me, to whom one of the spirits of our earth said, that they might tell their associates not to speak anything but what was true, and not, as they were accustomed, present the opposite to those who questioned them ; for if any of the spirits of our earth were to do so, he would be punished. Thereupon the company at a distance, from which those spirits were sent, made answer that, if they were to be punished for that, they would all be punished, since from continual habit they could not do otherwise. They said that when they speak with the men of their own earth, they do the same, and this not with the intention of deceiving, but

[♯] That lamps with lights signify truths shining from good, n. 4638, 9548, 9783.

[♯] That lambs in heaven, and in the Word signify innocence, n. 3994, 7840, 10132.

to inspire the desire of knowing. For when they suggest what is opposite, and conceal things in a certain manner, the desire of knowing is excited, and thus from the endeavor to examine into what is presented, the memory is perfected. I also spoke with them at another time on the same subject, and because I knew that they spoke with the men of their own earth, I asked how they instruct their people. They said, that they do not instruct them how the matter really is, but still insinuate some perception of it, that the desire of investigating and of knowing may thereby be fostered and increased. For if they answered everything, the desire would die out. They added that they present what is opposite also, to the end that the truth may afterward better appear ; for every truth is made clear from comparison with what is opposite.

36. It is their custom not to tell any one what they know ; but still they wish to learn from all what is known to them. Yet they communicate all things to their own society, inso-much that what one knows all know, and what all know is known to every one there.

37. Since the spirits of Mercury abound in knowledges, they have a certain pride, and think they know so much that hardly any more can be known. But it was told them by the spirits of our earth, that they do not know much, but little, and that the things they do not know are infinite in comparison ; that the things they do not know, compared to the things they do know, are as the waters of the largest ocean compared with the waters of a little fountain ; also that the first step toward wisdom is to know, acknowledge, and perceive, that what one knows is so little as to be scarce anything to what he does not know. That they might know that it is so, it was permitted that a certain angelic spirit should speak with them, and tell them in general what they knew and what they did not know, and that there were infinite things that they did not know ; also that to eternity they could not even learn the generals of

things. He spoke by angelic ideas, with much more readiness than they did, and because he disclosed what they knew and what they did not know, they were struck with amazement. Afterward I saw another angel speaking with them, who appeared at some height to the right. He was from our earth, and enumerated very many things which they did not know; and afterward he spoke with them by changes of state, which they said they did not understand. Then he told them that every change of state, and every least part of it, contained infinite things. When they heard this, as they had been in pride on account of their knowledges, they began to humble themselves. Their humiliation was represented by the lowering of their mass downward — for that company then appeared as a mass, in front toward the left, at a distance, in the plane of the region below the navel; but the mass appeared as it were hollowed in the middle, and elevated on the sides, and a reciprocal movement was also noticed in it. It was also told them what that signified, that is, what they thought in their humiliation; and that they who appeared elevated on the sides, were not as yet in any humiliation. Then I saw that the volume was separated, and that they who were not in humiliation, were remanded toward their orb, the rest remaining where they were.

38. There came spirits of Mercury to a certain spirit from our earth, who while he lived in the world had been most distinguished for his learning — it was Christian Wolff — desiring to receive information from him on various subjects. But when they perceived that what he said was not elevated above the things of sense of the natural man, because in speaking he thought of honor, and that he wished as in the world — since in the other life every one is like his former self — to connect various things into series, and from those series again and continually to form other conclusions, and so from such conclusions to link together still more — which they did not see or acknowledge to be true,

saying that thus his series did not cohere in themselves, nor with the conclusions, and calling these the obscurity of authority — they then desisted from asking him questions, inquiring only, how this is called, and how that ; and as he answered these inquiries also by material ideas, and by no spiritual ones, they withdrew from him. For every one in the other life speaks spiritually, or by spiritual ideas, so far as in the world he had believed in God, and materially so far as he had not believed. As opportunity here offers, it may be well to relate how it is in the other life with the learned who acquire intelligence from their own meditation, that is fired with the love of knowing truths for the sake of truths, thus for the sake of uses abstracted from worldly things, and how with those who acquire intelligence from others without any meditation of their own, as they are wont to do who desire to know truths merely to acquire a reputation for learning, and hence honor or gain in the world, and thus not for the sake of uses abstracted from worldly things — concerning whom I may here relate the following experience. A certain sound was perceived penetrating from beneath near the left side even to the left ear, and I observed that it was spirits who were there endeavoring to force a way, but of what sort they were I could not learn. When however they had forced their way, they spoke with me, saying that they were logicians and metaphysicians, and that they had immersed their thoughts in such things with no other end than to be accounted learned and thus attain to honor and wealth, lamenting that they now led a miserable life, in consequence of having acquired those sciences with no other end, and thus not having cultivated thereby their rational mind. Their speech was slow, and in a low tone of voice. In the meantime there were two talking together above my head, and when it was asked who they were, it was said that one of them was a most distinguished character in the learned world, and it was given me to believe that it was Aristotle. Who the other was, was

not stated. The former was then let into the state in which he was when he lived in the world ; for any one may easily be let into the state of his life which he had in the world, inasmuch as he has with him every state of his life. But, what surprised me, he applied himself to my right ear, and there spoke hoarsely and yet sanely. From the purport of his speech I perceived that he was of an altogether different genius from those schoolmen who came up first, inasmuch as he evolved from his own thought the things he had written, and thence produced his philosophy ; so that the terms which he invented and imposed on subjects of thought, were forms of expression by which he described interior things ; also that he was excited to such pursuits by the enjoyment of affection, and by the desire of knowing the things of the thought and intellect ; and that he followed obediently what his spirit had dictated. It was for this reason that he applied himself to the right ear, unlike his followers, who are called schoolmen, and who do not go from thought to terms, but from terms to thoughts, thus in a contrary way ; and many of them do not even proceed to thoughts, but only stick fast in terms ; and if they apply them, it is to confirm whatever they wish and to impose on falsities an appearance of truth according to their desire of persuading. Hence philosophical inquiries are to them means of becoming insane rather than of becoming wise ; and hence they have darkness in place of light. Afterward I spoke with him concerning the science of analysis, saying that a child in half an hour speaks more, philosophically, analytically, and logically, than he could describe in a volume, for the reason that all the things of thought and of human speech therefrom, are analytical, and the laws of such things are from the spiritual world ; and he who desires to think artificially from terms, is not unlike a dancer, who would learn to dance by knowledge of the motive fibres and muscles, on which if his mind should be fixed while dancing, he would be scarce able to move his

foot; and yet, without that knowledge he moves all the motive fibres dispersed throughout his whole body, and in addition, the lungs, the diaphragm, the sides, the arms, the neck, and the other organs, to describe all which volumes would not suffice; and I said it is just so with those who desire to think from terms. These things he approved, saying, that to learn to think in that way is to proceed in an inverted order; adding, if any one will be so foolish, let him so proceed; but let him think continually of use and from what is interior. He then showed me what idea he had of the Supreme Deity, namely, that he represented Him to himself with a human face, and encompassed about the head with a radiant circle; and that now he knew that the Lord is Himself that Man, and that the radiant circle is the Divine from Him, which flows not only into heaven, but also into the universe, disposing and ruling them; and he added, Whoso disposes and rules heaven, also disposes and rules the universe, because the one cannot be separated from the other. He also said that he believed in one God only, Whose attributes and qualities they distinguished by names, which others worshipped as so many gods. There appeared to me a woman who stretched out her hand, desiring to stroke my cheek, and when I wondered at this, he said that when he was in the world, such a woman had often appeared to him, as if stroking his cheek, and with a beautiful hand. The angelic spirits said that such women sometimes appeared to the ancients, and were by them called Pallases, and that she appeared to him from the spirits who, when they lived as men in ancient times, were delighted with ideas, and indulged in thoughts, but without philosophy; and because such spirits were with him and were delighted with him, because he thought interiorly, they presented such a woman representatively. Lastly, he informed me what idea he had had of the soul or spirit of man, which he called *pneuma*, namely, that it was an invisible vital principle, like something ethereal; and he said

that he knew that his spirit would live after death, inasmuch as it was his interior essence, which cannot die, because it can think ; and further that he could not think clearly concerning it, but only obscurely, because he had not formed his thought about it from any other source than from himself, and a little also from the ancients. Moreover, Aristotle is among sensible spirits in the other life, and many of his followers are among the infatuated.

39. I once saw that spirits of our earth were with spirits of the earth Mercury, and I heard them conversing together, and then the spirits of our earth asked them among other things, in whom they believed. They replied that they believed in God ; but when they inquired further concerning the God in whom they believed, they were unwilling to tell, since it is their custom not to answer questions directly. But then the spirits from the earth Mercury in turn asked the spirits from our earth, in whom they believed. They said that they believed in the Lord God. The spirits of Mercury then said that they perceived that they believed in no God, and that they had a habit of professing with the mouth that they believed, when yet they do not believe — for the spirits of Mercury have exquisite perception, in consequence of their continually exploring by means of perception what others know. The spirits from our earth were of those who in the world made profession of faith according to the doctrine of the church, but still did not live the life of faith, and they who do not live the life of faith in the other life have no faith, because it is not in the man.* On hearing this they were silent, because by a perception then given them they acknowledged that it was so.

40. Certain spirits knew from heaven, that it had once been promised the spirits of the earth Mercury, that they

* That they who make profession of faith from doctrine, and do not live the life of faith, have no faith, n. 3865, 7766, 7778, 7790, 7950, 8094. And that their interiors are contrary to the truths of faith, though in the world they do not know this, n. 7790, 7950.

should see the Lord; therefore they were asked by the spirits about me, whether they remembered that promise. They said that they did remember it, but they did not know whether it had been promised in a such a way as to be beyond doubt. While they were thus speaking together, the Sun of heaven appeared to them. The Sun of heaven, which is the Lord, is seen only by those who are in the inmost or third heaven; the rest see the light therefrom. On seeing the Sun, they said that this was not the Lord God, because they did not see any face. Meanwhile the spirits were conversing together, though I did not hear what they said. Then suddenly the Sun appeared again, and in the midst of it the Lord, encompassed with a solar circle. On seeing this, the spirits of Mercury humbled themselves profoundly, and subsided. Then also the Lord was seen from that Sun by spirits of this earth, who when they were men saw Him in the world, of whom one after another and thus many in order confessed that it was the Lord Himself, and this in the presence of the whole assembly. Then too the Lord was seen from the Sun by the spirits of the planet Jupiter, who declared aloud that it was He Himself Whom they had seen on their earth, when the God of the universe appeared to them.^s

41. Some after the Lord had been seen were led away toward the front, to the right, and as they advanced, they said that they saw a light much clearer and purer than they had ever seen before, and that no greater light could ever

^s That the Lord is the Sun of Heaven, from Whom is all light there, n. 1053, 3636, 4060. And that the Lord thus appears to those who are in His celestial kingdom, where love to Him reigns, n. 1521, 1529-1531, 1837, 4696. That He appears at a middle altitude above the plane of the right eye, n. 4321, 7078. That therefore by the sun in the Word is signified the Lord as to Divine love, n. 2495, 4060, 7083. That the sun of the world is not seen by spirits and angels, but in its place as it were something dusky, behind, and opposite to the Sun of heaven, or to the Lord, n. 9755.

be seen ; and this was at the time of evening. They who said this were many.¹

42. It is to be known that the sun of the world does not appear at all to any spirit, nor any of its light. The light of that sun is to spirits and angels like thick darkness. That sun remains only in the perception of spirits, from their having seen it while in the world, and is presented to them in idea as something dusky and this behind at a considerable distance, in altitude a little above the plane of the head. The planets which are within the system of that sun appear according to fixed position in respect to the sun — Mercury behind, a little toward the right ; the planet Venus to the left, a little backward ; the planet Mars to the left in front ; the planet Jupiter in like manner to the left in front, but at a greater distance ; the planet Saturn directly in front, at a considerable distance ; the Moon to the left, at some height ; the satellites also to the left in respect to their planet. Such is the situation of these planets in the ideas of spirits and angels ; and the spirits also appear near their own planet, but out of it. Further, as regards the spirits of Mercury in particular, they do not appear at a fixed quarter, nor at a fixed distance, but now in front, now to the left, now a little behind. The reason is, that they are allowed to wander through the universe to procure for themselves knowledges.

43. Spirits of Mercury were once seen to the left in a

¹ That there is great light in the heavens, which exceeds by many degrees the light of noonday on the earth, n. 1117, 1521, 1533, 1619-1632, 4527, 5400, 8644. That all light in the heavens is from the Lord as a sun there, n. 1053, 1521, 3195, 3341, 3336, 3643, 4415, 9548, 9684, 10809. That the Divine truth proceeding from the Divine good of the Lord's Divine love appears in the heavens as light, and furnishes all the light there, n. 3195, 3222, 5400, 8644, 9399, 9548, 9684. That the light of heaven illumines both the sight and the understanding of angels, n. 2776, 3138. That when heaven is said to be in light and heat, it means being in wisdom and love, n. 3643, 9399, 9401.

globe, and afterward in a volume extending itself lengthwise ; and I wondered whither they wished to go, whether to this earth or elsewhere ; and presently I observed that they inclined to the right, and as they whirled along, they drew near to the earth or planet Venus, toward the nearer side of it. But when they came thither they said that they would not stay there, because the people were wicked ; wherefore they went round to the farther side of that earth, and then said that they would stay there, because the people were good. While this was taking place I was sensible of a remarkable change in the brain, and of a strong working thence. From this it was given to conclude that the spirits of Venus, who were from that side of the planet, were in accord with the spirits of Mercury, and that they had reference to a memory of material * things which was in accord with the memory of immaterial things to which the spirits of Mercury have reference. Hence a stronger working was felt from them when they were there.

44. I was desirous of knowing what face and body the men of the earth Mercury had, whether like that of men on our earth. Then there was presented before my eyes a woman entirely like the women who are on that earth. She had a beautiful face, but smaller than that of the women of our earth ; she was also more slender in body, but equal in height ; her head was covered with a linen cap, not artfully, but becomingly disposed. A man likewise was presented, who was also more slender in body than the men of our earth ; he was clad in a garment of dull blue, closely fitted to the body, without folds or puffs in any part. I was told that the men of that earth were of such form and manner of dress. Then there were presented specimens of their oxen and cows, which indeed did not differ much from those on our earth, but were smaller and in a manner approached to a kind of hinds and deer.

* Latin *immaterialium*, but in n. 107, *materialium*.

45. They were also asked about the sun of the world, how it appears from their earth? They said that it appears large, and larger there than from other earths, as they said they knew from the idea of other spirits about the sun. They said further that they had a middle temperature, neither too hot nor too cold. It was then given to tell them that it was so provided for them by the Lord, that they might not have excessive heat from being nearer to the sun than other earths are ; since heat comes not from nearness to the sun, but from the height and density of the aerial atmosphere — as appears from the cold on high mountains even in hot climates. The heat is also varied according to the direct or oblique incidence of the sun's rays, as is plain from the seasons of winter and summer in every region. These are the things that have been given me to know concerning the spirits and inhabitants of the earth Mercury.

THE EARTH OR PLANET JUPITER, ITS SPIRITS AND INHABITANTS.

46. With the spirits and angels of the planet Jupiter, a longer intercourse was granted me than with the spirits and angels from the rest of the planets, and for this reason I may relate more particulars about their state of life and that of the inhabitants of their planet. That the spirits were from that planet, was plain from many things and was also told me from heaven.

47. The earth or planet Jupiter itself is not indeed seen by spirits and angels ; for no earth is anywhere seen by those who are in the spiritual world, but only the spirits and angels who are from it. They who are from the planet Jupiter appear in front to the left, at a considerable distance, and this constantly (see above, n. 42) ; and there too is the planet. The spirits of every earth are near their

own earth, because they are from its inhabitants — inasmuch as every man after death becomes a spirit — and because they are thus of a similar genius, and are able to be with the inhabitants and to be of service to them.

48. The spirits from Jupiter said that in the region of the earth where they lived while in the world, the multitude of men was as great as the earth could support, that the earth was fertile and abounded in all things, that there they did not desire anything beyond the necessaries of life, that they accounted nothing useful that was not necessary, and that for this reason the number of inhabitants was so great. They said that their greatest concern was the education of children, and that they loved them most tenderly.

49. They stated further that the inhabitants are distinguished into tribes, families, and households, and that they all live by themselves with their own kindred, and that hence their intercourse is confined to relatives; also that no one ever covets another's possessions, and that it never enters into their minds to desire anything of the possessions of another, still less to claim anything fraudulently, and least of all to break in and steal; this they regard as a deed contrary to human nature and abominable. When I would have told them that on this earth there are wars, depredations, and murders, they turned away and were unwilling to hear. It was told me by angels that the most ancient people on this earth lived in a similar manner — that they were distinguished into tribes, families, and households, and were all content with their own possessions; that becoming rich from the possessions of others, and also ruling from love of self, were altogether unknown; and for this reason the ancient times, and especially the most ancient, were more acceptable to the Lord than those that followed; and because such was the state of men, innocence also then reigned and with it wisdom; every one did what was good from good, and what was just from justice. They did not know what it was to do good and justice for the sake of

honor to self, or for the sake of gain ; and they told nothing but the truth, and this not so much from truth as from good, that is, not from the intellect alone, but from the will joined with the intellect. Such were the ancient times, and therefore angels could then converse with men, and lift their minds almost separated from corporeal things into heaven, and lead them about and show them the magnificence and blessedness there, and likewise communicate to them their own blessedness and enjoyment. These times were known also to the ancient writers, and were by them called the golden and also the Saturnian ages. That those times were so happy was, as was said above, because men lived distinguished into tribes, and the tribes into families, and the families into households, and every household dwelt by itself ; and it then never entered into any one's mind to invade another's inheritance, and so acquire for himself wealth and dominion. Self-love and the love of the world were then far removed ; every one rejoiced in his own, and not less in his neighbor's good. But this scene was changed and turned into the opposite in succeeding times, when the lust of dominion and of large possessions invaded the mind. Then mankind, for the sake of self-defence, gathered into kingdoms and empires, and as the laws of charity and of conscience, that had been inscribed on the hearts, ceased to operate, it became necessary to enact laws in order to restrain violence, under which honors and gains became rewards, and privation of them punishment. When the state of men was thus changed, heaven itself withdrew from man, and this more and more even to the present age, when it is no longer known whether heaven and hell exist, and by some it is denied. These things are said that it may be illustrated by the parallel, what is the state of those who are on the earth Jupiter, and whence they have their probity, and also their wisdom, of which more will be said in what follows.

50. By long conversation with the spirits of the earth

Jupiter, it was made manifest to me that they were better than the spirits of most other earths. The manner of their approach to me, their stay with me, and their influx at that time, was inexpressibly gentle and sweet. In the other life the quality of every spirit manifests itself by an influx, which is a communication of his affection, goodness by gentleness and sweetness — by gentleness in that it fears to do harm, and by sweetness in that it loves to do good. The gentleness and sweetness of the influx from the good spirits of our earth I could clearly distinguish from that of the spirits of Jupiter. They said that when any little disagreement arises among them, there appears as it were a slender bright ray like that of lightning, or like a little belt in which are gleaming and wandering stars ; but any disagreement among them is soon adjusted. Stars gleaming and at the same time wandering signify what is false, but stars gleaming and fixed signify what is true ; and thus the former signify disagreement.”

51. I could distinguish the presence of the spirits of Jupiter, not only by the gentleness and sweetness of their approach and influx, but also by this, that they flowed as much as possible into the face, and made it cheerful and smiling, and this as long as they were present. They said that they so dispose the faces of the people of their own earth when they come to them, desiring thus to inspire them with tranquillity and enjoyment of heart. The tranquillity and enjoyment with which they inspired me, filled my breast and heart sensibly ; and then were removed desires and anxieties about the future, which induce unrest and discomfort, and excite in the mind various commotions. Thus it was plainly evident to me what was the life of the inhabitants of the earth Jupiter ; for from the spirits of any earth

“ That stars in the Word signify knowledges of good and truth, consequently truths, n. 2495, 2849, 4697. And that in the other life truths are represented by fixed stars, but falsities by wandering stars, n. 1128.

is known the disposition of its inhabitants, since each one has with him from the world his own life, and lives it when he becomes a spirit. It was observed that they had a state of blessedness or happiness still more interior, and this was observed because it was perceived that their interiors were not closed, but open to heaven; for the more open the interiors are to heaven, the more ready are they for receiving the Divine good, and with it blessedness and interior happiness. It is altogether otherwise with those who do not live in the order of heaven; for with them the interiors are closed and the exteriors open to the world.

52. What sort of face the inhabitants of the earth Jupiter have, was also shown me. Not that the inhabitants themselves appeared to me, but that the spirits appeared with faces similar to what they had when on their earth. But before this was shown, one of their angels appeared behind a bright cloud, who gave permission, and then two faces were shown. They were like the faces of the men of our earth, fair and beautiful; sincerity and modesty beamed forth from them. While the spirits of Jupiter were with me, the faces of the men of our earth appeared smaller than usual, which was owing to this, that from those spirits flowed in the idea which they had about their own faces, as being larger; for they believe while living as men on their earth, that after death their faces are to be larger, and of a round form. And because this idea has been impressed upon them, it also remains with them, and when they become spirits, they appear to themselves to have a larger face. The reason of their believing that their faces are to be larger, is, that they say the face is not of the body, because through it they see, hear, and speak, and present their thoughts; and thus the mind is seen through it. They hence have an idea of the face, as of the mind in form; and because they know that they are to be wiser after the life in the world, they therefore believe that the form of the mind, or the face, becomes larger. They also believe that

after death they are to perceive a fire, which is to warm their faces. This they infer from its being known to the wiser of them that fire in the spiritual sense signifies love, and that love is the fire of life, and from this fire the angels have life.^x Those of them also who have lived in heavenly love, obtain their wish, and perceive their face to grow warm ; and then the interiors of their mind are kindled with love. For this reason the inhabitants of that earth also wash and cleanse their faces much, and protect them carefully from the heat of the sun. They have a covering made of the inner rind or bark of a tree, of a bluish color, with which they wrap the head and so cover the face. Of the faces of the men of our earth, which they saw through my eyes,^y they said that they were not beautiful, and that their beauty consisted in the external skin, but not in the fibres from the internal. They wondered that the faces of some were covered with warts and pustules, or were otherwise deformed, saying that with them such faces were never seen. Some faces were always smiling, namely, those that were cheerful and merry, and those that were a little prominent about the lips.

53. The reason of the faces smiling that were prominent about the lips was, that the most of their speech is effected by the face, and especially by the region around the lips ; and also that they never dissemble, or speak otherwise than they think. For this reason they do not constrain their face, but let it out freely. It is otherwise with those who from childhood have learned to dissemble. Their face is

^x That fire in the Word is love in both senses, n. 934, 4906, 5215. That the sacred and heavenly fire is the Divine love, and every affection which is of that love, n. 934, 6314, 6832. That infernal fire is the love of self and the world, and every concupiscence which is of these loves, n. 965, 1861, 5071, 6314, 6832, 7575, 10747. That love is the fire of life, and that life itself is actually thence, n. 4906, 5071, 6032.

^y That spirits and angels do not see what is in this solar world, but that they saw through my eyes, n. 1881.

thus contracted interiorly, lest something of their thought should shine forth. Neither is it let forth outwardly, but is held ready to let itself out or contract itself, according as craft suggests. From inspecting the fibres of the lips and the parts around them, the truth may be evident. For there are manifold series of fibres there, folded together and intertwined, which were created not only for masticating and for speech by words, but also for expressing the ideas of the mind.

54. It was also shown how the thoughts are presented by the face. The affections of the love are manifested by the features and their changes, and the thoughts in them by variations as to the forms of the interiors therein; but they cannot be further described. The inhabitants of the earth Jupiter have also a vocal speech, but not as sonorous as ours. The one speech assists the other, and their vocal speech is inspired with life by the speech of the face. I was informed by angels that the first speech of all men on every earth was speech by the face, and this from two sources, the lips and the eyes. The reason why such speech was the first, is, that the face was formed for portraying what man thinks and wills, and so also the face was called the portrait and index of the mind; also because in the most ancient or earliest times there was sincerity, and man neither thought nor wished to think anything else than what he was willing should shine forth from his face. Thus also the affections of the mind, and the thoughts therefrom, could be presented to the life, and fully. Thus also they were made apparent to the eye, very many, as it were, in a form together. This speech therefore as much surpassed vocal speech as sight excels hearing, or as seeing a landscape excels hearing of it, or apprehending it by verbal description. They added that such speech accorded with the speech of angels, with whom also men in those times were in communication; and further that when the face speaks, or the mind through the face, it is the angelic speech with man in

ultimate natural form, but not when the mouth speaks by words. Every one too can comprehend that the most ancient people could not have the speech of words ; since the words of language were not immediately imparted to men, but had to be invented, and applied to things ; which could be done only in process of time.^z As long as sincerity and rectitude remained with man, so long also such speech remained. But as soon as the mind began to think one thing and speak another — which took place when man began to love himself and not his neighbor — then vocal speech began to make progress, the face being silent or dissembling. Thus the internal form of the face was changed, contracted itself, stiffened, and began to be almost void of life ; but the external form, inflamed by the fire of self-love, began to appear to the eyes of men as if it were alive. For that absence of life which lies underneath, does not appear to the eyes of men, but to the eyes of angels, since these see the interiors. Such are the faces of those who think one thing and speak another ; for dissimulation, hypocrisy, cunning, and deceit, which are prudence at this day, produce such effects. But it is different in the other life, where it is not permitted to speak otherwise than one thinks. Disagreement between the speech and the thought is also there clearly perceived in every word ; and when it is perceived in a spirit, he is cast out of the community, and punished. Afterward he is reduced by various methods to speaking as he thinks, and to thinking as he wills ; even till he has one undivided mind ; so that if he is good, he may will good and think and speak truth from good, and if he is evil, he may will evil and think and speak what is false from evil. Not before this is effected is the good spirit elevated into

^z That the most ancient people on this earth had speech through the face and lips, by means of internal breathing, n. 607, 1118, 7361. That the people on certain other earths have a similar speech, n. 4799, 7359, 8248, 10587. Concerning the perfection and excellence of that speech, n. 7360, 10587, 10708.

heaven, nor the evil spirit cast into hell; and this to the end, that there may be in hell nothing but evil and the falsity of evil, and in heaven nothing but good and the truth of good.

55. I was further informed by the spirits from this planet, Jupiter, about various things in regard to its inhabitants, as their manner of walking, their food, and their dwellings. As to their manner of walking, they do not walk erect, like the inhabitants of this and many other earths; nor do they creep, like animals. But when they walk, they aid themselves with their hands, and by turns half raise themselves upon their feet; and also in walking, at every third step they look with the face turned sidewise and behind them — and then also bend the body a little, which is done suddenly. For among them it is indecorous to be seen by others except in the face. When they are walking in this manner, they always keep the face uplifted, as we do, that thus they may look at the heavens as well as the earth; and do not keep it bent down, so as to look at the earth, to do which they call accursed. The most worthless among them do so; and these if they do not acquire the habit of lifting the face, are expelled from their society. When however these people sit, they appear erect as to the upper part of the body, like the men of our earth; but they sit with the feet crossed. They take special care when they sit as well as when they walk, not to be looked at from behind, but in the face. They are also very willing to have their faces seen, because from these their mind appears; for they never show a face that is at variance with the mind, nor can they. Those present know also plainly from their faces what their feelings are toward them — which they do not conceal — especially whether their apparent friendliness is sincere, or forced. These things were shown to me by their spirits, and confirmed by their angels. Hence also their spirits do not seem to walk erect, like others, but to aid their progress with the hands, almost like swimmers, and by turns to look around them.

56. Those who live in their warm climates go naked, except with a covering about the loins; nor are they ashamed of their nakedness, for their minds are chaste, and they love their consorts only, and they abhor adulteries. They wondered exceedingly that the spirits of our earth, on hearing that they walked in this manner and were naked, jeered and had lascivious thoughts; and that they paid no attention to their heavenly life, but only to such things. They said this was a sign that they had greater care for corporeal and earthly, than for heavenly things, and that their minds were full of indecencies. It was answered them that nakedness is no cause of shame nor of scandal to those who live in chastity and in a state of innocence, but only to those who live in lasciviousness and immodesty.

57. When the inhabitants of that earth lie in bed, they turn their face forward or toward the chamber; but not backward, or to the wall. This their spirits related to me, and said the reason was, that they believed they thus turn the face to the Lord, but avert it if they turn backward. The same has sometimes occurred to me, when I was in bed, but whence it was, I had not before known.

58. They take delight in long repasts together; but not so much from enjoyment of the food, as from enjoyment of the conversation. When they sit at table, they do not sit on chairs or benches, or raised couches of turf, nor on the grass, but on the leaves of a certain tree. They were not willing to tell of what tree the leaves were; but when I named several by conjecture, they assented at last on my naming the leaves of the fig-tree. They said moreover, that they do not prepare food with reference to the palate, but especially with reference to the use; and they added that to them useful food was savory. On this subject a conversation arose among the spirits, and it was said that this is the right way for man; for in this way his heart's desire is to have a sound mind in a sound body — as is not the case with those who are governed by the pleasure

of taste, and whose body therefore sickens, or at least inwardly languishes, and consequently their mind also; for the action of this depends upon the interior state of the recipient parts of the body, as the sight and hearing upon the state of the eye and ear. Thus is seen the insanity of placing all the enjoyment of life in luxury and pleasure. From this practice, too, comes dulness in such things as are of thought and judgment, and shrewdness in such things as are of the body and the world. From this arises the likeness between a man and a brute animal, with which also such persons not inaptly compare themselves.

59. The dwellings of the inhabitants of Jupiter were also shown to me. They are of wood and low; but within they are lined with the bark or rind of a tree, of a light blue color, and are dotted around and above as with little stars in representation of the sky. They wish to give their houses within this likeness of the visible heaven with its stars, for the reason that they believe the stars to be the dwellings of angels. They likewise have tents, which are rounded above, and extended in length, and also dotted within with little stars on a blue ground. Into these they betake themselves during the day, that their faces be not harmed by the heat of the sun. They take great care in constructing these tents of theirs and in keeping them clean, and in them they also take their meals.

60. When the spirits of Jupiter saw the horses of this earth, the horses appeared to me smaller than usual, though they were quite stout and tall. This arose from the idea of those spirits concerning the horses on their earth. They said that they also had similar horses, though much larger; but that they were wild, living in the forests; and that they themselves were terrified at the sight of them, though they did no harm. They added that they had an inborn or natural fear of them. Being thus led to think of the cause of that fear, it was seen that a horse in the spiritual sense sig-

nifies the intellect formed from knowledges,^{aa} and that fear flows in with them because they fear to cultivate the intellect by knowledge drawn from the world. That they have no care for knowledge which is of human learning, will be seen in what follows.

61. The spirits of that earth are not willing to be in company with the spirits of our earth, because they differ in disposition and customs. They say that the spirits of our earth are cunning, and ready and ingenious in contriving evil; and that they know and think little about what is good. Besides, the spirits of the earth Jupiter are much wiser than the spirits of our earth. Of ours they also say that they talk much and think little; and that thus they cannot perceive many things interiorly, and not even what is good. From this they conclude that the men of our earth are external men. Once also it was permitted evil spirits of our earth with their evil arts to act upon and infest the spirits of Jupiter who were with me. The spirits of Jupiter endured them for quite a long time, but at length confessed that they could endure no longer, and that they believed no worse spirits could be found; for they perverted their imagination, and also their thought, to such a degree that they seemed to themselves to be bound and unable to be extricated and freed, except by the Divine aid. When I was reading from the Word some things about the passion of our Saviour, European spirits infused dreadful scandals with the purpose of seducing the spirits of Jupiter. It was asked who they were, and what had been their profession in the world; and it was found that some of them had been preachers, and many were of those who call themselves of the society of the Lord, or Jesuits. I said that these when they lived in the world, were able by their preaching on the Lord's passion to move the common

^{aa} That a horse signifies the intellect, n. 2760-2762, 3217, 5321, 6125, 6400, 6534, 7024, 8146, 8148. And that the white horse in the Apocalypse is the understanding of the Word, n. 2760.

people to tears. I explained also that in the world they thought one way and spoke another, thus entertained one thing in the heart and professed another with the mouth; but now it was not permitted them to speak thus deceitfully, because when they become spirits, they are compelled to speak just as they think. The spirits of Jupiter were greatly astonished that there could be given such a disagreement between a man's interiors and his exteriors, so that he could speak altogether differently from what he thought; which to them was an impossibility. They wondered when they heard that many who are from our earth even become angels, and are of an altogether different heart, supposing at the time that all on our earth were like the spirits then present. But it was said that there are many of a different nature, and that there are also those who think from good, and not as these from evil; and that they who think from good become angels. That they might know that it was so, there came out of heaven choirs of angels from our earth, one after another, which with one voice and in harmony together glorified the Lord.⁶⁶ Those choirs so greatly delighted the spirits of Jupiter who were with me, that they seemed to themselves to be caught up into heaven. The glorification by the choirs lasted about an hour, and the delight they received was communicated to me and given me to feel. They said that they should tell their people about it who were elsewhere.

62. The inhabitants of the earth Jupiter place wisdom in thinking well and justly of all things that happen in life. This wisdom they receive from their parents from childhood, and it is successively transmitted to posterity, and increases from the love they have for it because of its belonging to their parents. Of sciences, such as are on our

⁶⁶ That when many spirits speak together and unanimously they form what is called a choir, and concerning them, n. 2595, 2596, 3350: that in their speech there is harmony, n. 1648, 1649. That by choirs in the other life introduction into unanimity is effected, n. 5182.

earth, they know nothing whatever, nor do they wish to know. They call them shadows, and compare them to clouds which hide the sun. This idea about the sciences they have derived from some spirits of our earth, who boasted before them that they were wise from these sciences. The spirits from our earth, who thus boasted, were those who placed wisdom in such things as are of mere memory — as in the languages, especially Hebrew, Greek, and Latin; in the learned observations of the literary world, in criticisms, in mere experiments, and in terms, especially the philosophical; and in other such things. Nor did they use these as means for becoming wise, since they placed wisdom in the things themselves. Such men, because they have not cultivated their rational faculty by the sciences as means, have little perception in the other life; for they see only in terms and from terms; and to those who see thus, those things are as clods and as clouds before the intellectual sight (see above, n. 38); and they who have been proud of their learning from that source, perceive still less; and they who have used the sciences as means of weakening and annihilating what is of the church and of faith, have utterly destroyed their intellect, and see in thick darkness, like owls, what is false for what is true, and what is evil for what is good. From conversation with such, the spirits of Jupiter had concluded that the sciences induce shade and blindness. But it was told them that on this earth the sciences are means of opening the intellectual sight, which sight is in the light of heaven; but because such things as are of merely natural and sensual life reign, the sciences are to such men the means of becoming insane — that is, of confirming themselves in favor of nature against the Divine, and in favor of the world against heaven. It was further said that the sciences are in themselves spiritual riches, and that they who possess them are like those that possess worldly riches, which in like manner are the means of performing uses to one's self, to one's neighbor, and to one's country, and also the means of doing evil; and that

they are like garments which serve for use and ornament, and also minister to pride, as with those who wish to be honored for these alone. The spirits of the earth Jupiter well understood these things; but they wondered that such persons when they were men, rested content with means, and placed the things that lead to wisdom before wisdom itself; and that they did not see that to sink the mind in these means, and not to elevate themselves above them, was to overshadow and to blind.

63. A certain spirit ascending from the lower earth came to me and said that he had heard the conversation I had with other spirits, but did not understand anything of what was said about spiritual life and its light. He was asked whether he wished to be instructed about it. He said that he had not come with that purpose; from which I concluded that he did not apprehend such things. He was very stupid, and yet I was told by angels that when he lived as a man in the world, he was quite celebrated for learning. He was cold, as was plainly felt from his breath. This was a sign of merely natural and no spiritual light; thus that by the sciences he had not opened, but closed for himself, the way to the light of heaven.

64. Because the inhabitants of the earth Jupiter procure to themselves intelligence by another way than the inhabitants of our earth, and are besides of another nature owing to their life, they cannot therefore be long with them, but either shun them or remove them. There are spheres, to be called spiritual spheres, that continually emanate and flow forth from every spirit. They flow from the activity of the affections and of consequent thoughts, thus from the life itself.^{cc} In the other life all consociations take place

^{cc} That a spiritual sphere, which is the sphere of his life, flows forth and pours out of every man, spirit, and angel, and encompasses them, n. 4464, 5179, 7454. That it flows from the life of their affection and the thought therefrom, n. 2489, 4464, 6206. That in the other life consociations are formed according to spheres, and dissociation arises from the same cause, n. 6206, 9606, 9607, 10312.

according to these spheres. Those which are in concord are conjoined according to the concord, and those which are discordant are separated according to the discord. The spirits and angels who are from the earth Jupiter have reference in the Greatest Man to the imaginative element of thought, and so to the active state of the interior parts. But the spirits of our earth have reference to the various functions of the exterior parts of the body; and when these wish to rule, the active or imaginative element of the thought from the interior cannot flow in. Hence comes repulsion between the spheres of life of the two.

65. As regards their Divine worship, the main thing is, that they acknowledge our Lord as the Supreme Being, Who governs heaven and earth. They call Him the Only Lord; and as they acknowledge and worship Him in the life of the body, they seek and find Him after death. He is the same with our Lord. They were asked whether they know that the Only Lord is Man. They answered that they all know that He is Man, because in their world He has been seen as a Man by many; and that He instructs them about the truth, preserves them, and gives eternal life to those who worship Him from good. They said further, that it has been revealed to them by Him how they should live, and how believe; and that what has been revealed is handed down by parents to children; and that hence the teaching spreads to all the families, and so to the whole tribe which is descended from one father. They added that it seemed to them as if they had the doctrine inscribed on their minds; which they concluded from the fact that they perceive at once, and acknowledge as of themselves, whether what is said by others about the life of heaven with man is true or not. They do not know that their only Lord was born a Man on our earth. They said that they cared only to know that He is Man, and rules the universe. When I said that on our earth He is named Jesus Christ, and that Christ signifies Anointed or King, and Jesus Saviour, they

said that they do not worship Him as King, because royalty savors of what is worldly ; but that they worship Him as Saviour. As a doubt was suggested by spirits of our earth, whether their Only Lord was the same with our Lord, they removed it by recalling that they had seen Him in the Sun, and had acknowledged that it was He Whom they had seen on their earth (see above, n. 40). Once also among the spirits of Jupiter who were with me, there flowed in for a moment the doubt whether their Only Lord was the same with our Lord ; but this doubt, which flowed in for a moment, was also in a moment dissipated. It flowed in from some spirits from our earth ; and then, what surprised me, they were so covered with shame, at having doubted this only for a moment, that they asked me not to publish it, lest it should give ground for charging them with incredulity ; when yet they now knew the fact better than others. These spirits were very much affected and rejoiced when they heard it said that the Only Lord is alone Man ; and that all have from Him what entitles them to be called men ; being so far men as they are images of Him, that is so far as they love Him and love the neighbor, thus, so far as they are in good ; for the good of love and faith is the image of the Lord.

66. There were spirits of the earth Jupiter with me when I was reading the seventeenth chapter of John, concerning the Lord's love, and concerning His glorification ; and when they heard the things that are there, holiness filled their minds, and they confessed that all things therein were Divine. But then spirits of our earth, who were unbelievers, kept suggesting scandals, saying that He was born an infant, lived a man, appeared like another man, was crucified, and other such things, to which, however, the spirits of Jupiter paid no attention. They said that such are their devils, whom they abhor ; adding that nothing at all heavenly abode in their minds, but only what is earthly, which they called dross. That it was so, they said they had found

out from this also, that when such spirits heard that on their earth they went naked, obscene thoughts took possession of their minds, and they took no thought whatever of their heavenly life, about which they had heard at the same time.

67. The clear perception of the spirits of Jupiter in regard to spiritual things, was made evident to me from their representation of how the Lord turns wrong affections into good ones. They represented the intellectual mind as a beautiful form, and put into it an activity suitable to the form, answering to the life of affection ; which they did in a manner that cannot be described in words, so dexterously that they were commended by angels. There were then present learned men from our earth, who had immersed their intellect in the terms of science, and had written and thought much about form, about substance, about the material and the immaterial, and the like, and had applied these things to no use ; but they could not even comprehend that representation.

68. On the earth Jupiter the greatest care is taken lest any one should fall into wrong opinions concerning the Only Lord ; and if they notice that any one is beginning to think improperly concerning Him, they first admonish him, then deter him by threats, and at length by punishments. They said they had observed that if any such thing crept into a family, the family was removed from their midst, not by punishment of death from their fellows, but by their breath being taken away and thus their life, by spirits, after they had first threatened them with death. For on that earth spirits speak with them, and chastise them if they have done evil, and also if they have intended to do evil—of which in what follows. And so if they think evil concerning the Only Lord, provided they do not repent, death is denounced to them. In this manner is the worship of the Lord preserved there, Who is to them the Supreme Divine.

69. They said that they do not have fixed days of wor-

ship, but that every morning at sunrise, and every evening at sunset, they perform holy worship to the Only Lord in their tents, and also sing psalms in their manner.

70. I was further instructed that on that earth there are also those who call themselves saints, and command their servants, whose numbers they keep increasing, to address them as lords if they would not be punished. They also prohibit them from adoring the Lord of the universe, saying that they themselves are mediating lords, and will bring their supplications to the Lord of the universe. The Lord of the universe, Who is our Lord, they do not, like the rest, call the Only Lord, but the Supreme Lord; because they call themselves also lords. The sun of the world they call the face of the Supreme Lord, and believe that His abode is there; for which reason they also adore the sun. The rest of the inhabitants hold them in aversion, and are not willing to have intercourse with them, as well because they adore the sun, as because they call themselves lords, and are worshipped by their servants as mediating gods. Their head covering was shown me by spirits — a tower-shaped cap of a dark color. In the other life such spirits appear to the left at some height, where they sit like idols, and at first are also worshipped by those who had been servants with such; but afterward they are held in derision by these also. What surprised me, they there shine in the face, as from fire, which they derive from having believed themselves to be holy. But though they appear fiery in the face, they are still cold, and desire intensely to become warm. From this it is plain that the fire from which they shine is the fire of self-love, and is fatuous. These same spirits seem to themselves to cut wood in order to get warm; and when they are cutting, there appears under the wood something human, which they at the same time endeavor to strike. This comes from their attributing to themselves merit and sanctity. Those who do this in the world, seem to themselves in the other life to cut wood:

as do some also from our earth, whom we have described elsewhere, and of whom, for illustration, I may here cite this experience. "In the lower earth, under the soles of the feet, are those also who have placed merit in good deeds and works. Many of them appear to themselves to be cutting wood. The place where they are is quite cold, and they seem to themselves to gain warmth by their labor. I have also spoken with them, and I was permitted to ask them whether they wished to come out of that place. They said that they had not yet earned it by their labor. But when that state has been gone through, they are taken out. They are natural, because to wish to merit salvation is not spiritual; for it comes from what is of self, not from the Lord. Moreover they prefer themselves to others, and some of them despise others. If they do not receive greater joy than others in the other life, they are indignant against the Lord; for which reason, when they are cutting wood, there appears as it were somewhat of the Lord under the wood. This comes from their indignation." [A. C. 4943.]^{dd}

71. It is common on that earth for spirits to speak with the inhabitants and to instruct them, and also to chastise them if they have done evil, in regard to which since many things have been related to me by their angels, I wish to repeat them in order. The reason why spirits speak with the men there, is that they think much about heaven and about the life after death, and have comparatively little solicitude about life in the world; for they know that they are to live after death, and in a state happy according to

^{dd} That the Lord alone has merit and justice, n. 9715, 9975, 9979, 9981, 9982. That they who place merit in works, or wish to merit heaven by their good deeds, wish to be served in the other life, and are no way content, n. 6393. That they despise the neighbor, and are angry with the Lord Himself if they do not receive reward, n. 9976. What their lot is in the other life, n. 942, 1774, 1877, 2027. That they are of those who appear to cut wood in the lower earth, n. 1110, 4943.

the state of their internal man that has been formed in the world. To speak with spirits and angels was also common on this earth in ancient times, for the same reason, namely, that they thought much about heaven and little about the world. But that living communication with heaven was closed after a time, as man from internal became external; or what is the same, as he began to think much about the world, and little about heaven; and still more when he no longer believed that there is a heaven or a hell; nor that man in himself is a spirit that lives after death. For it is believed at this day that the body lives of itself, and not from its spirit; and so unless a man now believed that he is to rise again with the body, he would have no belief in a resurrection.

72. As regards the presence of spirits with the inhabitants of the earth Jupiter, more particularly, there are spirits who chastise, there are those who instruct, and there are those who govern them. The spirits who chastise apply themselves to the left side, and incline themselves toward the back, and when there, draw forth from the man's memory all that he has done and thought; for this is easy to spirits, inasmuch as when they come near to a man, they come into all his memory.ⁱ If they find that he has done evil, or thought evil, they reprove him, and also chastise him with pain of the joints, and of the feet or hands, or with a pain about the epigastric region. This also spirits can do dexterously when permitted. On coming to a man they inspire horror and fear, and thus make the man conscious of their approach. Evil spirits can inspire fear when they approach any one, especially those who while they lived in the world were robbers. That I might know how these spirits from Jupiter act when they come to a man of their earth, one was permitted to come to me. When he was near, horror and fear manifestly took possession of me; yet the terror was not interior but exterior, because I knew that it was such a spirit. He was also seen, and appeared

like a dark cloud, with moving stars in the cloud. Moving stars signify falsities, but fixed stars truths." He applied himself to my left side toward the back, and undertook also to reprove me for the deeds and thoughts which he drew forth out of my memory, and also interpreted perversely; but he was prevented by angels. When he perceived that he was with one who was not a man of his earth, he began to speak with me, saying that when he came to a man, he knew each and every thing that the man had thought and done; and that he reproved him severely, and also chastised him with various pains. Again at another time such a chastising spirit came to me, and applied himself to my left side below the middle of the body, like the former one, and also wished to punish me; but he too was prevented by angels. He however showed me the kinds of punishments which they are permitted to inflict upon the men of their earth, if they do and intend to do evil. They were, besides pain of the joints, a painful constriction also around the middle of the belly, which is felt as a compression by a sharp girdle. And then there was a taking away of the breath at intervals even to distress; and also the prohibition from eating anything but bread for a time; last of all the threat of death, if they should not leave off doing such things; and also privation from enjoyment of wife, children, and companions. Pain therefrom is also then insinuated.

73. The spirits who instruct, also, apply themselves to the left side, but more toward the front. They also rebuke, but mildly, and presently teach them how they ought to live. They appear dark also, yet not as the former like clouds, but as if clothed in sackcloth. These are called instructors, but the former chastisers. When these spirits are present, angelic spirits are also present, sitting at the head and filling it in a peculiar manner. Their presence is also perceived there as a gentle breathing; for they fear lest from their drawing near and their influx the man should feel the least pain or anxiety. They control the chastising

and instructing spirits ; preventing the former from doing worse to the man than is permitted by the Lord, and requiring the latter to tell the truth. When the chastising spirit was with me, the angelic spirits also were present, and kept my face continually cheerful and smiling, and the region around the lips prominent, and my mouth a little open. This the angels easily effect by influx, when permitted by the Lord. They said that they induce such a countenance upon the inhabitants of their earth, when they are present.

74. If a man after chastisement and instruction again does evil, or thinks to do evil, and does not restrain himself by the precepts of truth, then, when the chastising spirit returns, he is punished more severely. But the angelic spirits moderate the punishment according to the intent in his deeds, and according to the will in his thoughts. From this it may be evident that their angels who sit at the head, have a kind of judicial authority over the man ; since they permit, moderate, restrain, and flow in. But it was told me that they do not judge, for the Lord alone is the Judge ; and all the things which they enjoin upon the chastising and instructing spirits flow in with them from Him, though it appears as if from them.

75. In the earth Jupiter spirits speak with man, but not man in turn with the spirits, except these words when he is instructed — that he will do so no more. Nor is it permitted him to tell any one that a spirit has spoken with him : if one does this, he is afterward punished. Those spirits of Jupiter, when they were with me, thought at first that they were with a man of their earth ; but when I spoke in turn with them, and they saw that I had some intention of publishing these things, and thus of telling others, and it was not then permitted them to chastise or instruct me, they perceived that they were with a stranger.

76. There are two signs that appear to those spirits when they are with a man. They see a venerable man with a

pale face, which is a sign that they should say nothing but what is true, and do nothing but what is just. They also see a face in a window, which is a sign that they should depart thence. That venerable man was also seen by me, and likewise the face in the window ; on seeing which the spirits immediately departed from me.

77. Besides the spirits who have now been mentioned, there are also spirits who persuade the contrary. They are those who while they lived in the world, were banished from the society of others, because they were evil. When they approach, there appears as it were a flitting fire, that glides down near the face. They place themselves low down behind the man, and speak thence toward the upper parts. They speak things contrary to what the instructing spirit has said from the angels, and to the effect that one should not live according to the instruction, but of his own will and license, and such like things. They come for the most part after the former spirits have gone away, but the men know who and what these spirits are, and therefore care nothing for them ; yet they learn in this way what evil is, and so what good is ; for by evil it is learned what good is, since the quality of good is known from its opposite. All perception of a thing is according to reflection in regard to its distinctions from things contrary, in various ways and various degrees.

78. The chastising and instructing spirits do not go to those who call themselves saints and mediating lords (of which above, n. 70), as they do to others on that earth, because these do not allow themselves to be instructed, nor are they amended by discipline. They are incorrigible, because they do this from the love of self. The spirits said that they recognize them from their coldness, and when they perceive this, they withdraw from them.

79. There are also spirits among those of Jupiter, whom they call chimney-sweeps, because they appear in such garments, and also with a sooty face. Who and what they are,

I am also permitted to describe. One such spirit came to me, and earnestly begged me to intercede for him that he might be admitted into heaven. He said that he did not know that he had done evil, only that he had chided the inhabitants of that earth; adding that after he had chided, he instructed them. He applied himself to my left side under the elbow, and spoke as with a cracked voice; he could also move to pity. But I could only reply that I could bring him no help, and that this is of the Lord alone; and that I could not intercede, because I did not know whether it would be useful or not, but if he was worthy he might have hope. He was then sent back among the upright spirits from his earth; but they said that he could not be in their company, because he was not such as they. Then because from his intense desire he still urged that he be let into heaven, he was sent into a society of upright spirits of this earth; but they also said that he could not be with them. He was of a black color in the light of heaven, but he said that he was not of a black, but of a brown color. It was told me that they are such at first, who are afterward received among those that make up the province of the seminal vesicles in the Greatest Man, or heaven; for in those vesicles the semen is collected and enclosed around with a suitable material, fitted for preserving its prolific principle from being dissipated, but such as may be thrown off in the neck of the uterus, that thus what is preserved within may serve for conception, or for the impregnation of the ovulum. Hence also that seminal matter has an effort, and as it were a burning desire, to throw itself off and leave the semen to perform its use—similar to what was seen in that spirit. He still came to me, in vile garments, and said again that he burned to come into heaven, and that he now perceived that he was such that he could. I was then permitted to tell him, that perhaps this was an indication that he would shortly be received. He was then told by angels to cast off his garments, which

from his intense desire he did so quickly, that scarce any thing could be quicker. By this was represented what are the desires of those who are in the province to which the seminal vesicles correspond. It was said that these spirits when they are being prepared for heaven, are divested of their garments and clad in shining new ones, and become angels. They were likened to caterpillars, which having passed through their vile state, are changed into chrysalids, and thus into butterflies; to which another dress is then given, and also wings of blue, yellow, silver, or gold; and then the liberty of flying in the air as in their heaven, of celebrating their marriages and laying their eggs, and thus of providing for the propagation of their kind; and at the same time there is allotted them sweet and pleasant food from the juices and odors of the various flowers.

80. Thus far nothing has been told of the quality of the angels who are from the earth Jupiter; for those who come to the men of their earth and sit at their head (as mentioned above, n. 73), are not angels in their interior heaven, but are angelic spirits, or angels, in their exterior heaven. And as the nature of the angels of the interior heaven has also been made known to me, it is permitted to relate what has been given me to know. A certain one of the spirits of Jupiter who inspire fear, applied himself to my left side under the elbow, and spoke thence. But his speech was harsh, nor were his words sufficiently distinct and separate; so that I had to wait some time before I could gather his meaning. And when he spoke, he also injected something of fear, thus also admonishing me to receive the angels well when they came. But it was given to answer, that this did not depend on me; since all were received with me according to what they were. Presently angels of that earth came to me, and I was able to perceive from their speech with me, that they were altogether different from the angels of our earth; for they spoke not by words, but by ideas, which diffused themselves everywhere through my

interiors, and thus they had also an influx into my face, so that the face concurred in every particular, beginning from the lips and proceeding in every direction toward the circumference. The ideas, which were in the place of spoken words, were discrete, though in small degree. They afterward spoke with me by ideas still less separated, so that scarce any interstice was perceivable. To my perception it was like the meaning of words with those who only attend to the meaning abstractly from the words. This speech was more intelligible to me than the former, and was also more full. Like the former it flowed into the face, but the influx in accordance with the quality of the speech, was more continuous. It did not however begin like the former from the lips, but from the eyes. Afterward they spoke still more continuously and fully, so that my face was not then able to concur by fitting motion; but it was felt that there was an influx into the brain, and that this was then acted upon in like manner. At last they so spoke that the discourse only fell into the inner understanding. Its volubility was like that of a thin aura. I felt the influx itself, but not distinctly the particulars. These kinds of speech were like fluids, the first kind like flowing water, the second like thinner water, the third comparatively like atmospheric air, and the fourth like a thin aura. The spirit mentioned above, who was on the left side, sometimes interrupted, especially warning me to act modestly with his angels; for there were spirits from our earth, who [*quæ*] introduced such things as were displeasing. He said that he did not at first understand what the angels said, but that he did afterward when he was brought nearer to my left ear. Then also his speech was not harsh, as before, but like that of other spirits.

81. I afterward spoke with these angels about some matters of note on our earth, especially about the art of printing, about the Word, and about the various doctrines of the church from the Word; and I said that the Word and the

doctrines are published, and so are learned. They wondered greatly that such things could be made public by writing and by types.

82. I was permitted to see how the spirits of that earth, after they have been prepared, are taken up into heaven and become angels. There then appear chariots and horses bright as with fire, by which they are carried away like Elijah. Chariots and horses bright as with fire appear, because it is thus represented that they have been instructed and prepared to enter heaven; since chariots signify the doctrines of the church, and bright horses the understanding enlightened.^{ee}

83. The heaven into which they are taken, appears on the right to their earth, thus apart from the heaven of the angels of our earth. The angels who are in that heaven appear clothed in shining blue, dotted with small golden stars, and this because they loved that color in the world. They also believed that it was the veriest celestial color, chiefly because they are in such good of love as that color corresponds to.^{ff}

84. There appeared to me a bald head, but only the top of it, which was bony; and it was said that those who are to die within a year see such a one, and that they then prepare themselves. They do not fear death there, except on account of leaving husband or wife, children or parents;

^{ee} That chariots signify the doctrines of the church, n. 2761, 5321, 8215. That horses signify the intellect, n. 2761, 2762, 3217, 5321, 6125, 6400, 6534, 7024, 8146, 8148, 8381. That the white horse in the Apocalypse signifies the understanding of the Word, n. 2760. That by Elijah in the representative sense is meant the Word, n. 2762, 5247. And because all the doctrine of the church and the understanding of it are from the Word, that Elijah was called the chariot of Israel and the horsemen thereof, n. 2762. That he was therefore taken up by a fiery chariot and horses of fire, n. 2762, 8029.

^{ff} That blue from red or flame corresponds to the good of celestial love, and blue from white or light corresponds to the good of spiritual love, n. 9868.

and instructing spirits ; preventing the former from doing worse to the man than is permitted by the Lord, and requiring the latter to tell the truth. When the chastising spirit was with me, the angelic spirits also were present, and kept my face continually cheerful and smiling, and the region around the lips prominent, and my mouth a little open. This the angels easily effect by influx, when permitted by the Lord. They said that they induce such a countenance upon the inhabitants of their earth, when they are present.

74. If a man after chastisement and instruction again does evil, or thinks to do evil, and does not restrain himself by the precepts of truth, then, when the chastising spirit returns, he is punished more severely. But the angelic spirits moderate the punishment according to the intent in his deeds, and according to the will in his thoughts. From this it may be evident that their angels who sit at the head, have a kind of judicial authority over the man ; since they permit, moderate, restrain, and flow in. But it was told me that they do not judge, for the Lord alone is the Judge ; and all the things which they enjoin upon the chastising and instructing spirits flow in with them from Him, though it appears as if from them.

75. In the earth Jupiter spirits speak with man, but not man in turn with the spirits, except these words when he is instructed — that he will do so no more. Nor is it permitted him to tell any one that a spirit has spoken with him : if one does this, he is afterward punished. Those spirits of Jupiter, when they were with me, thought at first that they were with a man of their earth ; but when I spoke in turn with them, and they saw that I had some intention of publishing these things, and thus of telling others, and it was not then permitted them to chastise or instruct me, they perceived that they were with a stranger.

76. There are two signs that appear to those spirits when they are with a man. They see a venerable man with a

with the face in heaven and the body in the world of spirits ; and those of them who are angels, with the face toward the Lord and the body in heaven.

86. The planet Mars in the idea of spirits and angels, like the other planets, appears constantly in its place, which is to the left in front, at some distance, in the plane of the breast, and so out of the sphere where the spirits of our earth are. The spirits of one earth are separate from the spirits of another earth, because the spirits of each earth represent some particular province in the Greatest Man,^h and hence are in another state, different from that of the spirits of other earths ; and diversity of state makes them appear separate from each other, either to the right or to the left, at a greater or less distance.^{hh}

87. Spirits from Mars came to me and applied themselves to my left temple, where they breathed upon me with their speech ; but I did not understand it. It was soft in its flow — softer I had never before perceived ; it was like the softest aura. It first breathed upon my left temple, and upon my left ear from above ; and the breathing proceeded thence to my left eye, and by degrees to the right, and then flowed down, chiefly from the left eye to the lips ; and when it reached the lips, it entered through the mouth, and through the passage within the mouth, and through the Eustachian tube, into the brain. When the breathing arrived there, I then understood their speech ; and I was permitted to speak with them. I observed when they were speaking with me, that my lips were moved, and the tongue also a little ; which was by reason of the correspondence of interior speech with exterior speech. Exterior speech is that of articulate sound finding its way to the external membrane of the ear, whence it is conveyed, by means of little organs, membranes, and fibres which are within the

^{hh} That distances in the other life are real appearances, which are presented by the Lord to be seen, according to the state of the interiors of angels and spirits, n. 5604, 9104, 9440, 10146.

ear, into the brain. I was permitted to know from this, that the speech of the inhabitants of Mars was different from that of the inhabitants of our earth, that is to say, in being not sonorous, but almost tacit, insinuating itself into the interior hearing and sight by a shorter way; and being such, it was more perfect, and more full of the ideas of thought, thus approaching nearer to the speech of spirits and angels. The very affection of the speech is also represented with them in the face, and its thought in the eyes; for the thought and the speech, also the affection and the face, with them act as one. They regard it as wicked to think one thing and speak another, and to will one thing and show another in the face. They do not know what hypocrisy is, nor what fraudulent pretence and deceit are. That such was also the speech of the most ancient people on our earth, it has been given me to know by conversation with some of them in the other life; and that this matter may be made clearer, I may repeat what I have heard, as follows: "It was shown me by an influx which I cannot describe, what kind of speech they had who were of the Most Ancient Church^{es} — namely, that it was not articulate, like the vocal speech of our time, but tacit, and effected, not by external breathing, but by internal; thus it was the speech of thought. I was also able to perceive what their internal breathing was, that it proceeded from the navel toward the heart, and so through the lips without being sonorous when they spoke; and that it did not enter into the ear of another by the external way, and beat upon what is called the drum of the ear, but by a certain internal way, and in fact by a certain passage now called the Eustachian tube. It was shown that by such speech they could much more fully express the feelings of the mind and the ideas of the thought, than can ever be done by articulate sounds or sonorous words; which speech is in like manner directed by breathing, but external; for there is no spoken word, nor indeed anything in a word, which is not directed by

applications of the breathing. But this was done much more perfectly with them, because it was effected by internal breathing, which is the more perfect, as being more internal, and more applicable and better conformed to the very ideas of thought; and it is further effected also by the little motions of the lips and corresponding changes of the face. For, since they were celestial men, whatever they thought shone forth from their face and eyes, which were varied in conformity — the face as to form according to the life of the affection, and the eyes as to light. They could by no means present any other countenance than such as accorded with what they thought; and because they had speech by internal breathing, which is that of man's spirit itself, they were therefore able to associate and speak with angels." [See A. C. n. 1118.] The breathing of the spirits of Mars was also communicated to me;ⁱⁱ and it was perceived that it proceeded from the region of the thorax toward the navel, and thence flowed upward through the chest with an imperceptible breathing toward the mouth. From this, as also from other proofs of experience, it was made plain to me that they were of a celestial genius; thus that they were not unlike those who were from the Most Ancient Church on this earth.

88. I have been instructed that the spirits of Mars have reference in the Greatest Man to what is mediate between the intellect and the will, thus to thought from affection, and the best of them to the affection of thought. It is for this reason that their face acts as one with their thought, and that they cannot dissemble before any one. And as they have reference to this in the Greatest Man, the middle province, which is between the cerebrum and the cerebellum, corresponds to them. For with those with whom the cerebrum and the cerebellum are conjoined as to spiritual operations, the face acts as one with the thought; so that the very affection of the thought beams forth from the face,

ⁱⁱ That spirits and angels have breathing, n. 3884, 3885, 3891, 3893.

and from the affection, with the aid of some signs going forth from the eyes, beams the general of thought. For this reason when the spirits of Mars were with me, I perceived sensibly a drawing back of the front part of the head toward the hindhead, thus of the cerebrum toward the cerebellum.^{kk}

89. Once when the spirits of Mars were with me, and occupied the sphere of my mind, some spirits from our earth came up, and wished to infuse themselves also into that sphere. But then these spirits from our earth became as it were insane, for the reason that they did not at all agree. For the spirits of our earth in the Greatest Man have reference to external sense, and thus they were in an idea turned to the world and to self, while the spirits of Mars were in an idea turned from self to heaven and to the neighbor; hence there was contrariety. But angelic spirits of Mars then came up, and at their approach communication was taken away, and so the spirits of our earth withdrew.

90. The angelic spirits spoke with me about the life of the inhabitants on their earth, that they are not under governments, but are arranged in societies larger and smaller, and that they take into their societies such as agree with them in mind, which they know at once from the face and speech, and are rarely deceived. Then they are friends at once. They said also that their consociations are delightful, and that they speak with one another of those things that are done in the societies, especially those done in heaven; for many of them have manifest communication with the angels of heaven. Those in their societies who

^{kk} That human faces on our earth in ancient times received influx from the cerebellum, and that the faces then acted as one with the interior affections of man; but that afterward they received influx from the cerebrum, when man began to dissemble and counterfeit in the face affections not his own, and concerning the changes brought upon faces therefrom in process of time, n. 4325-4328.

begin to think perversely, and from this to will evil, are cast out of the societies, and left to themselves alone, and thus pass their time very miserably out of the society, among rocks or elsewhere ; for the society no longer takes thought for them. Certain societies try in various ways to compel such to repentance ; but when they cannot effect this, they separate themselves from them. Thus they take care lest the lust of dominion and the lust of gain creep in ; that is, lest any from the lust of dominion subject a society to themselves, and then many more ; and lest any from the lust of gain seize the goods of others. Every one there lives content with his goods, and every one with his honor, in being esteemed just and one that loves his neighbor. This enjoyment and tranquillity of mind would perish, if those that think and will what is evil were not cast out, and if the love of self and the love of the world were not met prudently and severely in the very beginnings. For these are the loves for the sake of which empires and kingdoms have been established, within which there are few who do not wish to rule, and to possess the goods of others. For there are few who do what is just and right from the love of what is just and right ; still less who do what is good from charity itself, rather than from fear of the law, of life, of the loss of gain, of honor, and of reputation on account of those things.

91. Concerning the Divine worship of those that dwell on their earth, they said that they acknowledge and adore our Lord, saying that He is the Only God, and that He rules both heaven and the universe ; and that all good is from Him, and that He leads them ; also that He often appears among them on their earth. I was then permitted to say to them, that Christians also on our earth know that the Lord rules heaven and earth, from the words of the Lord Himself in Matthew — *All power is given unto Me in heaven and in earth* (xxviii. 18) ; but that they do not believe this as those who are from the earth Mars do. They

said also that they believe there, that there is nothing in them but what is filthy and infernal, and that all good is the Lord's, even saying further, that of themselves they are devils, and that the Lord draws them out of hell, and continually keeps them from it. Once when the Lord was named, I saw that those spirits humbled themselves so inferiorly and profoundly as cannot be described; for in their humiliation they had the thought that they were of themselves in hell; and that so they were altogether unworthy to look to the Lord, Who is Holiness Itself. They were so profoundly in that thought, from full belief, that they were as if out of themselves; and they remained in it upon their knees until the Lord lifted them up, and then as it were drew them out of hell. When they thus come forth out of their humiliation, they are full of good and of love, and thence of joy of heart. When they so humble themselves, they do not turn their face to the Lord, for this they do not then dare to do, but turn it away. The spirits who were around me said that they had never seen such humiliation.

92. Certain spirits who were from that earth wondered that there were about me so many spirits from hell, and that they also spoke with me. But it was given to answer, that this was permitted them in order that I might know their quality, and why they are in hell, and that this is in consequence of their life. It was also given to say that there were some among them whom I had known when they lived in the world, and that some were then established in great dignity, who yet had nothing but the world in their heart; but that no evil spirit, even the most infernal, could do me any harm, because I was continually protected by the Lord.

93. There was presented before me an inhabitant of that earth. He was not really an inhabitant, but like one. His face was like that of the inhabitants of our earth, but the lower region of the face was black, not from a beard, for

he had none, but from blackness in place of it. This blackness extended on both sides as far as the ears. The upper part of the face was yellowish, like the faces of the inhabitants of our earth who are not altogether white. These spirits said further that on their earth they eat the fruits of trees, especially a certain round fruit which grows up out of the ground, and also leguminous plants; that they are clothed with garments made out of the bark-fibres of certain trees, of such consistence that they can be woven, and also glued together by a kind of gum which they have among them. They further related that they know there how to make fluid fires, from which they have light during the evening and night.

94. I saw a most beautiful flame, as it were, of varying color, crimson and also pink, and the colors with a beautiful ruddy glow from the flame. I also saw a certain hand, to which this flame adhered, at first on the back, afterward to which this flame adhered, at first on the back, afterward in the palm, and thence it played round the hand on all sides. This lasted for some little time. Then the hand with its flamy light was removed to a distance, and where it rested there was a bright light. In that brightness the hand receded, and then the flame was changed into a bird, which at first was of the same colors as the flame, and the colors glowing as before; but gradually the colors were changed, and with the colors the vigor of life in the bird. It flew round about and at first around my head, then forward into a sort of narrow room, which appeared like a shrine; and as it flew farther forward, so its life receded, till at length it became as of stone, at first of a pearl color, afterward dark; but though without life, it was still flying. When the bird was flying around my head and was still in the vigor of life, a spirit was seen rising from below through the region of the loins to the region of the breast, who wished to take the bird away. But because it was so beautiful, the spirits around me forbade him; for their eyes were all fastened on it. The spirit however who rose up

from below, endeavored strongly to persuade them that the Lord was with him, and thus that he did this from the Lord. And then, though most of them did not believe this, they no longer hindered him from taking away the bird. But as heaven flowed in at that moment, he could not retain it, and presently let it go free out of his hand. After this the spirits around me who had intently watched the bird and its successive changes, spoke with one another about it, and this for a considerable time. They perceived that such a sight could not but signify something celestial. They knew that the flame signified celestial love and its affections; that the hand to which the flame adhered, signified life and its power; the changes of colors, varieties of life as to wisdom and intelligence; and the bird also the same, but with the difference that the flame signified celestial love and the things of that love, and the bird signified spiritual love and the things of that love — celestial love being love to the Lord, and spiritual love charity toward the neighbor^{ss} — and that the changes of the colors and at the same time of the life in the bird, until it became as of stone, signified successive changes of spiritual life as to intelligence. They knew also that spirits who ascend from below through the region of the loins to the region of the breast, are in a strong persuasion that they are in the Lord, and hence believe that all things they do, even though evil, they do by the Lord's will. But yet they could not make out from this who were meant by this appearance. At length they were instructed from heaven that the inhabitants of Mars were meant — that their celestial love, in which very many still are, was signified by the flame which adhered to the hand, and that the bird in the beginning, when in the beauty of its colors and the vigor of its life, signified their spiritual love; but that the bird's becoming as of stone and of no life, and at length of a dark color, signified such of the inhabitants as have removed themselves from the good of love and are in evil, and yet still believe that they are in the Lord. The

same was signified by the spirit who rose up and wished to take away the bird.

95. By the bird of stone were also represented the inhabitants of that earth who in a strange manner transmute the life of their thoughts and affections into almost no life — as to which I have heard as follows. A certain spirit spoke with me from above my head, and from the sound of his voice he seemed to be in a state of sleep. In this state he said many things, and with as much prudence as if he were awake. It was given to perceive that he was a subject through which angels spoke; and that in that state he perceived and brought forth what they said,⁴² for he spoke nothing but what was true. If anything flowed in from any other source, he admitted it indeed, but did not bring it forth. I questioned him about his state, and he said that this state was to him peaceful, and without any anxiety about the future; and that at the same time he performed uses, whereby he had communication with heaven. It was told me that such spirits in the Greatest Man have reference to the longitudinal sinus in the brain, which lies between its two hemispheres, and is in a quiet state there, however the brain may be disturbed on both sides. When I was in conversation with this spirit, some spirits introduced themselves toward the fore part of the head, where he was, and pressed upon him; so that he withdrew to one side, and gave them place. The newly arrived spirits conversed with one another; but neither the spirits around me, nor I myself, understood what they were saying. I was instructed by angels that they were spirits from the earth Mars, who were skilled in talking with one another in such manner that the spirits present neither understood nor perceived anything. I wondered that such speech was possible, because all spirits have one kind of speech,

⁴² That communications are made through spirits sent forth by societies of spirits and angels to other societies, and that these emissary spirits are called subjects, n. 4403, 5856, 5983, 5985-5989.

which flows from the thought, and consists of ideas, that are heard as words in the spiritual world ; but I was told that those spirits form in a certain manner ideas expressed by the lips and the face, not intelligible to others, and at the same moment artfully withdraw their thoughts, taking special care that nothing of the affection should manifest itself, because if anything of affection were perceived, the thought would then be manifest ; since thought flows from affection, and as it were in it. I was instructed further that the inhabitants of the earth Mars who place heavenly life in knowledges alone, and not in a life of love, contrived such speech — though not all of them — and that when they become spirits, they retain it. It is these who were signified in particular by the bird of stone ; for to present speech by modifications of the countenance and foldings of the lips, with removal of affections and withdrawal of thoughts from others, is to take the soul out of speech, and to render it like a mere image, and by degrees themselves also. But although they think that they are not understood by others in what they say among themselves, still angelic spirits perceive each and every thing that they speak, for the reason that from them no thought can be concealed. This was also shown them by living experience. I was thinking of this, that the evil spirits of our earth are not affected with shame when they infest others, and this thought flowed in with me from angelic spirits who perceived the speech of those spirits of Mars. These spirits then acknowledged that this was what they were speaking of among themselves, and they marvelled. Moreover, there were many things disclosed by an angelic spirit, both of what they spoke and of what they were thinking, notwithstanding they endeavored to withdraw their thoughts from him. Afterward those spirits flowed in from above into my face, and their influx was felt like a fine striated rain, which was a sign that they were not in any affection for truth and good, since that is represented by what is striated. They

then spoke with me plainly, saying that the inhabitants of their earth talk with one another in like manner. It was then said to them, that this was evil, because in this way they obstruct internals, and recede from them to externals, which they also deprive of their life ; and especially because it is not sincere to speak thus. For they who are sincere have no wish to speak, nor even to think, anything but what others may know, even all, or the whole heaven. But they who do not wish others to know what they speak, judge others, think evil of them, and well of themselves, and are at length carried by habit so far as to think and speak ill of the church, of heaven, and even of the Lord Himself. It was said that they who love knowledges, and not so much a life according to them, have reference to the interior membrane of the skull in the Greatest Man ; but that they who accustom themselves to speak without affection, and to draw the thought to themselves and withdraw it from others, have reference to that membrane when it is become bony, because from having some spiritual life they come to have no life.

96. As those who are in knowledges alone, and in no life of love, were also represented by the bird of stone, and as they have thence no spiritual life, I may therefore show here, by way of appendix, that those alone have spiritual life who are in heavenly love, and in knowledges therefrom ; and that a love contains in itself all the power of knowing which is of that love. For example, the animals of the earth, and also the animals of the air, or the birds, have the knowledge of all things that are of their loves. These loves are, to nourish themselves, to dwell in safety, to propagate offspring, to bring up their young, and with some, to provide for themselves against winter. Consequently they have all the requisite knowledge, for this is in those loves, and flows into them as into its very receptacles ; and this so wonderfully with some animals that man cannot but marvel. The knowledge is innate with them, and is called

instinct ; but it is of the natural love in which they are. If man were in his love, which is love to God and toward the neighbor — for this love is man's proper love, by which he is distinguished from the beasts, and is heavenly love — man would then be not only in all requisite knowledge, but also in all intelligence and wisdom ; for these would flow into those loves from heaven, that is, through heaven from the Divine Being. As man however is not born into those loves, but into the opposite ones, that is, into the loves of self and the world, for that reason he cannot but be born into all ignorance and nescience. But by Divine means he is led on to something of intelligence and wisdom, yet not actually into anything of it, unless the loves of self and the world are removed, and the way is thus opened for love to God and the neighbor. That love to God and love toward the neighbor have in them all intelligence and wisdom, may be evident from those who in the world have been in these loves. When after death they come into heaven, they there come into such knowledge and wisdom as they had never known any thing about before ; yea, they think and speak there, as do the rest of the angels, such things as the ear hath never heard, nor the mind known, and which are ineffable. The reason is, that those loves have in them the faculty of receiving such things.

THE EARTH OR PLANET SATURN, AND ITS SPIRITS
AND INHABITANTS.

97. The spirits from the earth Saturn appear, as does that earth itself, in front at a considerable distance, down in the plane of the knees ; and when the eye is opened in that direction, a multitude of spirits come into view, who are all from that earth. They are seen on this side of that earth, and to the right of it. It has also been given to speak with them, and thus to know their quality in compar-

ison with others. They are upright and modest, and because they have small esteem for themselves, they therefore appear small in the other life.

98. In worship they are extremely humble, for in it they hold themselves as nothing. They worship our Lord, and acknowledge Him as the Only God. The Lord also appears to them at times under an angelic form, and thus as Man; and then the Divine shines forth from His face, and affects the mind. The inhabitants also, when they come to suitable age, speak with spirits, by whom they are instructed concerning the Lord, and how He is to be worshipped, and also how they must live. When any wish to seduce spirits who are from this planet, and to draw them away from faith in the Lord, or from humiliation toward Him and probity of life, they say that they wish to die. Then there appear in their hands small knives, with which they seem to want to pierce their breasts. When asked why they do so, they say that they would rather die than be led away from the Lord. The spirits of our earth sometimes deride them for this, and put the good spirits to question for doing so. But they then answer, that they know well they are not killing themselves, and that this is only an appearance flowing from the will of their mind, that they would rather die than be drawn away from the worship of the Lord.

99. They said that spirits sometimes come to them from our earth, and ask them what God they worship; to whom they answer that they are insane, and that there cannot be greater insanity than to ask what God one worships, when yet there is One God alone to all in the universe; and that they are still more insane in not acknowledging that the Lord is that One God, and that He rules the whole heaven and thence the whole world; for He who rules heaven rules also the world, because the world is ruled through heaven.

100. They said that on their earth there are also some who call their nocturnal light, which is great, the Lord; but that they are separated from the rest and not tolerated by

them. That nocturnal light comes from the great ring which surrounds the planet at a distance, and from its moons or satellites.

101. They related that another kind of spirits, who go in companies, frequently come to them, desiring to know how matters stand with them, and that in various ways they draw out from them what they know. Of these they said that they are not insane, except in having so strong a desire to know, for the sake of no other use than that of knowing. They were afterward informed that those spirits are from the planet Mercury, or the earth nearest the sun; and that they are delighted with knowledges alone, and not so much with their uses.

102. The inhabitants and spirits of the planet Saturn have reference to the middle sense which is between the spiritual and the natural man, but recedes from the natural and draws near to the spiritual. It is for this reason that those spirits appear to be borne away or taken up into heaven, and then soon let back again; for whatever is of spiritual sense is in heaven, and whatever is of natural sense is below heaven. Since the spirits of our earth have reference in the Greatest Man to natural and corporeal sense, it has been given to know from manifest experience, how the spiritual man and the natural come into contention and collision when the latter is not in faith and charity. Spirits of the earth Saturn came into sight from afar, and living communication was then given between them and such spirits of our earth. The latter on perceiving the former, became as if insane, and began to infest them by infusing unworthy suggestions about faith and also about the Lord; and while hurling at them invectives and insults, they even threw themselves into the midst of them, and from the insanity in which they were, endeavored to injure them; but the spirits of Saturn feared nothing, because they were secure and in tranquillity. On the other hand, those spirits of our earth when in the midst of them, began

to be distressed and to breathe with difficulty, and so they thrust themselves out, one this way and another that, and were dispersed. Those present perceived from this what the natural man is, separated from the spiritual, when it comes into the spiritual sphere — that it is insane. For the natural man separated from the spiritual is wise only from the world, and not at all from heaven ; and he who is wise from the world only, believes nothing except what is apprehended by the senses ; and what he believes, he believes from the fallacies of the senses ; and unless these be removed by influx from the spiritual world, they produce falsities. Hence spiritual things to him are nothing, even to such a degree that he scarcely endures to hear the spiritual named, for which reason such are insane when kept in the spiritual sphere. It is otherwise while they are living in the world, when they either think naturally concerning spiritual things, or turn away the ear ; that is, they hear and do not pay attention. From this experience it was also evident that the natural man cannot introduce itself into the spiritual, that is, ascend ; but that when a man is in faith, and thence in spiritual life, the spiritual man flows into the natural and thinks there. For spiritual influx is given, that is, influx from the spiritual world into the natural, but not the reverse.^{mmm}

103. I was further informed by the spirits of that earth in regard to the inhabitants, among other things, how they are consociated. They said that they live grouped in families, each family separate from every other ; thus a man and his wife with their children ; and that the children, when they marry, are separated from the home of their parents, and care no longer for it ; for which reason the

^{mmm} That there is spiritual influx, and not physical or natural, thus that influx is from the spiritual world into the natural, and not from the natural into the spiritual, n. 3219, 5119, 5259, 5427, 5428, 5477, 6322. That it appears as if there were influx from man's externals into his internals, but that it is a fallacy, n. 3721.

spirits from that earth appear in pairs. They have little solicitude about food and clothing, they live upon the fruits and leguminous plants which their earth produces ; and they are lightly clad, being wrapped with a thick skin or a tunic which keeps off the cold. Moreover, all on their earth know that they are to live after death ; and therefore make no account of their bodies, except only for the sake of the life, which they say is to remain and serve the Lord ; for this reason also they do not bury the bodies of the dead, but cast them forth and cover them with branches of forest trees.

104. They were asked about that great ring which appears from our earth to rise above the horizon of that planet, and to vary its situation. They said that it does not appear to them as a ring, but only as a snowy light in the sky, varying in direction.

THE EARTH OR PLANET VENUS, AND ITS SPIRITS AND INHABITANTS.

105. The planet Venus, in the idea of spirits and angels, appears to the left a little backward, at some distance from our earth. It is said, in the idea of spirits, because to no spirit does the sun of the world appear, nor any planet ; but spirits have only an idea of their existence. From this idea the sun of the world is presented behind as something quite dark, and the planets not wandering as in the world, but constantly in their places (see above, n. 42).

106. On the planet Venus are two kinds of men, of contrary disposition. There are those who are mild and humane, and there are those who are fierce and almost like wild beasts. Those who are mild and humane appear on the farther side of the earth ; those who are fierce and almost like wild beasts appear on the side looking this way. But it is to be known that they appear thus according to

their states of life, for the state of life determines all appearance of space and distance there.

107. Some of those who appear on the further side of the planet, and are mild and humane, came to me and presented themselves to my sight above my head, where I spoke with them about various matters. They said among other things that when they were in the world, and afterward still more, they acknowledged our Lord as their Only God. They added that they had seen Him on their earth, and also represented in what manner they had seen Him. These spirits in the Greatest Man have reference to the memory of things material, agreeing with the memory of things immaterial, to which the spirits of Mercury have reference. For this reason the spirits of Mercury are in fullest concord with these spirits of Venus; and therefore when they were together, a marked change was felt from their influx, and a strong working in my brain (see above, n. 43).

108. With those spirits who appear on the side that looks this way and who are fierce and almost like wild beasts, I have not spoken, but I have been told by angels what their quality is, and whence they have so savage a nature — namely, that their chief delight is in plundering, and especially in feasting on their plunder. Their enjoyment when thinking of feasting on their plunder, was communicated to me, and was perceived to be extreme. That there have been inhabitants on our earth also of such a savage nature, is plain from the histories of various nations; also from the inhabitants of the land of Canaan (1 Sam. xxx. 16), and from the Jewish and Israelitish nation even in the time of David — in their making yearly excursions to plunder the nations and feast with rejoicing on the spoil. It was also said, that those inhabitants are for the most part giants, and that the men of our earth only come up to their middle; and further that they are stupid, not asking what heaven is, or eternal life, and caring only for what concerns their land and their cattle.

109. Because they are of such a nature, even when they come into the other life, they are infested there exceedingly by evils and falsities. Their hells appear near to their earth, and do not communicate with the hells of the wicked of our earth, for the reason that they are of another genius altogether and different disposition. Hence also their evils and falsities are of an altogether different kind.

110. But those of them who are such that they can be saved, are in places of vastation, and are there reduced to the last degree of despair; for in no other way can evils and falsities of that kind be subdued and removed. When they are in a state of despair, they cry out that they are beasts, that they are abominations, that they are hatreds, and so that they are damned. Some of them when in such a state, even cry out against heaven; but this is pardoned them, because it comes from their despair. The Lord controls them, that they may not pour forth their vituperations beyond certain limits. When these have passed through extreme suffering, corporeal things being then as it were dead with them, they are finally saved. It was also said of them that when they lived on their earth, they believed in a certain Supreme Creator, without a Mediator; but when they are saved, they are also instructed that the Lord is the Only God, Saviour, and Mediator. I saw some of them, after having passed through extreme suffering, taken up into heaven; and when they were received there, I perceived such a tenderness of joy from them, as drew tears from my eyes.

THE SPIRITS AND INHABITANTS OF THE MOON.

111. Some spirits appeared above my head, from whom were heard voices like thunder; for so their voices sounded, like the thunder from clouds after lightning. I imagined that there was a great multitude of spirits, who had ac-

quired the art of letting their voices forth with such a sound. Some rather simple spirits who were with me, laughed at them, at which I greatly wondered. But the cause of their laughter was soon discovered — that the spirits who thundered were not many, but few, and as small as boys, and had before struck them with terror by such sounds, when yet they could do them no harm. That I might know what they were, some of them let themselves down from on high where they were thundering ; and what was strange, one carried another on his back, and the two approached me in this way. They appeared with a face not unattractive, but longer than the faces of other spirits ; of a stature like that of a boy of seven years, but stouter in body — thus they were dwarfs. I was told by angels that they were from the Moon. The one who was carried by the other came to me, applying himself to my left side under the elbow, and spoke thence, saying, that whenever they utter their voice, they spoke thus, and in this way terrify the spirits who wish to do them evil, putting some to flight, and thus they go in safety wherever they wish. That I might know certainly that they made this sound, he withdrew from me to some other spirits, but not quite out of sight, and thundered in the same manner. They showed further that their voice resounded in this way by being sent forth from the abdomen, like an eructation. It was perceived that this arose from the fact that the inhabitants of the Moon do not speak from the lungs, like the inhabitants of other earths, but from the abdomen, and so from air there collected ; and this because the Moon is not surrounded by the same kind of atmosphere as the other earths. I was instructed that the spirits of the Moon in the Greatest Man have reference to the ensiform or xiphoid cartilage, to which the ribs are attached in front, and from which descends the *fascia alba*, which is the support of the muscles of the abdomen.

112. That there are inhabitants on our Moon is known

to spirits and angels, as likewise that there are on the moons or satellites around the earths Jupiter and Saturn. Those who have not seen and spoken with the spirits therefrom, still do not doubt but that there are also men upon them, because they are equally earths; and where there is an earth, there are men. For man is the end for the sake of which an earth exists, and nothing was made by the Most High Creator without an end. That the end of creation is the human race, that there may be a heaven therefrom, may be evident to every one who thinks from a somewhat enlightened reason.

THE REASONS WHY IT PLEASSED THE LORD TO BE BORN ON OUR EARTH, AND NOT ON ANOTHER.

113. That it pleased the Lord to be born, and to assume the Human, on our earth, and not on another, was for many reasons, of which I have been informed from heaven. *The principal reason was for the sake of the Word, in that this could be written on our earth; and being written, could then be published throughout the whole earth; and being once published, could be preserved to all posterity; and that thus it could be made manifest that God became Man, even to all in the other life.*

114. *That the principal reason was for the sake of the Word, is because the Word is the Divine truth itself, which teaches man that there is a God, that there is a heaven and also a hell, and that there is a life after death; and teaches moreover how he must live and believe in order that he may come into heaven, and so be happy forever. All these things without a revelation, and thus on this earth without the Word, would have been altogether unknown; and yet man was so created that as to his interiors he cannot die.¹¹⁴*

¹¹⁴ That from natural light alone nothing is known about God, about heaven and hell, about the life of man after death, and about

115. *That the Word could be written on our earth*, is because the art of writing has been here from the most ancient time, first on bark of trees, then on parchments, afterward on paper, and at length published by types. This has been provided by the Lord for the sake of the Word.

116. *That the Word could then be published throughout the whole earth*, is because there is here intercourse between all nations, both by land and by sea, to all the places on the whole globe. Hence the Word, once written, could be conveyed from one nation to another, and be taught everywhere.

117. *That the Word once written could be preserved to all posterity*, consequently for thousands and thousands of years, and that it has been so preserved, is well known.

118. *That thus it could be made manifest that God became Man*; for this is the first and most essential thing for the sake of which the Word is given. For no one can believe in a God, and love a God, Whom he cannot comprehend under some appearance; and therefore they who acknowledge what is invisible and thus incomprehensible, sink down in thought into nature, and so believe in no God. For which reason it pleased the Lord to be born here, and to make this manifest by the Word, that it might not only become known on this globe, but also *might thereby be made manifest to spirits and angels from other earths, and likewise to the Gentiles on this earth.*^{oo}

the Divine truths by which man has spiritual and eternal life, n. 8944, 10318-10320. That this may be evident from the fact that many, and among them the learned, do not believe those things, though they were born where the Word is and by it have instruction concerning them, n. 10319. That it was therefore necessary that there should be a revelation from heaven, because man was born for heaven, n. 1775.

^{oo} That the Gentiles are instructed by angels in the other life, and that they who have lived aright according to their religion receive the truths of faith and acknowledge the Lord, n. 2409, 2595, 2598, 2601, 2603, 2661, 2863, 3263.

119. It is to be known that the Word on our earth given through heaven by the Lord, is the union of heaven and the world ; to which end there is a correspondence of all things in the letter in the Word with Divine things in heaven ; and that the Word in its supreme or inmost sense treats of the Lord, of His kingdom in the heavens and on earth, and of love and faith from Him and in Him, consequently of life from Him and in Him. Such things are presented to the angels in heaven, when the Word of our earth is read and preached. *pp*

120. On every other earth Divine truth is manifested by word of mouth through spirits and angels ; as has been said in the preceding pages, where the inhabitants of the earths in this solar system are described ; but this is done within families. For the people on most earths dwell apart in families ; and therefore the Divine truth thus revealed by spirits and angels is not conveyed far beyond the families ; and unless a new revelation continually succeeds, what has been given is perverted or perishes. It is otherwise on our earth, where the Divine truth, which is the Word, remains in its integrity forever.

121. It is to be known that the Lord acknowledges and receives all, from whatever earth they are, who acknowledge and worship God under the human form ; since God under the human form is the Lord. And as the Lord appears to the inhabitants on the earths in an angelic form, which is the human form, therefore when spirits and angels from those earths hear from the spirits and angels of our earth

pp That the Word is understood otherwise by angels in the heavens than by men on earth, and that the former have the internal or spiritual sense, but the latter the external or natural, n. 1769-1772, 1887, 2143, 2333, 2396, 2540, 2541, 2545, 2551. That the Word is that which unites heaven and earth, n. 2310, 2495, 9212, 9216, 9357, 10375. That the Word is therefore written by pure correspondences, n. 1404, 1408, 1409, 1540, 1619, 1659, 1709, 1783, 8615, 10687. That in the inmost sense of the Word the Lord and His kingdom are solely treated of, n. 1873, 2249, 2523, 7014, 9357.

that God is actually Man, they receive that Word, acknowledge it, and rejoice that it is so.

122. To the reasons which have been presented above, may be added, that the inhabitants and spirits of our earth have reference in the Greatest Man to natural and external sense, which sense is the ultimate in which the interiors of life close, and on which they rest as on their common basis. It is the same with Divine truth in the letter, which is called the Word; which for that reason also was given on this earth, and not on any other.⁹⁹ And as the Lord is the Word, and is the First and the Last thereof, therefore that all things might exist according to order, it pleased Him to be born on this earth, and to become the Word — according to what is said in John: “In the beginning was the Word, and the Word was with God, and the Word was God. The same was in the beginning with God. All things were made by Him; and without Him was not any thing made, that was made. . . . *And the Word was made flesh, and dwelt among us; and we beheld His glory, the glory as of the Only begotten of the Father. . . .* No man hath seen God at any time; the Only-begotten Son, Who is in the bosom of the Father, He hath brought Him to view” (i. 1-4, 14, 18). The Word is the Lord as to Divine truth, and thus the Divine truth from the Lord.¹⁰⁰ But this is an arcanum which comes within the understanding of only a few.

⁹⁹ That the Word in the sense of the letter is natural, n. 8783; because the natural is the ultimate into which spiritual and heavenly things close, and on which they subsist as on their foundation; and that otherwise the internal or spiritual sense of the Word, without the external or natural, would be like a house without a foundation, n. 9430, 9433, 9824, 10044, 10436.

¹⁰⁰ That the Word is the Lord as to Divine truth, and thus the Divine truth from the Lord, n. 2859, 4692, 5075, 9987. That by the Divine truth all things were created and made, n. 2803, 2884, 5272, 7835.

EARTHS IN THE STARRY HEAVENS.

123. Those who are in heaven can speak and converse not only with the angels and spirits from the earths in this solar system, but also with those who are from earths in the universe out of this system ; and not only with the spirits and angels there, but also with the inhabitants themselves though only with such as have their interiors opened, so as to hear those that speak from heaven. The same thing is possible to a man while living in the world, to whom it is granted by the Lord to speak with spirits and angels. For a man is a spirit as to his interiors, the body which he carries about in the world only serving him for discharging his functions in this natural or earthly sphere, which is the lowest. But to speak as a spirit with angels and spirits is granted to no one, unless he is capable of being conjoined with angels as to faith and love ; nor can he be conjoined, unless he has faith in and love to the Lord, since it is by faith and love to Him that man is conjoined — that is, by truths of doctrine and goods of life from Him ; and when he is conjoined, he is safe from the assault of evil spirits from hell. With others the interiors cannot be so far opened, since they are not in the Lord. This is the reason that there are few at this day to whom it is given to speak and converse with angels ; as is manifestly proved by its being scarcely believed at this day that there are spirits and angels, much less that they are with every man, and that by means of them man has connection with heaven, and through heaven with the Lord ; and still less again that man when he dies as to the body, lives a spirit, and in the human form as before.

124. As at this day with many in the church there is no belief in the life after death, and scarce any belief in heaven, nor in the Lord as the God of heaven and earth, therefore the interiors of my spirit have been opened by

the Lord, so that while still in the body, I can at the same time be with angels in heaven ; and not only speak with them, but also see the stupendous things there, and describe them ; so that it may not chance to be said hereafter, "Who has come to us from heaven and told us that there is such a place, and what there is there?" But I know that they who in heart have before denied heaven and hell and the life after death, will still confirm themselves against them, and deny them ; for it is easier to make a crow white, than to make those believe who have once rejected faith in the heart. The reason is, that they always think of such things from the negative, and not from the affirmative. Nevertheless, let what has been said hitherto, and what is still further to be said concerning angels and spirits, stand for the benefit of the few who are in faith. And that the rest also may be led along to some degree of acknowledgment, I am permitted to relate such things as attract and delight the man who is desirous of knowing ; and now about the earths in the starry heavens.

125. He who does not know the arcana of heaven, cannot believe that a man can see earths so far away, and relate anything about them from sensible experience. But let him know that the spaces and distances, and thence the journeyings in the natural world, are, in their origin and first cause, changes of the state of the interiors, and with angels and spirits appear according to these changes ;^{ss} and that thus they can by these changes be apparently transferred from one place to another, and from one earth to another, even to the earths which are at the end of the universe. So also may a man be transferred as to his spirit, his body still remaining in its place. Thus has it been with me, since by the Divine mercy of the Lord it has been

^{ss} That movements, progressions, and changes of place in the other life are changes of state of the interiors of the life, and that still they appear to spirits and angels as real changes of place, n. 1273-1277, 1377, 3356, 5605, 10734.

given me to have full intercourse with spirits as a spirit, and at the same time with men as a man. That a man can be so transferred as to his spirit, the sensual man cannot understand, since he is in space and time, and measures his movements thereby.

126. That there are many worlds, may be evident to every one, from there being so many fixed stars visible in the universe; and it is known in the learned world that every fixed star is like a sun in its place; for it remains fixed like the sun of our earth in its place; and that the distance makes it appear small in form like a star; consequently that just like the sun of our world, it has round it planets, which are earths; and the reason that these are not apparent to our eyes, is their being at such an immense distance, and having only the light of their star, which cannot be reflected again as far as here. For what other purpose is there so great a heaven with so many stars? For the end of the creation of the universe is man, that from man there may be an angelic heaven; but what would the human race, and thence an angelic heaven, from one earth, be for the Infinite Creator, for Whom a thousand earths, nay, tens of thousands, would not be enough? By calculation it appears that if there were a million of earths in the universe, and men on every earth to the number of three hundred millions, and two hundred generations in six thousand years, and if to each man or spirit were given the space of three cubic ells, the whole number of so many men or spirits, collected into one body, would still not fill the space of the thousandth part of this earth, thus perhaps not more than the space of a single satellite around the planet Jupiter or Saturn; which would be a space scarce discernible in the universe, for a satellite is hardly visible to the naked eye. What is this to the Creator of the universe? to Whom there would not be enough if the whole universe should be filled, for He is Infinite. On these matters I have spoken with angels, who said that they have a

similar idea of the fewness of the human race in comparison with the infinity of the Creator, although they do not think from spaces, but from states; and that according to their idea, earths to the number of as many myriads as could be conceived by thought, would still be as nothing at all to the Lord. But in what now follows, the earths in the starry heavens shall be described from experience itself; from which it will also be evident how I was transferred thither as to my spirit, while my body remained in its place.

THE FIRST EARTH IN THE STARRY HEAVENS, AND
ITS SPIRITS AND INHABITANTS; FROM THINGS
HEARD AND SEEN.

127. I was led by the Lord by means of angels to a certain earth in the starry heavens, where it was given me to see the earth itself, yet not to speak with the inhabitants there, but with the spirits who were from it. All the inhabitants or men of every earth, after the life in the world is finished, become spirits, and remain near their own earth. From these spirits, however, information is given about their earth, and about the state of the inhabitants there; for men who leave the body bring with them all their former life, and all their memory.⁴⁴ To be led to earths in the universe is not to be led and transferred thither as to the body, but as to the spirit; and the spirit is led by variations of the state of interior life, which appear to it as progressions through space.⁵⁵ Approaches also are made according to agreements or similarities of states of life; for agreement or similarity of life conjoins, and disagreement and dissimilarity disjoin. From this may be evident how transference is made as to the spirit, and approach to

⁴⁴ That man after death retains the memory of all his affairs in the world, n. 2476-2486.

what is remote, while the man still remains in his place. But to lead the spirit beyond its own world by variations of the state of interiors, and to make the variations advance successively even to a state agreeing with or similar to that of those to whom it is led, is in the power of the Lord alone. For there must be continual direction and foresight from first to last, in going and returning; especially with a man who is still in the world of nature as to the body, and thereby in space. That this has really been done, those who are in and think from the bodily senses cannot be induced to believe, for the reason that what is of bodily sense cannot apprehend movements unconnected with space. But still they who think from the sense of their spirit, somewhat removed or withdrawn from the sense of the body, thus interiorly in themselves, may be induced to believe and to apprehend; since in the idea of interior thought there is not space nor time, but instead thereof those things from which spaces and times exist. It is for such persons that what follows concerning the earths in the starry heavens is related, and not for others, unless they will suffer themselves to be instructed.

128. In entire wakefulness I was led as to the spirit by the Lord, by means of angels, to a certain earth in the universe, accompanied by some spirits from this world. Our progress was made toward the right, and lasted two hours. Near the limit of our solar system, there appeared at first a shining white cloud, but dense, and beyond it a fiery smoke ascending out of a great chasm. It was a vast gulf separating our solar world on that side from some worlds of the starry heavens. That fiery smoke appeared at a considerable distance. I was borne across the middle of it; and then there appeared beneath in that chasm or gulf very many men, who were spirits — for spirits all appear in the human form, and actually are men. I also heard them speaking with one another; but whence and who they were, was not given me to know. Yet one of them said to me

that they were guards, lest spirits should pass from this world into another in the universe without leave having been given. That it was so, was also confirmed ; for some spirits who were in our company, but had not received permission to pass over, when they came to that great interspace, began to cry out vehemently that they were perishing ; for they were like those who are struggling in agony with death, and therefore they stopped on that side of the gulf, nor could they be taken any further, as the fiery smoke that exhaled from the gulf enveloped them and thus tortured them.

129. After I was borne on through that great chasm, I at length arrived at a place where I stopped ; and there then appeared to me spirits overhead with whom it was given me to speak. From their speech, and from their peculiar way of apprehending and explaining things, I clearly perceived that they were from another earth ; for they were quite different from spirits of our solar system. They also perceived from my speech that I was from afar.

130. After we had spoken for some time on various matters, I asked what God they worshipped. They said that they worshipped an Angel, who appears to them as a Divine Man, shining with light ; and that He instructs them and gives them to perceive what they ought to do. They said further that they know that the Most High God is in the Sun of the angelic heaven ; and that He appears to their Angel, and not to themselves ; and that He is too great for them to dare to adore Him. The Angel whom they worshipped was an angelic society, to which it was given by the Lord to preside over them, and to teach the way of what is just and right. They therefore have light from a certain flame, which appears like a small torch, quite fiery and yellow. The cause of it is their not adoring the Lord, and thus not having light from the Sun of the angelic heaven, but from an angelic society. For an angelic society, when it is given by the Lord, can present such light to

the spirits who are in a lower region. That angelic society was also seen by me, high above them ; and there was also seen there the flamy source of their light.

131. As to the rest they were modest, and somewhat simple, but yet of quite good thoughts. From the light with them it might be concluded what their intellectual capacity is ; for the understanding is according to the reception of the light which is in the heavens ; since the Divine truth proceeding from the Lord as a Sun is what shines there, and enables the angels not only to see, but also to understand.^{uu}

132. I was instructed that the inhabitants and spirits of that earth have reference in the Greatest Man to something in the spleen, as to which I was confirmed by an influx into the spleen when they were speaking with me.

133. They were asked about the sun of their system, which illumines their earth. They said that the sun there appears flamy ; and when I represented the size of the sun of our earth, they said that theirs was smaller ; for their sun to our eyes is a star, and I was told by angels that it is among the smaller stars. They also said that the starry heavens are likewise seen from their earth, and that a star larger than the rest appears to them toward the west. I was told from heaven that this is our sun.

134. Presently my sight was opened, so that I could see somewhat of that earth itself ; and there appeared many meadows and woods with leafy trees, and also woolly sheep. I afterward saw some of the inhabitants, who were of the

^{uu} That the light in the heavens is great, n. 1117, 1521, 1522, 1533, 1619-1632, 4527, 5400, 8644. That all the light in the heavens is from the Lord as a Sun there, n. 1053, 1521, 3195, 3341, 3636, 4415, 9548, 9684, 10809. That Divine truth proceeding from the Lord appears in the heavens as light, n. 3195, 3222, 5400, 8644, 9399, 9548, 9684. That that light illumines both the sight and the understanding of angels and spirits, n. 2776, 3138. That the light of heaven also illumines the understanding of man, n. 1524, 3138, 3167, 4408, 6608, 8707, 9128, 9399, 10569.

lower class, clothed in a dress much like that of peasants in Europe. There was also seen a man with his wife. She appeared of handsome figure and graceful carriage, and the man likewise. But, what seemed strange to me, he had a pompous gait, with a rather haughty step; while the woman, on the contrary, walked with a humble step. It was said by the angels that such is the custom on that earth, and that the men who are such are loved, because nevertheless they are well disposed. I was further told that they are not permitted to have more than one wife, that being contrary to their laws. The woman whom I saw had before her breast a broad garment, with which she could screen herself, while it was so made that she could insert her arms and wrap it about herself, and so walk away. Or the lower part of it could be drawn up, and when drawn up and applied to the body, it appeared like an upper garment covering the chest, such as is worn by the women of our earth. But the same garment served also for the man, who was seen to take it from the woman and apply it to his back, loosening the lower part, which then flowed down to his feet, like a toga, and thus clothed he walked about. What I saw on that earth, was not seen with the eyes of my body, but with the eyes of my spirit; and the spirit can see the things that are on an earth, when it is given by the Lord.

135. As I know that it will be doubted whether it is in any wise possible for a man to see with the eyes of his spirit anything on an earth so far away, it is well to say how this thing is. Distances in the other life are not like distances on earth. In the other life distances are altogether according to the states of the interiors of any one. Those who are in a like state, are together in one society and in one place. Everything is present there according to similarity of state, and everything is distant according to dissimilarity of state. Hence it was that I was near that earth when I was led by the Lord into a state similar to that of its spirits

and inhabitants, and
them. From the
world are not d
world ; but only
of the inhabitants
state of affections
being able to see
is the same, a ma
also is. Neither
see anything that
the world, or of t
by his bodily sight
life ; for to him t
But still, spirits
pleasure, can see
the eyes of a ma
any others than th
and angels, and t
my eyes it has be
and as plainly as I
me. It has some
have seen their fr
body, just as pres
They have also s
children, and wish
and saw them, and
state in the other
them and letting t
for the reason tha
would have thoug
was known to me
the lips, still they
were spirits, and t
spirits, and that th
When my interior
were in the other
the things that wer



EARTHS IN THE UNIVERSE.

and that being then present I spoke with
it is plain that the earths in the spiritual
stant in the same way as in the natural
apparently, according to the states of life
s and spirits there. The state of life is the
as to love and faith. In regard to a spirit
the things which are on an earth, or what
an as to his spirit, I may explain how this
spirits nor angels can, by their own sight,
is in the world; for to them the light of
he sun, is as thick darkness—just as man
t cannot see anything that is in the other
he light of heaven is as thick darkness.
and angels, when it is the Lord's good
the things that are in the world through
n. But this the Lord does not grant to
those whom He gives to speak with spirits
to be in company with them. Through
en given them to see things in the world,
I did; and also to hear men speaking with
etimes happened, that some through me
iends whom they had in the life of the
ent as before, to their great astonishment.
een their husbands, or wives, and their
ned to tell them that they were present
d also wanted me to tell them about their
life. But I was prohibited from telling
hem know that they were thus seen, even
t they would have called me insane, or
ht that it was delirium of mind. For it
e, that although they acknowledged with
did not believe in the heart, that there
hat the dead had risen and were among
ese could see and hear through a man.
r sight was first opened, and those who
life saw through my eyes the world and
re in it, they were so astonished that they

A SECOND EARTH IN THE STARRY HEAVENS, AND ITS SPIRITS AND INHABITANTS.

138. I was afterward led by the Lord to an earth in the universe, which was farther distant from our earth than the first one, already described. That it was farther distant was made manifest from my being led on the way to it as to my spirit for the space of two days. This earth was to the left, while the former was to the right. As remoteness in the spiritual world is not from distance of place, but from difference of state, as said above, I could therefore conclude from the duration of the journey thither, which was two days, that the state of the interiors with the people of that earth, which is the state of affections and thence of thoughts, differed that much from the state of the interiors with the spirits from our earth. Being conveyed thither as to my spirit by changes of the state of the interiors, I was permitted to observe the successive changes themselves before I arrived there. This was done when I was awake.

139. When I arrived, the earth itself was not seen, but only spirits from it. For, as was also said before, the spirits of each earth appear around their earth, for the reason that they are of a similar genius with the inhabitants, being from them, and that they may be of service to them. Those spirits were seen very high above my head, whence they observed me as I was coming. It is to be known, that those who stand on high in the other life can look at those who are below them, and the higher they are the wider is their view; and that they can not only look at them, but speak with them also. Thence they observed that I was not from their earth, but from one far away elsewhere; and therefore they addressed me, inquiring about various things, to which it was also given me to reply; and among other things I told them what earth I was from, and what its nature was. And I afterward told about the other earths in

our solar system, and about the spirits of the earth or planet Mercury, that they wander around to many earths in order to procure for themselves knowledges of various things. When they heard this, they said that they had also been seen with them.

140. It was told me by angels from our earth, that the inhabitants and spirits of that earth have reference in the Greatest Man to keenness of vision and for this reason they appear on high, and that they are also exceedingly clear-sighted. As they had reference to such vision, and as they saw very clearly what was beneath them, in talking with them I also compared them to eagles, which fly aloft and have a clear and wide vision beneath them. But at this they were indignant, supposing that I believed them to be like eagles as to rapine, and thus that they were evil. But I replied that I did not liken them to eagles as to rapine, but as to keenness of sight.

141. They were asked about the God Whom they worshipped; and they answered that they worshipped a God visible and invisible — a God visible under the human form, and a God invisible not under any form; and it was found from their speech, and also from the ideas of their thought as communicated to me, that the visible God was our Lord Himself, and they also called Him Lord. To this it was given to reply, that on our earth also God is worshipped as invisible and as visible; and that God invisible is called the Father, and visible the Lord, but that the two are one — as He taught, saying that no man had ever seen the form of the Father, but that the Father and He are one; and that he who sees Him sees the Father; and that the Father is in Him, and He in the Father; and consequently that the two are the Divine in one person. That these are the words of the Lord Himself, may be seen in John (v. 37; x. 30; xiv. 7, 9-11).

142. After a while I saw other spirits from the same earth, who appeared in a place below the former, with

whom also I spoke. But they were idolaters, for they worshipped an idol of stone, resembling a man, but not handsome. It is to be known that all who come into the other life have at first a worship like their worship in the world, but that they are gradually withdrawn from it. The reason is, that all worship remains implanted in man's interior life, from which it cannot be removed and eradicated but by degrees. On seeing this, it was given me to tell them that they ought not to worship what is dead, but what is living; to which they answered that they knew that God lives, and that a stone does not; but that they think of the living God when they look upon a stone in the form of a man; and that in no other way can the ideas of their thought be fixed and determined to the invisible God. Then it was given me to tell them that the ideas of thought may be fixed and determined to the invisible God when they are fixed and determined to the Lord, Who is God visible in thought under the human form; and that man may thus be conjoined to the invisible God in thought and affection, consequently in faith and love, when he is conjoined to the Lord, but in no other way.

143. The spirits who were seen on high were asked whether on their earth they live under the rule of princes and kings; to which they answered that they did not know what such rule was; and that they live under themselves, distinguished into tribes, families, and households. They were asked whether they are secure in this way. They said that they are, since one family does not envy another, nor wish to take anything away from it. They were indignant at being asked such questions, which seemed to imply that there was hostility among them, or need of protection against robbers. What more is needed, said they, than to have food and clothing, and so to dwell contented and quiet by ourselves.

144. Being questioned further about their earth, they said that they have meadows, flower gardens, woods full of

fruit trees, and also lakes abounding in fish, birds of a blue color with golden wings, and animals of various sizes. Among the smaller they mentioned one kind which had the back humped, like the camels on our earth. They do not however eat the flesh of these animals, but only the flesh of fishes, and also the fruits of trees and leguminous plants of the earth. They said further that they do not dwell in regularly built houses, but in groves, in which they make shelter for themselves among the boughs against rain and the heat of the sun.

145. They were asked about their sun, which is seen as a star from our earth, and they said that it appears fiery; not larger to the sight than a man's head. I was told by angels that the star which is their sun is among the smaller stars, not far distant from the celestial equator.

146. Spirits were seen, in a similar appearance to what they had when they were men on their earth. They had a face not unlike that of the men of our earth, except that the eyes and nose were smaller. As this seemed to me somewhat of a deformity, they said that to them small eyes and a small nose are marks of beauty. A woman was seen, dressed in a gown on which were roses of various colors. I inquired of what materials they make their garments on that earth. They answered that from plants they gather fibres which they spin into threads, and that they then lay the threads side by side in double and triple layers, and moisten them with a glutinous liquid, and so give the web consistency, coloring it afterward with juices from herbs. I was likewise shown how they prepare the threads: the women sit leaning back on a seat, and twist the thread with the toes; and when it is twisted, they draw it to them, and finish it with the hands.

147. They also said that on that earth a husband has one wife, and no more, and that they have from ten to fifteen children. They added that harlots are also found there; but that after the life of the body, when they become spirits, they are sorceresses, and are cast into hell.

A THIRD EARTH IN THE STARRY HEAVENS, AND ITS SPIRITS AND INHABITANTS.

148. Some spirits appeared at a distance who were not willing to come near. The reason was that they could not be with the spirits of our earth who were then around me. From this I perceived that they were from another earth, and I was afterward told that they were from a certain earth in the universe; but where that earth is, I was not informed. These spirits were altogether unwilling to think of their body, and indeed of any thing corporeal and material — quite unlike the spirits from our earth. This was why they were not willing to come near. And yet after the removal of some of the spirits of our earth, they came nearer and spoke with me. But then anxiety was felt, arising from collision of spheres; for spiritual spheres encompass all spirits and societies of spirits;^{cc} and as they flow forth from the life of the affections and of the thoughts therefrom, so where there are opposing affections there arises collision, and thence anxiety. The spirits of our earth said that they did not dare to approach them, since when they were approaching, they not only were seized with anxiety, but also appeared to themselves as if bound hand and foot with serpents, from which they could not be loosed until they withdrew. This appearance had its origin in correspondence; for the spirits of our earth have reference in the Greatest Man to external sense, thus to the corporeal sensual, and this sensual is represented in the other life by serpents.^{xx}

149. Such being the nature of the spirits of that earth,

^{xx} That man's external sensual is represented in the spiritual world by serpents, because it is in the lowest things, and in comparison with the interiors with man, lies on the ground and as it were creeps; and that they were thence called serpents, who reasoned from that sensual, n. 195-197, 6398, 6949.

they appear in the eyes of spirits, not as other spirits, in a manifest human form, but as a cloud, and for the most part like a dark cloud, in which is mingled something of white and human appearance. But they said that they are white within, and that when they become angels, the dark color is turned into a beautiful blue, as was also shown to me. I asked whether they had such an idea of their body, when they lived as men in the world. They said that the men of their earth make no account of their bodies, but only of the spirit in the body, because they know that this is to live for ever, but the body to perish. They said further that many on their earth believe that the spirit of the body has been from eternity, and was infused into the body at conception. But they added that they now know it is not so, and that they repent having been in such a false opinion.

150. When I asked whether they wished to see anything on our earth, and said that this could be done through my eyes (see above, n. 135), they answered at first that they could not, and then that they did not wish it; since they would see only earthly and material things, from which they remove their thoughts as far as possible. But still there were represented to their view magnificent palaces, like those of kings and princes on our earth—for such things can be represented before spirits, and when represented, they appear just as if actually existing. But the spirits from that earth set no value upon them, calling them marble images; and then they told me that they had buildings more magnificent, which are their sacred edifices, not of stone, but of wood. When it was said to them that these were still earthly, they answered that they were not, but heavenly; because when they look upon them, they have not an earthly, but a heavenly idea, believing that they are to see similar buildings in heaven after death.

151. They then represented their sacred edifices before the spirits of our earth, who said that they had seen nothing more magnificent; and as I also saw them, I can there-

fore describe them. They are constructed of trees, not felled, but growing where first planted. They said that on their earth there were trees of wonderful size and height. These from their beginnings they arrange in order, so that they serve for porticoes and shaded walks, and by cutting and pruning the branches when they are tender, they fit and prepare them so that while they are growing they may intertwine and unite to make the base and floor of the house that is to be built, and rise on the sides for the walls, and bend above into arches for the roof. By these means they construct a building with admirable art, elevated high above the ground, and also prepare an ascent into it by successive branches of the trees extending out and firmly connected. Moreover they adorn the edifice within and without in various ways, by bending the leafy boughs into various forms. Thus they build entire groves. But what these buildings are within, I was not permitted to see. It was only told me that the light of their sun is let into them through apertures between the branches, and is here and there transmitted through crystals, by which the light falling on the walls is variegated into the colors of the rainbow, especially the colors blue and orange, of which they are especially fond. Such is their architecture, which they prefer to the most magnificent palaces of our earth.

152. They said further, that the inhabitants do not live in high places, but on the earth in low cottages, for the reason that high places are for the Lord, Who is in heaven, and low places for men, who are on earth. Their cottages were also shown to me. They were oblong, having within along the walls a continuous couch, on which they lie one after another. On the side opposite the door is a semicircular recess, before which is a table, and behind this a fireplace, by which the whole room is lighted. In the fireplace there is not a burning fire, but luminous wood which gives out as much light as the flame of a wood fire. They said that those pieces of wood appear in the evening like a fire of burning coals.

153. They said that they do not live in societies, but households by themselves ; that they are however societies when they meet for worship, and that then those who teach walk within* the house of worship, and the rest in the porches at the sides ; and that in those meetings they have interior joys, from the sight of the house, and from the worship therein.

154. Respecting Divine worship they said that they acknowledge God under the human form, thus our Lord ; for whoever acknowledge the God of the universe under the human form, are accepted by our Lord and led by Him. The rest cannot be led, because they think without their thoughts resting on a form. They added that the inhabitants of their earth are instructed in the things of heaven by a kind of immediate intercourse with angels and spirits, into which they can be led by the Lord more easily than others, because they reject what is corporeal from their thought and affection. I asked what becomes of those among them who are evil. They said that on their earth it is not permitted to be wicked ; but that if any one thinks and does evil, he is reproved by a certain spirit, who threatens death to him if he persists in so doing ; and that when he persists, he dies in a swoon ; and that in this way the men of that earth are preserved from the contamination of the evil. One such spirit was also sent to me, and spoke with me as he did with his own people. Moreover he brought something of pain to the region of my abdomen, saying that thus he did to those who thought and did evil, and threatened death to them, if they persisted. They said that those who profane holy things are severely punished ; and that before the punishing spirit comes, there appear to them in vision the jaws of a lion, wide-open, of a livid color, who seems as if he would swallow their head and tear it from the body, whereby they are seized with horror. They call the punishing spirit the devil.

* Latin *infra*, probably for *intra*.

155. As they desired to know how it is with regard to revelation on our earth, I said that it is effected by writing and by preaching from the Word, and not by immediate intercourse with spirits and angels; and that what is written can be printed and published, and be read and comprehended by entire communities, and thus the life may be amended. They wondered greatly that such an art, entirely unknown elsewhere, should exist here. But they comprehended that on this earth, where corporeal and earthly things are so much loved, Divine things from heaven cannot flow in and be received in any other way; and that it would be dangerous for such men to speak with angels.

156. The spirits of that earth appear above, in the plane of the head, toward the right. All spirits are distinguished by their situation with respect to the human body; and this for the reason that the universal heaven corresponds to all things of man. These spirits keep themselves in that plane and at that distance because their correspondence is not with the externals in man, but with the interiors. Their action is into the left knee, above and a little below, with a certain very sensible vibration; which is a sign that they correspond to the conjunction of natural and heavenly things.

A FOURTH EARTH IN THE STARRY HEAVENS, AND ITS SPIRITS AND INHABITANTS.

157. I was conducted to still another earth in the universe beyond our solar system, which was effected by changes of the state of my mind, and thus as to the spirit. For, as has been frequently said before, the spirit is conducted from place to place in no other way than by changes of the state of its interiors, which changes appear to it altogether like movements from place to place, or like journeyings. These changes lasted continuously for about

ten hours, before from the state of my life I arrived at the state of their life — that is, before I was brought thither as to my spirit. I was borne toward the east, to the left, and I seemed to be gradually elevated above the plane of the horizon. It was also given me to observe very clearly the progression and advance from the place where I had been before, until at length those from whom I departed were no longer in sight. Meanwhile I conversed on various subjects with the spirits who went with me. A certain spirit was also with us, who when he lived in the world had been a bishop and a preacher, and likewise a very pathetic writer. From my idea of him the accompanying spirits supposed that in heart he must be eminently a Christian. For in the world an idea is received and a judgment formed from one's preaching and writings, and not from his life, unless this is conspicuous; and if there appears any thing inconsistent in his life, still it is excused; for the idea, or the thought and perception concerning any one, draws everything to its own view.

158. After I had observed that as to my spirit I was in the starry heavens far beyond the world of our sun — for this might be observed from the changes of state and from the apparent continual progress thereby, which lasted nearly ten hours — I at length heard spirits speaking near some earth, which was afterward also seen by me. When I came near to them, after some conversation, they said that visitors sometimes come to them from elsewhere, who speak with them about God and confuse the ideas of their thought. They also pointed out the way by which they come, from which it was perceived that they were of the spirits from our earth. Being then asked wherein their thoughts were confused, they answered that it was by those spirits saying that one must believe in the Divine as distinguished into three persons, which they still call one God. And when they examine the idea of their thoughts, it is presented as a trine not continuous, but discrete; and with some, as

three persons conferring one with another ; and with some, as two seated near together, and a third hearkening to them, and then going from them ; and though they call each person God, and have a different idea concerning each, they still call them one God. They complained bitterly that these strangers confuse them by thinking three and saying one, when yet one ought to think as he speaks, and speak as he thinks. The spirit who in the world had been a bishop and a preacher, and was with me, was then examined as to what idea he had concerning one God and three persons. He represented three Gods, and yet these as one by continuity ; but he presented this trinal one as invisible because Divine ; and when he presented this, it was perceived that he then thought only of the Father, and not of the Lord ; and that his idea of the invisible God was no other than as of nature in its first principles ; from which it resulted that to him the inmost of nature was his Divine, and thus that from this he could be easily led to acknowledge nature as God. It is to be known that in the other life the idea of any one upon any subject is presented to the life ; and that by this means every one is explored as to what thought and perception he has concerning matters of faith ; and that the idea of the thought concerning God is the chief of them all ; for by that, if it is genuine, conjunction is effected with the Divine, and thence with heaven. Being then asked what idea they had of God, these spirits answered that they did not conceive of God as invisible, but as visible under the human form ; and that they know this not only from interior perception, but also from His appearing to them as a Man ; adding that if according to the idea of some strangers they should conceive of God as invisible, thus without form and quality, they could not think at all of God, since what is thus invisible does not fall into any idea of thought. On hearing this, it was given me to say to them that they do well to think of God under the human form ; and that many from our earth think in like

manner, especially when they think of the Lord, and that the ancients thought in no other way. I then told them about Abraham, Lot, Gideon, and Manoaah and his wife, and what is related of them in our Word — that they saw God under the human form and acknowledged Him thus seen as the Creator of the universe, and called Him Jehovah, and this also from interior perception — but that at this day that interior perception has perished in the Christian world, and only remains with the simple who are in faith.

159. Until this was said, they believed that our company also was of those who wished to confuse them in their thoughts of God by the idea of three. When therefore they heard what I told them, they were affected with joy, and said that some were also sent to them by God — Whom they then called the Lord — to teach them concerning Him ; and that they were not willing to admit strangers who disturb them, especially by the idea of three persons in the Divinity, since they know that God is one, consequently that the Divine is one, and not a unanimity of three — unless they would think of God as of an angel, in whom the inmost of life is something invisible, from which he thinks and is wise, and the external of life what is visible under the human form from which he sees and acts, and the proceeding of life that which is the sphere of love and faith from him — for from every spirit and angel proceeds a sphere of life by which he is known at a distance^{cc} — and as to the Lord, that the proceeding of life from Him is the Divine Itself which fills and constitutes the heavens, because it proceeds from the *esse* itself of the life of love and faith. They said that in this and in no other way could they perceive a Trine and a One at the same time. On hearing this, it was given me to say that such an idea of a Trine and a One together agrees with the angelic idea of the Lord ; and that it is from the Lord's own teaching concerning Himself ; for He teaches that the Father and He

are one ; that the Father is in Him, and He in the Father ; that whoso sees Him, sees the Father ; and that he who believes in Him, believes in the Father and knows Him ; also that the Comforter, by whom is meant the proceeding Divine, and whom He calls the Spirit of Truth, as also the Holy Spirit, proceeds from Him, and speaks not from himself, but from Him. Moreover, that the idea of a Trine and of One at the same time agrees with the *esse* and *existere* of the Lord's life, when He was in the world. The *esse* of His life was the Divine Itself, for He was conceived of Jehovah, and the *esse* of any one's life is that from which he is conceived ; the *existere* of life from that *esse* is the Human in form. The *esse* of any one's life, which he has from his father, is called the soul ; and the *existere* of life therefrom is called the body. The soul and the body constitute one man. There is a likeness between the two, as between that which is in effort and that which is in the act thence, for the act is the effort acting, and so the two are one. Effort in man is called the will, and effort acting is called action. The body is the instrument, by which the will, which is the principal, acts ; and the instrument and the principal in acting are one ; thus the soul and the body are one. Such an idea concerning the soul and the body have the angels in heaven ; and thus they know that the Lord made His Human Divine from the Divine in Himself, which He had as His soul from the Father. The faith also received everywhere in the Christian world does not dissent from this, for it teaches — "Although Christ is God and Man, yet He is not two, but one Christ ; yea, He is altogether a one and only person ; for as body and soul are one man, so also God and Man is one Christ." Because there was such a union, or such a One, in the Lord, He therefore, otherwise than any man, rose not only as to the soul, but also as to the body, which He glorified in the

” From the Athanasian Creed.

world — concerning which He also instructed His disciples, saying, *Handle Me, and see; for a spirit hath not flesh and bones, as ye see Me have.*^{zz} These things those spirits well understood, for such things fall into the understanding of angelic spirits. They then added that the Lord alone has power in the heavens, and that the heavens are His. To which it was given me to respond that the church on our earth also knows this, from the mouth of the Lord Himself, before He ascended into heaven; for He then said, *All power is given unto Me in heaven and in earth.*

160. I afterward spoke with those spirits concerning their earth; for all spirits know about their earth when their natural or external memory is opened by the Lord; since they carry this with them from the world, though it is not opened except by the good pleasure of the Lord. The spirits then said respecting their earth from which they were, that when leave is given them, they appear to the inhabitants of their earth, and speak with them as men; and that this is done by their being let into their natural or external memory, and thus into such thought as they were in when they lived in the world; and that the inhabitants then have their interior sight, or the sight of their spirit, opened, from which they see them. They added that the inhabitants do not know that they are not men of their earth, and first perceive that they are not, when they are suddenly taken away from their sight. I told them that such was the case on our earth in ancient times — as with Abraham, Sarah, Lot, the inhabitants of Sodom, Manoah and his wife, Joshua, Mary, Elizabeth, and the Prophets in general; and that the Lord appeared in like manner, and those who saw Him did

^{zz} That man rises again as to his spirit immediately after death, and that he is in the human form, and that as to each and every particular he is a man, n. 4527, 5006, 5078, 8939, 8991, 10594, 10597, 10758. That man rises again only as to his spirit, and not as to his body, n. 10593, 10594. That the Lord alone rose again as to the body also, n. 1729, 2083, 5078, 10825.

not know otherwise than that He was a man of the earth, until He revealed Himself. But that this is rarely done at this day, lest by such things men should be compelled to believe; for a faith under compulsion, such as is that which enters through miracles, does not remain fixed, and would also be hurtful to those with whom faith might be implanted through the Word in a state free from compulsion.

161. The spirit who in the world had been a bishop and a preacher, did not at all believe that there were any other earths than ours, because he had thought in the world that the Lord was born on this earth only, and that no one has salvation without the Lord. He was therefore reduced to such a state as the spirits are reduced when they appear on their earth as men — see just above — and thus was sent to that earth, so as not only to see it, but also to speak with its inhabitants. When this was done, communication was also thereby granted me, so that I in like manner saw the inhabitants, and some things also upon that earth (as mentioned above, n. 135). There then appeared four kinds of men, but one kind after another in succession. First were seen men clothed; next men naked of the color of human flesh; afterward men naked, but with bodies inflamed; and lastly black men.

162. While the spirit who had been a bishop and preacher was with those who were clothed, there appeared a woman of a very beautiful face, dressed in a simple garment, with a tunic that hung gracefully behind her and was brought up over the arms. She had a beautiful head-dress, in the form of a chaplet of flowers. That spirit was greatly delighted at the sight of this maiden, and spoke with her, and also took her hand. But as she perceived that he was a spirit, and not of that earth, she hurriedly left him. There afterward appeared to him on the right several other women, who were tending sheep and lambs, which they were then leading to a watering trough that was supplied with water by a small ditch from a lake. They

were similarly clothed, and held shepherds' crooks in their hands, by which they guided the sheep and lambs to drink. They said that the sheep went the way they pointed with their crooks. The sheep seen were large, with woolly tails, both broad and long. The faces of the women when seen nearer were fair and beautiful. The men were also seen, and their faces were of the color of human flesh, as on our earth; but with the difference, that the lower part of the face, in place of a beard, was black, and the nose more the color of snow than of flesh. Afterward the spirit above-mentioned, who had been a preacher in the world, was led on further, but unwillingly, because his thought was still on that woman with whom he was delighted, as was made manifest by somewhat of a shadow from him still appearing in the place where he had been with her. He then came to those who were naked, and who were seen walking together two and two, being husband and wife, with only a covering about the loins and upon the head. The preaching spirit when with them was led into that state in which he was in the world when he wished to preach, and said that he would preach to them the Lord crucified. But they said that they were not willing to hear any such thing, because they did not know what this meant, but they knew that the Lord lives. He then declared that he wished to preach the Lord living. But this also they refused to hear, saying that they perceived in his speech something not heavenly, because it had much regard to himself, his fame and honor — for they can tell from the very tone of one's voice whether it is from the heart, or not — and that for this reason he could not teach them. On this he was silent, for in the world he had had much pathetic power, so that he could strongly move his hearers to holiness; but this power had been acquired by art, and thus it was from himself and the world, and not from heaven.

163. They said further, that they have a perception whether marriage love exists with those of their people who

are naked ; and it was shown that they perceive this from a spiritual idea of marriage, which was communicated to me, to the effect that a similarity of interiors is formed by the conjunction of good and truth, thus of love and faith, and from that conjunction flowing down into the body there arises marriage love. For all things of the mind are presented in a certain natural appearance in the body, thus in the appearance of marriage love, when the interiors of two mutually love each other, and from that love desire also to will and to think the one like as the other, and so to be together and to be conjoined as to the interiors which are of the mind. Thus spiritual affection, which is of the minds, becomes natural affection in the body, and clothes itself with the sense of marriage love. The spiritual affection which is of the minds is affection for good and truth, and for their conjunction ; for all things of the mind, or of the thought and will, have reference to truth and good. They said also that what is given between one man and several wives is not marriage love at all, since the marriage of good and truth, which is of the minds, can be given only between two.

164. The spirit mentioned above then came to those who were naked, but with bodies inflamed, and at last to those that were black, of whom some were naked, and some clothed ; but these different people dwelt in distant places on the same earth, for a spirit can be led in a moment to remote parts of an earth, since he does not proceed and is not borne, as a man is, through spaces, but through changes of state (see above, n. 125, 127).^{ss}

165. I lastly spoke with the spirits of that earth concerning the belief of the inhabitants of our earth about the resurrection — that they cannot conceive of men's coming into the other life immediately after death, and then appearing like men as to face, body, arms, feet, and all the senses, both external and internal ; and still less of their being then clothed with garments and having mansions and

dwelling. And the reason is that most of them think from the bodily senses, and therefore believe in the existence of nothing which they do not see and touch ; and few of them can be drawn away from what is external and sensual to what is interior, and so be elevated into the light of heaven in which such interior things are perceived. Hence it is, that in regard to the soul or spirit they cannot have any idea of it as a man, but as of wind, air, or breath, without form, in which there is yet something vital. This is why they do not believe they are to rise until the end of the world, which they call the final judgment ; when they believe the body, though fallen into dust and dissipated to all the winds, will be brought back and joined to its soul or spirit. I added that they are permitted to believe this, for the reason that those who think from what is external and sensual, as has been said, can form no other idea than that one's soul or spirit can live as a man in the human form, only by regaining the body which it bore about in the world. And therefore, unless it were said that this would rise again, they would reject in heart the doctrine of a resurrection and eternal life, as incomprehensible. But still that thought about the resurrection has this use in it, that they believe in a life after death, from which belief it follows that when they come to lie sick in bed and do not think as before from what is worldly and corporeal, thus not from what is of outward sense, they then believe that they shall live immediately after death. They also speak then about heaven, and about the hope of living there immediately after death, laying aside their doctrine about the final judgment. I told these spirits further, that I sometimes wondered that when those who are in faith speak of the life after death, and of their friends who are dying or have died, and do not at the same time think of the final judgment, they believe that they live as men immediately after death. But this idea, as soon as the thought of the final judgment flows in, is changed into a material idea about

their earthly body, that it is to be again joined to its soul. For they do not know that every man is a spirit as to his interiors, and that it is the spirit which lives in the body and in all its parts, and not the body of itself; and that it is from the spirit of every one that the body has its human form, and thus it is the spirit which is chiefly the man, and in a similar form, but invisible to the eyes of the body, yet visible to the eyes of spirits. Hence also when the sight of a man's spirit is opened, which comes about by the setting aside of the sight of the body, angels appear as men. Thus did the angels appear to the ancients, as related in the Word. I have also spoken sometimes with spirits with whom I was acquainted when they lived as men in the world, and have asked them whether they wished to be clothed again with their earthly body, as they had once thought. On hearing which, at the mere idea of conjunction with the body they fled away, being struck with amazement that in the world they should have thus thought from blind faith without any understanding.

166. Moreover, their dwellings on that earth were seen by me, and were long, low houses, with windows on the sides according to the number of rooms or chambers into which they were divided. The roof was arched, and there was a door on each side at the end. They said that they were built of earth and roofed with turf, and the windows of threads of grass, so woven together that the light shone through. Children were also seen. And they said that their neighbors visited them, especially for the sake of their children, that they might be in company with other children, under the sight and auspices of their parents. There also appeared fields then whitening with the nearly ripened harvest. The seeds or grains of this harvest were shown, and they were like the grains of Chinese wheat. We were shown also loaves made of the grain, which were small in size and square in form. There were also seen grassy plains, with flowers therein, and trees with fruits similar to

pomegranates; also shrubs, which were not vines, yet bearing berries from which they make wine.

167. Their sun which to us is a star, appears flaming there, and about one-fourth as large as our own sun. In their year are about two hundred days, and the days of fifteen hours length, as compared with the days on our earth. The earth itself is among the smallest in the starry heavens, being scarcely five hundred German miles* in circumference. This I learned from angels by comparison with such things as they saw in me, or in my memory, in relation to our earth. They formed these conclusions by angelic ideas, by which the measures of spaces and times are immediately known in their just relation to the spaces and times elsewhere. In such comparisons angelic ideas, which are spiritual, immensely exceed human ideas, which are natural.

A FIFTH EARTH IN THE STARRY HEAVENS, AND ITS SPIRITS AND INHABITANTS.

168. Again I was conducted to another earth, which is in the universe beyond our solar system, and this also by means of changes of state, which lasted nearly twelve hours. In company with me were a number of spirits and angels from our earth, with whom I spoke on the way, or in that progression of state. I was borne now obliquely upward and then obliquely downward, continually toward the right, which in the other life is toward the south. In only two places did I see spirits, and in one I spoke with them. On the way, or in this progress, it was given me to observe how immense is the Lord's heaven for angels and spirits; for, from the parts not inhabited, I was able to conclude that it was so immense, that if there were many myriads of

* Or two thousand English geographical miles.

earths, and as great a multitude of men on every one as on ours, there would still be room for them to dwell to eternity, and it would never be filled. This conclusion I was able to draw from a comparison with the extent of the heaven which is around our earth and designed for it, which extent was so small comparatively that it did not equal a hundred millionth part of the extent not inhabited.

169. When the angelic spirits who were from that earth came into view, they addressed us, asking who we were and what we wanted. We said that we had been brought thither in the course of our travels abroad, and that they had nothing to fear from us. For they feared that we were of those who disturb them about God, about faith, and such like things, and had therefore betaken themselves to that quarter on their earth, fleeing as far as they could from them. Being asked by what things they were disturbed, they answered — by an idea of three, and by an idea of the Divine without the Human, in God, when yet they know and perceive that God is One, and that He is Man. It was then perceived that those who disturb them and from whom they fled, were from our earth ; as was also manifest from this, that they who thus wander about in the other life, from the zest and enjoyment in travelling which they have contracted in the world, are from our earth ; for on other earths there are not such journeyings. It was then discovered that they were monks, who had wandered over our globe from a zeal for converting the Gentiles. We therefore told the angelic spirits that they do well to shun them, as their purpose is not to teach, but to gain wealth and dominion, and then study first to captivate minds by various means, and then to subject them to themselves as slaves. Moreover we told them that they do well not to suffer their idea of God to be disturbed by such spirits. They said further that these spirits also confuse them by saying that they ought to have faith and to believe what they say ; but they answer them that they do not know what faith is, or what it is to believe ;

since they perceive in themselves what is true. They were of the Lord's celestial kingdom, where all know from interior perception the truths which with us are called the truths of faith, for they are in enlightenment from the Lord; differing in this from those who are in the spiritual kingdom. That the angelic spirits of that earth were of the celestial kingdom, was also given me to see from the flaming light whence their ideas flowed; for the light in the celestial kingdom is flaming, and the light in the spiritual kingdom is white. They who are of the celestial kingdom, when truths are talked about, say nothing more than yea, yea, or nay, nay, and never reason about them, as to whether they be so, or not so. They are those of whom the Lord says, *Let your discourse be, yea, yea; nay, nay: for whatsoever is more than this, cometh of evil.* Hence it is that these spirits said they do not know what is meant by having faith, or believing. They look upon this as if one should say to his companion, who sees houses or trees with his eyes, that he ought to have faith or believe that they are houses and trees, when he sees clearly that they are. Such are they who are of the Lord's celestial kingdom, and such were these angelic spirits.^{aaa} We told them that there are few on our earth who have interior perception, for the reason that in their youth they learn truths and do not do them. For man has two faculties, called the understanding and the will. It is those that do not admit truths further than into the memory, and thence in some degree into

^{aaa} That heaven is distinguished into two kingdoms, one of which is called the celestial kingdom, and the other the spiritual kingdom, n. 3887, 4138. That the angels in the celestial kingdom know innumerable things, and are vastly wiser than the angels in the spiritual kingdom, n. 2718. That the celestial angels do not think and speak from faith, like the spiritual angels, but from internal perception that it is so, n. 202, 597, 607, 784, 1121, 1387, 1398, 1442, 1919, 7680, 7877, 8780. That the celestial angels only say concerning the truths of faith, yea, yea; nay, nay; but that the spiritual angels reason whether it is so or is not so, n. 202, 337, 2715, 3246, 4448, 9196.

the understanding, but not into the life, that is, into the will, who because they cannot be in any enlightenment or interior sight from the Lord, say that things are to be believed, or that faith is to be exercised, and likewise reason about them, as to whether they are true or not, not even wishing to perceive by any interior sight, or by any enlightenment through the understanding. They say thus, because with them truths are without light from heaven; and to those who see without light from heaven, falsities may appear as truths, and truths as falsities. Hence so great blindness has seized many there, that even though a man does not practise truths, or live according to them, still they say that he can be saved by faith alone — as if a man were not a man from the life and according to it, but from the knowledge of such things as are of faith, without the life. We afterward talked with them of the Lord, of love to Him, of love toward the neighbor, and of regeneration; saying that to love the Lord is to love the commandments which are from Him, that is, from love to live according to them; ^{bbb} and that love toward the neighbor is to will good and thence to do good to a fellow-citizen, to one's country, to the church, and to the Lord's kingdom; not for the sake of self, to be seen, or to acquire merit; but from affection for good. ^{ccc} Of regeneration, we said that those who are regenerated by the Lord, and bring truths immediately into life, come into interior perception concerning them; but that those who receive truths first in the memory, and then will them and do them, are they who are in faith, for they act from faith, which is then called conscience. They said

^{bbb} That to love the Lord is to live according to His commandments, n. 10143, 10153, 10310, 10578, 10648.

^{ccc} That to love the neighbor is to do what is good, just, and right in every work and in every function, from affection for what is good, just, and right, n. 8120–8122, 10310, 10336. That the life of love toward the neighbor is a life according to the Lord's commandments, n. 3249.

that they perceived that these things are so, and thus also what faith is. I spoke with them by spiritual ideas, by which such things can be presented and comprehended in light.

170. These spirits with whom I thus far spoke, were from the northern part of their earth. I was then conducted to others, who were from the western part. These also, wishing to find out who and what I was, said at once that there was nothing in me but what was evil, thinking that thus I should be deterred from drawing nearer. It was perceived that this was their manner of addressing all who come to them. But it was given me to answer that I well knew it was so, and that in them likewise there was nothing but evil; because every one is born into evil and therefore whatever comes from a man, spirit, or angel, as from what is his own, or from his proprium, is nothing but evil, since all the good there is in any one is from the Lord. From this they perceived that I was in the truth, and I was permitted to talk with them. They then showed me their idea of evil in man, and of good from the Lord, how they are separated from each other. They placed one near the other, so as almost to touch, but still distinct, and yet linked as it were together in an indescribable way; so that the good led the evil, and so restrained it that it was not permitted to act of its own pleasure; and thus the good bent the evil whither it would, without the evil on its part being aware of it. In this manner they represented the dominion of good over evil, and at the same time a state of freedom. They then asked how the Lord appeared to angels from our earth. I said that He appears in the Sun as Man, encompassed therein with solar fire as it were, from which the angels in the heavens have all their light; and that the heat proceeding therefrom is the Divine good, and that the light proceeding therefrom is the Divine truth, both from the Divine love, which is the fire that appears around the Lord in that Sun. That Sun however appears only to

the angels in heaven, and not to the spirits who are beneath ; since the latter are more remote from the reception of the good of love and the truth of faith than the angels who are in the heavens (see above, n. 40). Their being moved to ask about the Lord, and about His appearance before the angels from our earth, was because it then pleased the Lord to present Himself before them, and to reduce to order the things that had been disturbed there by the evil spirits of whom they complained. Moreover it was that I might see these things, that I was conducted thither.

171. There was then seen a dark cloud toward the east, descending from on high, which in descending gradually appeared bright and in the human form ; and this form at length appeared in a flaming radiance, around which were little stars of the same color. In this manner the Lord presented Himself before the spirits with whom I was speaking. To this Presence were then gathered together from every side all the spirits who were there ; and when they came, the good were separated from the evil, the good to the right and the evil to the left, and this at once, as of their own accord. And those on the right were arranged according to the quality of their good, and those on the left according to the quality of their evil. The good were then left to form a heavenly society among themselves ; but the evil were cast into the hells. I saw afterward that this flaming radiance descended quite deep into the lower parts of the earth there ; and then it appeared, now flamy verging to brightness, now bright verging to darkness, and now in darkness. And I was told by angels that the appearance is according to the reception of truth from good, and of falsity from evil, with those who inhabit the lower parts of that earth ; and that the flamy radiance itself by no means underwent such variations. They said also that the lower parts of that earth were inhabited as well by the good as by the evil ; but well separated, in order that the evil

might be ruled through the good by the Lord. They added that the good were by turns taken up thence into heaven by the Lord, and others succeed in their place, and so continually. In that descent the good were in like manner separated from the evil, and all things were reduced to order. For the evil, by various arts and crafty devices, had introduced themselves into the dwellings of the good there, and infested them; and this was the cause of the present visitation. That cloud, which in descending gradually appeared bright and in the human form, and then as a flamy radiance, was an angelic society, in the midst of which was the Lord. From this it was manifest what is meant by the Lord's words in the Evangelists, where He speaks of the final judgment — "That He will come with the angels in the clouds of heaven with glory and power."

172. Afterward some monkish spirits were seen, those in fact who had been travelling monks or missionaries in the world, and who have been spoken of above; and a crowd of spirits was also seen, who were from that earth, most of them evil, whom they had drawn over and seduced to their side. These were seen at the eastern quarter of that earth, from which they drove away the good, who betook themselves to the northern side of that earth, and have been spoken of above. That crowd, together with their seducers, was collected into one body, to the number of some thousands, and then separated, the evil being cast into the hells. With one monkish spirit I was also permitted to speak, and to ask what he was doing there. He said that he was teaching them about the Lord. What further? I asked. About heaven and hell. What further? About having faith in all that he should say. What further? About the power of remitting sins, and of opening and shutting heaven. He was then examined as to what he knew of the Lord, of the truths of faith, of the remission of sins, of man's salvation, and of heaven and hell; and it was found that he knew scarcely anything, but was in ob-

scurity and falsity concerning each and every thing ; and that he was possessed solely by the lust of gain and dominion, which he had contracted in the world and brought with him. He was therefore told that as he had wandered thither led by that lust, and as he was so ignorant as to doctrine, he could not but take away the heavenly light that was with the spirits of that earth and bring in the darkness of hell, and so cause hell to rule among them, and not the Lord. He was moreover cunning in seducing, but stupid as to the things of heaven. Because he was of this nature, he was then cast into hell. Thus were the spirits of that earth liberated from these spirits.

173. Among other things the spirits of that earth said that those strangers, who, as has been said, were monkish spirits, exhorted them with all earnestness to live in society together, and not separate and by themselves. For spirits and angels dwell and live together in like manner as in the world ; those who have lived as a community in the world, also live as a community in the other life ; and those who have lived separated into households and families, live separated there also. These spirits when they lived on their earth as men, dwelt separate, household by household, family by family, and so tribe by tribe, and hence did not know what it was to dwell in society together. When therefore it was told them that those strangers tried to persuade them to this for the purpose of gaining rule or dominion over them, as they could in no other way subject them to themselves and make slaves of them, they answered that they knew nothing about rule and dominion. That they flee at the mere idea of rule and dominion, I observed when one of them, who accompanied us back, fled away at the first sight of the city which I showed him, in which I lived, and was seen no more.

174. I then conversed with the angels with me concerning rule, to this effect — that there are two kinds of rule, one of neighborly love, and the other of self-love ; and that

the rule of neighborly love exists among those who dwell separated into households, families, and tribes; but the rule of self-love among those who dwell in a community. Among those who live separated into households, families, and tribes, he who is the father of the tribe rules, and under him the fathers of families, and under these the fathers of the several households. He is called the father of the tribe, from whom are the families, and the households of the families. But all these rule from love, as that of a father toward his children. He teaches them how to live, does good to them, and as far as he can, gives them of his own. It never comes into his mind to subject them to himself as subjects or servants, but he loves to have them obey, as sons obey their father. And as this love increases in descending, as is known, the father of a tribe acts from a more interior love than the father himself from whom they are immediately descended. Such also is the rule in the heavens, since such is the Lord's rule; for His rule is from the Divine love toward the whole human race. But the rule of self-love, which is opposite to the rule of neighborly love, began when man alienated himself from the Lord. For, as far as man does not love and worship the Lord, so far he loves and worships himself, and so far also he loves the world. Of necessity, then, for their safety, the tribes with their families and households formed themselves into one body, and established governments under various forms. For as self-love grew, evils of every kind increased, such as enmity, envy, hatred, revenge, cruelty, and deceit, against all who opposed it. For from the proprium in which are those who are in self-love, nothing but evil springs, inasmuch as man's proprium is nothing but evil, and being evil, does not receive good from heaven. Hence self-love, while it rules, is the father of all such evils.^{ddd} And that love is

^{ddd} That man's proprium, which he derives from his parents, is nothing but dense evil, n. 210, 215, 731, 874, 876, 987, 1047, 2307, 2318, 3518, 3701, 3812, 8480, 8550, 10283, 10284, 10286, 10731. That man's proprium is to love self above God, and the world above

also of such a nature that as far as it has full rein, it rushes on, until at length every one possessed by it wishes to rule over all others in the whole world, and to possess all the goods of others. Nay, even this is not enough, but he wishes to rule over the whole heaven — as may be evident from the Babylon of this day. Such then is the rule of self-love, from which the rule of neighborly love differs as much as heaven does from hell. But however great such rule of self-love is in communities or in kingdoms and empires, still even in these is found also the rule of neighborly love among those who are wise from faith in and love to God; for these love the neighbor. That these also dwell in the heavens distinguished into tribes, families, and households, although in societies together, but according to spiritual affinities, which are those of the good of love and the truth of faith, will by the Divine mercy of the Lord be told elsewhere.

175. I afterward questioned those spirits about various things on the earth from which they were, and first about their Divine worship and revelation. In regard to worship they said that the tribes with their families assemble at one place every thirtieth day, and hear preaching; and that the preacher then, from a pulpit raised a little above the ground, teaches them Divine truths, which lead to good of life. As to revelation they said that it came in the early morning, in a state midway between sleep and wakefulness, when they are in interior light not yet disturbed by the bodily senses and by worldly things; that they then hear angels

heaven, and to make the neighbor of no account in comparison with one's self, except only for the sake of self, when he thus regards him as himself; thus that it is the love of self and the world, n. 694, 731, 4317, 5660. That from the love of self and the world, when they rule, all evils arise, n. 1307, 1308, 1321, 1594, 1691, 3413, 7255, 7376, 7480, 7488, 8318, 9335, 9348, 10038, 10742. What contempt of others, enmity, hatred, revenge, cruelty, and deceit are, n. 6667, 7372-7374, 9348, 10038, 10742; and that from these evils is every falsity, n. 1047, 10283, 10284, 10286.

of heaven speaking of Divine truths, and of a life according to them ; that when they awaken, an angel in a white garment appears to them by the bedside, who then suddenly vanishes from their sight ; and that from this they know that what they have heard is from heaven. In this way Divine vision is distinguished from vision not Divine ; for in vision not Divine no angel appears. They added that revelations are made in this manner to their preachers, and sometimes to others.

176. To an inquiry concerning their houses, they said that they are low, of wood, with a flat roof, around which project eaves sloping downward ; and that in the front part dwell the husband and wife, in the next adjoining part the children, and after them the maid-servants and men-servants. Of their food they said that they drink milk with water, and that they have the milk from cows, which are woolly like sheep. Of their manner of life they said that they walk naked, and that to them nakedness is no matter of shame ; also that their social intercourse is with those who are within the same families.

177. In regard to the sun of their earth they said that it appears flamy to the inhabitants, that their year is two hundred days, and that a day is equal to nine hours of our time, as they concluded from the length of the days of our earth, perceived in me ; and further, that they have perpetual spring and summer ; and that thus the fields are blooming and the trees bearing fruit all the year round. This is because their year is so short, being equal only to seventy-five of our days ; and where the years are so short, the cold does not stay long in winter, nor the heat in summer, and so the ground is continually in verdure.

178. In regard to betrothals and marriages on their earth, they said that a daughter, on arriving at a marriageable age, is kept at home and is not permitted to go out until the day on which she may be married ; and that she is then conducted to a certain nuptial house, to which also other

marriageable maidens are led ; and there they are placed behind a table reaching up to their waists, so that they appear naked as to the breast and face ; and that then young men come there to choose for themselves each a wife. And when a young man sees one that seems suited to him, and to whom his heart draws him, he takes her by the hand. If she then follows, he leads her to a house prepared for her, and she becomes his wife. For they see from the faces whether they agree in mind ; since there the face of every one is the index of the mind, and in no way does it dissemble and deceive. That all things may be done decently, and with no wantonness, an old man sits behind the maidens, and an old woman at their side, to have a care. There are many such places to which the maidens are led, and at stated times, that the young men may have opportunity for choosing. For if they do not find a maiden suited to them in one place, they go to another ; and if not at one time, they return at another. They said further that a husband has only one wife, and never more than one, because this is contrary to Divine order.

INDEX

The Numbers refer to the Paragraphs.

- ACT. Act is effort acting, 159. *See Effort.*
- ADORE. They who adore the Divine under a human form are all accepted by the Lord. Man may adore what he has some idea of, but not what he has no idea of, 7 (g).
- AFFECTION. Spiritual affection which is of the mind, is affection for good and truth, and for their conjunction, 163.
- AGE. Description of the golden or Saturnian age, 49.
- ANCIENTS. The most ancient people on our earth, their ways, 49.
- ANGELS. All angels whatsoever were once men, 1, 30. Difference between celestial angels and spiritual angels, 169.
- ANIMALS. All animals have the knowledge of all things that are of their loves, 96.
- APPEARING. Concerning the appearing of spirits and angels upon our earth, 160. Why they are not seen at this day, 160.
- ARCHITECTURE. 151.
- ARISTOTLE. 38.
- ART OF WRITING. That it has been on our earth from the most ancient time, and for the sake of the Word, 115.
- ATMOSPHERE OF THE MOON. III.
- BABYLON. The modern Babylon, 174.
- BIRDS. Birds signify rational things, intellectual things, thoughts, ideas, and knowledges; and this with variety according to the genera and species of the birds, 33 (h), 94, 95.
- BLUE. Blue from red or flame corresponds to the good of celestial love; and blue from white or light corresponds to the good of spiritual love, 83 (f).
- BODY. The *existere* of the life of every man from the *esse* or soul, is called the body, 159. The body is the instrument whereby the will, which is the principal, acts, 159.
- BUILDINGS. Of trees, 150, 151.
- CEREBELLUM. 88. *See Face.*
- CEREBRUM. 88. *See Face.*
- CHANGES. Changes of colors signify varieties of life as to wisdom and intelligence, 94. Changes of place in the other life are changes of state of the interiors, 125 (ss), 164.
- CHARIOTS. Chariots signify the doctrines of the church, 82.
- CHASM. Separating our solar system from other systems, 128.
- CHASTISING SPIRITS. 72-76, 78, 154.
- CHOIR. That is called a choir where many spirits speak together, or unanimsly, 61 (bb). Angelic choirs, 61.
- CHURCH. A church is called celestial in which love to the Lord is the ruling principle, but spiritual in which the ruling principle is charity and faith, 85 (gg).
- CLOUD. Of a cloud in the human form, 171.
- COMFORTER. By the Comforter is meant the preceding Divine, 159.
- COMMUNICATIONS. Communications in the other life are effected by means of spirits sent forth from societies of spirits and angels to other societies, 9c (ll). In the heavens there is communication of all good things, 15.
- CONJUGIAL LOVE. *See Marriage Love.*
- CONSOCIATIONS. All consociations in the other life take place according to the spiritual spheres, 64.
- CORRESPONDENCE. Of man, and all the things which are of him, with the Greatest Man, which is heaven, 5 (f), 156.
- CREATION. Man is the end for which every earth was created, in order that there may be a heaven from the human race, 112, 126.
- CRYSTALS. In the other life, the knowledges of things immaterial are represented by crystals, 19.
- DANCER. 38.
- DISTANCES. Distances in the other life are real appearances, which are visibly presented according to the state of the interiors of angels and spirits, 86 (hh), 125, 135. Distances there are from dissimilarity of state, 135.
- DIVINE TRUTH. The Word is the Lord as to Divine truth. By Divine truth all things were created and made, 122.
- DIVINE WORSHIP. Of the inhabitants of the other earths, 7, 65, 68, 69, 91, 98, 107, 130, 141, 142, 154, 158, 175.
- DOCTRINE. All doctrine of the church and the understanding thereof are from the Word, 82 (ee).

DOMINION. The dominion of good over evil; how represented by angels, 170.

EARTH. Where there is an earth there are men inhabitants, 112. The reasons why it pleased the Lord to be born on our earth, and not on another, 113-122. The spirits of this earth in the Greatest Man, have relation to the various functions of the exterior parts of the body, 64; and to the natural and corporeal sense, 102; the natural and external sense, 122; the sensual corporeal principle, 148. The immense number of the earths in the universe, 2, 3, 6, 26. The inhabitants of all the earths adore the Divine under a human form — consequently the Lord, 7. In the universe there are many earths, 4, 126.

EFFORT. Effort in man is called will, and effort acting is called action, 159.

ELIAS. By Elijah in a representative sense, is meant the Word, 82.

ESSE. The *esse* of the life of the Lord when He was in the world was the essential Divine, 159. The *esse* of every one's life is that from which he is conceived, 159.

EVIL. By evil it is learned what good is; the quality of good being discerned by its opposite, 77.

EVILS. All evils flow from self-love and the love of the world, 174.

EXTERNALS. The externals of life are kept closed after death, and the internals opened, 30 (*n*).

EYE. The eye corresponds to the understanding; the sight of the left eye corresponds to truths, consequently to intelligence; and the sight of the right eye to the goods of truth, consequently to wisdom, 22.

FACE. Where the cerebrum and the cerebellum are joined together as to spiritual operations, with such persons the face acts in unity with the thoughts, so that the very affection of thought beams forth from the face, 88. The difference between the human faces on our earth in ancient times and afterward, 87.

FAITH. They who make profession of faith from doctrine, and do not live the life of faith, have no faith, 39 (*r*). Faith under compulsion, such as is the faith which enters by miracles, does not remain fixed, 160.

FIRE. The fire appearing around the Lord in the spiritual sun is Divine love, 170. Fire, in the Word, signifies love in both senses; sacred and celestial fire is Divine love, and infernal fire is self-love and the love of the world, 52.

FLAME. A flame signifies celestial love, and the things of that love, 94.

FOOD. The food which is wholesome is also savory, 58. Food should be prepared, not with a view to gratify the palate, but with a view to use, 58.

FORESTS. Represented in the other life, 32.

FORM. The human form is the form of the Divine of heaven, of every angel, and of every spirit, 1, 5, 121, 123, 159.

GARDENS. Represented in the other life, 32, 33.

GENIUS. The genius of the men of every earth may be known from the genius of the spirits who come from thence, 30.

GENTILES. The Gentiles in the other life are instructed by angels; and they who have lived good lives, according to their religion, receive the truths of faith and acknowledge the Lord, 118 (*oo*).

GOD. God, under a human form, is the Lord, 121. No one can believe in a God and love a God whom he cannot comprehend under some appearance, 118. It is impossible to think of God except in human form, 7. See *Adore*.

GOVERNMENTS. Origin of governments, 49, 174.

HAND. The hand signifies power, 94.
HEAT. Heat signifies love, 41. The heat which proceeds from the spiritual sun is Divine good, 170.

HEAVEN. Heaven corresponds to the Lord; it is, before the Lord, a man in large form, and is called the Greatest Man, 5 (*f*). The universal heaven has the form of one man, 9. How immense the Lord's heaven is, 168. Heaven is distinguished into two kingdoms, one of which is called the celestial kingdom, and the other the spiritual kingdom, 169 (*aa*).

HOLY SPIRIT. Is the preceding Divine, 159.

HORSE. Horses signify the intellect; in the Apocalypse the white horse signifies the understanding of the Word, 60 (*aa*), 82. Why Elijah was taken up by a fiery chariot and fiery horses, 82 (*re*).

HUMAN. The Lord made His Human Divine from the Divine in Himself, which He had as a soul from the Father, 159.

HUMAN RACE. The human race is the seminary of heaven, 3, 30.

HUMILIATION. Extraordinary humiliation of the spirits of the planet Mars, 91.

IDEA. The idea which any person entertains concerning anything in the other world is presented to the life, 158. Angelic ideas, which are spiritual, infinitely excel human ideas, 167. Material ideas, 38.

IMMENSITY OF HEAVEN. 168.

INFLUX. In the other life the quality of every spirit manifests itself by an influx, which is a communication of his affection, 50. Influx is spiritual, and not physical or natural, 102 (*mm*). Influx appears as if it were from externals into man's internals, but this is a fallacy, 102 (*mm*).

INHABITANTS. The inhabitants of all the other earths adore the Divine under a human form, consequently the Lord, 7.

Dwellers in households, families, tribes, and societies, 174.

INSTINCT. What instinct is, 96.

INSTRUCTORS. Concerning spirits who instruct, 73-76, 78.

INSTRUMENT. The body is the instrument by which the will, which is the principal, acts; and the instrument and the principal in acting are one, 159.

INTERNALS. The internals of the life are opened after death, 30 (*n*).

JESUITS. 61.

JUDGMENT. The final judgment not the end of the world, as is falsely believed, 165. The final judgment in one of the earths in the starry heaven, 171.

JUPITER. Concerning the planet Jupiter, 46-84. Population and fertility, 48. Probity and wisdom of its inhabitants, 49, 62. Their faces, 53, 54. Their manner of walking, 55. Their nudity, 56. Their position in bed, 57. Their repasts, 58. Their dwellings, 59. Their Divine worship, 65, 68, 69. The spirits and angels from the earth Jupiter in the Greatest Man have relation to the imaginative element of thought, and consequently to an active state of the interiors, 64. Their clear perception concerning spiritual things, 67. Of inhabitants of Jupiter who regard themselves as saints and mediating lords, and how they are treated by spirits, 70, 78. Their instructing and chastising spirits, 72-76, 78. The angels of their interior heaven, and their discourse, how it differs from that of the angels of our earth, 80. How the spirits of Jupiter, when they are prepared, are taken up into heaven and become angels, 82, 83. The age to which the inhabitants of Jupiter live, and how they die, 84.

KNEE. The knee signifies the conjunction of things natural and things celestial, 156.

KNOWLEDGES. In heaven, the knowledges of each are communicated with all, and the knowledges of all with each, 25.

LAMBS. Lambs signify innocence, 34.

LAMPS. Lamps, with lights, signify truths which shine from good, 33.

LEARNED. Experiences concerning the learned in the other life, 38, 67.

LIFE. Every one's life remains with him and follows him after death, 30 (*n*). The state of life is the state of affections as to love and faith, 135.

LIGHT. Light signifies wisdom, 41 (*t*). The light which proceeds from the spiritual Sun is Divine heat, 170. The light of heaven illumines both the sight and the understanding of angels, 41 (*t*).

LIGHTS. Lamps with lights signify truths which shine from good, 33.

LIPS. The lips were especially used in the discourse by the face; results of an examination of the fibres of the lips, 53, 54.

LOGICIANS. 38.

LORD. The Lord is the Only God, 98, 99. The Lord is the Sun of heaven; He appears at a middle distance above the plane of the right eye, 40. The Lord seen in the midst of the Sun of heaven by the spirits of our earth, of Mercury, and of Jupiter, 40, 170. He is seen by the spirits of Mars often, 91. He is seen at times under an angelic form, and thereby as Man by the spirits of Saturn, 98.

LOVE. Love is the fire of life, 52 (*r*). Celestial love is love to the Lord, and spiritual love is charity toward the neighbor, 94. Self-love is the father of evils, 174. The love of a father for children increases in descending, 174. Marriage love, 163. To love the Lord is to live according to the commandments which are from Him. To love the neighbor is to do what is good, just, and right, in every work and in every function, from affection for what is good, just, and right, 169.

MAN. Man is a spirit as to his interiors, 123. When man dies as to the body he lives a spirit, even in human form, as before, 123, 159. Man, after death, retains the memory of all his concerns in the world, 127. Man, becoming a spirit after death, remains near his own earth, 47, 139. Man is as to his interiors in the midst of spirits and angels, of a nature and quality agreeing with them, but he is capable of speaking with them, but at this day it is dangerous, 1 (*e*). How the natural man fights and strives with the spiritual man, 102.

MARRIAGE. Of marriage in one of the earths in the starry heaven, 178.

MARRIAGE LOVE. Its origin, 163.

MARS. The spirits of Mars are among the best of all who come from the earths of this solar system, 85. Speech and genius of the inhabitants of Mars, 87. The spirits of Mars in the Greatest Man have relation to thought from affection, and the best of them to the affection of thought, 88. The middle province, and the cerebellum, corresponds to them, 88. Life of the inhabitants, 90. Their Divine worship, 91. Their profound humiliation, 91. Their face, food, and garments, 93.

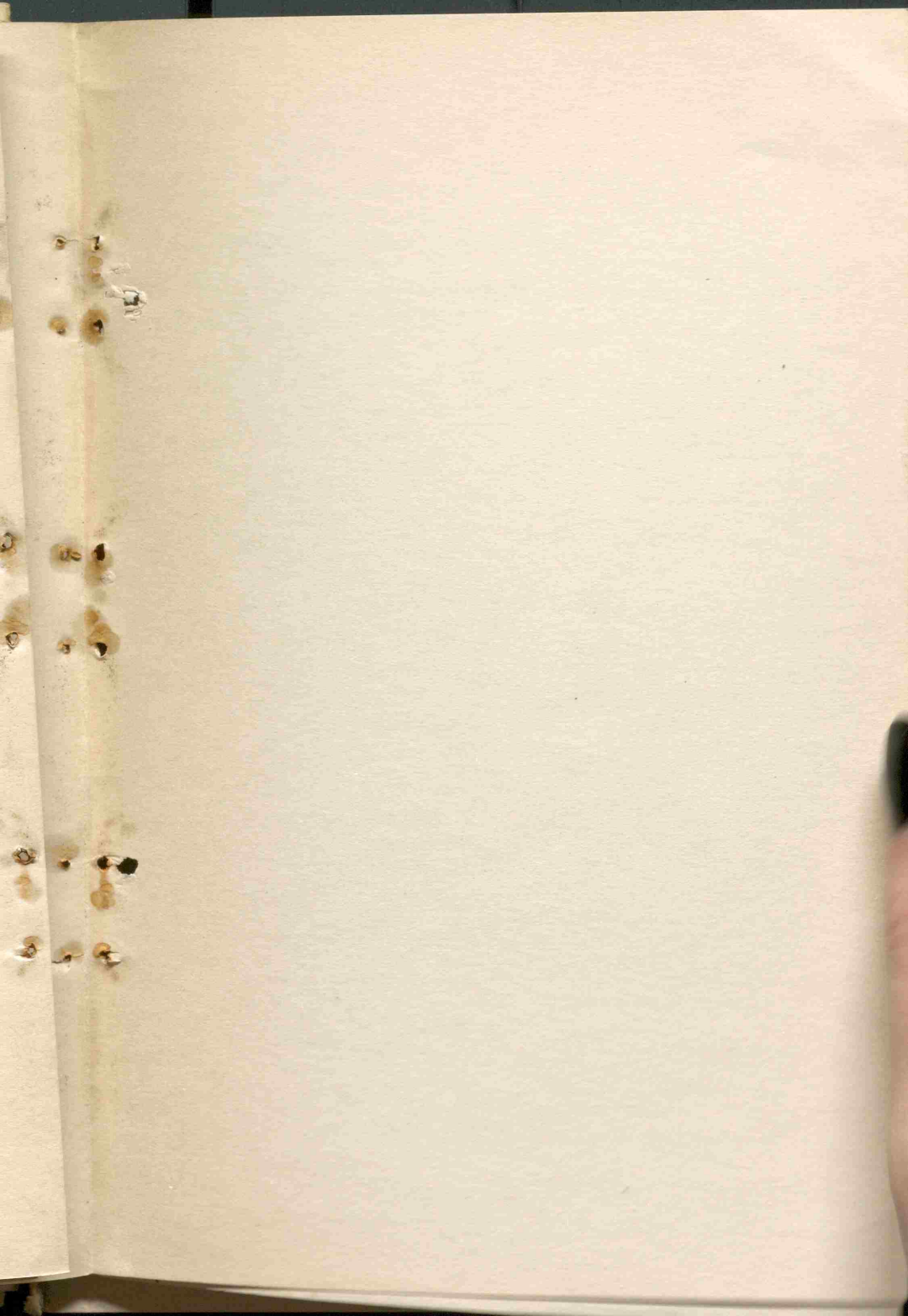
MEADOWS — represented in the other life, 32.

MEMBRANE. They who love knowledges and not so much a life according to knowledges, in the Greatest Man have relation to the interior membrane of the skull, 95.

MEMORY. Man after death retains the memory of all his concerns in the world, 127. Spirits when they come to man, see in his memory all things contained therein, 11; they enter into all his memory, and read the things contained therein, as

- out of a book, 13. The natural or external memory remains with spirits, but it is not opened, except by the good pleasure of the Lord, 160.
- MERCURY.** Of the earth or planet Mercury, its spirits and inhabitants, 9-45. The spirits of Mercury in the Greatest Man have relation to the memory of things abstracted from what is material and earthly, 11. Their eagerness to acquire knowledges, 13. Their self-conceit in consequence of their knowledges, 16, 37. They are little distinguished for their judgment; bare knowledges alone are what give them pleasure, 17. They think that knowledges to them are uses, 18. Their judgment is, as it were, instantaneous, 22 (2). They wander through the universe, 24. They go in companies and troops, 25. How they perfect their memory, 35. How they instruct the inhabitants of their earth, 35. They have exquisite perception, 39. Form and dress of the inhabitants of Mercury, 44. How the sun of our solar system appears from the planet Mercury, 45. Temperature of that earth, 45.
- MERIT.** The Lord alone has merit and righteousness. The lot of those who place merit in their works, in the other life, 70.
- METAPHYSICIANS.** 38.
- MIND.** The exertions of the mind depend on the interior state of the recipient parts of the body, 35. All the things of the mind, or of the thought and will, have relation to truth and good, 163. All the things of the mind are represented in some natural appearance in the body, 163.
- MIRACLES.** The faith which enters by miracles is wrought by compulsion, and does not remain fixed; it would be hurtful to those in whom faith may be implanted by the Word in a state without compulsion, 160. Miracle of miracles, 135.
- MONKS—** and monkish spirits, 169, 172, 173.
- MOON.** Of the spirits and inhabitants of the moon, 111, 112. Stature of the inhabitants of the moon; their speech; their relation in the Greatest Man to the ensiform or xiphoid cartilage, 111. All the moons or satellites are inhabited by men, 112.
- MOTIONS.** In the other life, motions, progressions, and changes of place are changes of the states of the interiors of life, 125. The spirit is led by variations of the state of the interior life, which appear to it as progressions through spaces, 127.
- NAKEDNESS.** Nakedness gives no occasion either of shame or of scandal to such as live in chastity and a state of innocence, 56.
- NATURAL.** The natural and external sense is the ultimate, wherein the interiors of life close, and rest as in their common basis, 122 (97).
- OPPOSITES.** All truth is made manifest by relation to its opposites, 35.
- PALACES.** Represented to the view of spirits, 150.
- PALATE.** When at meals the gratification of the palate is the chief thing attended to, the body is disordered. That food should be dressed not merely to gratify the palate, but chiefly for use, 58.
- PALLAS.** 38.
- PERCEPTION.** Interior perception is lost in the Christian world, and remains only with the simple who are in faith, 158.
- PLANETS.** The planets are earths inhabited by men, 3. Situation of the planets in the ideas of spirits and angels, 42, 86, 105. Spirits appear near their respective planets, but out of them, 42, 47.
- PLURALITY OF WORLDS.** 2.
- PREACHER.** Concerning one who had been a prelate and a preacher, and likewise a very pathetic writer, 157, 158, 161, 162.
- PRINCIPAL.** The instrument and principal in act are one, 159.
- PRINTING.** The art of printing, 81, 115, 155; unknown in the other earths, 155. Printed papers among spirits of Mercury, 28.
- PROGRESSIONS.** In the other life progressions and changes of place are changes of state of the interiors of life, 125. The spirit is led by variations of the state of interior life, which appear to it as progressions through spaces, 127.
- QUALITY.** In the other life the quality of every spirit manifests itself by an influx, which is the communication of its affection, 50.
- REASONS—** why the Lord chose to be born on our earth, and not on another, 113-122.
- REPRESENT.** To represent objects is to present them to another's imagination, which is done in the other world to the life, 32.
- RESPIRATION.** Spirits and angels have respiration, 87.
- RESURRECTION.** Man rises again only as to spirit, and not as to body. The Lord alone rose again as to body also, 159. Why the false belief of the present day as to the resurrection is permitted, 105.
- REVELATION.** It was necessary that there should be a revelation from heaven, 114. How revelation is effected on our earth, 155. How it comes in one of the earths in the starry heaven, 175.
- RIGHT.** The right in the other life is toward the south, 168.
- RIGHTOUSNESS.** The Lord alone has merit and righteousness, 70.
- RINGS OF SATURN.** 3, 104.

- on this earth are from the things of sense, which are of the body, and therefore they believe in the existence of nothing but what they see and touch, 165.
- THREEFOLD UNITY. In the Lord, 159.
- TRANSFERENCE. How transference is effected as to the spirit, and approach or near advancement to things remote, 127, 164. Transference to other earths in the universe, 125, 127, 138, 157, 168.
- TRINE. The true doctrine concerning the Lord, 159.
- UNDERSTANDING. The understanding is internal sight, and the sight of things immaterial, 22 (*m*).
- UNIVERSE. In the universe there is an immense number of earths, and these earths are inhabited by men, 3, 26.
- VENUS. The earth Venus, its spirits and inhabitants, 105-110. In Venus there are two kinds of men, of tempers and dispositions opposite to each other, 106. One class acknowledge our Lord as their only God; these in the Greatest Man have relation to the memory of things material agreeing with the memory of things immaterial, 43, 107. The other class are savage and almost brutal, 108, 109.
- WHITE HORSE. The white horse in the Apocalypse signifies the understanding of the Word, 60 (*aa*), 82 (*ee*).
- WISDOM. The first step in the ladder of wisdom is to know, acknowledge, and perceive that what is known is little and scarce anything in comparison with what is unknown, 37.
- WOLFF. Interview between the spirits of Mercury and Christian Wolff, 38.
- WORD. The Word is the Lord as to Divine truth, consequently Divine truth from the Lord, 122 (*rr*). The Word is what conjoins heaven and earth, 119 (*pp*). The Word is written by pure correspondences, 119 (*pp*).
- WORSHIP. Divine worship of the inhabitants of other earths, 7, 65, 68, 69, 91, 98, 107, 130, 141, 142, 154, 158, 175.
- WRITING. The art of writing existed on our earth from the most ancient time, 115.



No.

NAME

12

12

ms

eds

ec.)

TES

12

Astronomy



RIGEL
 Taurus Apr. 20th to May 21st
 ALDEBARAN
 Gemini May 21st to June 21st
 PROCYON
 Cancer June 21st to July 23rd

POLUX
 Leo Aug 23rd to Sept 23rd
 REGULUS
 Virgo Sept 23rd to Oct 23rd
 ARCTURUS
 Libra Oct 23rd to Nov 22nd

DENEK
 Scorpio Nov 22nd to Dec 22nd
 VEKA
 Sagittarius Nov 22nd to Dec 22nd
 ALTAKR
 Capricornus Dec 22nd to Jan 20th

CAPELLA
 Aquarius Feb 19th to Mar 21st
 PISCES
 Aries Mar 21st to Apr 20th



1st Magnitude Stars ☆
 2nd Magnitude Stars ☆
 3rd Magnitude Stars △
 4th Magnitude Stars ○
 5th Magnitude Stars ○
 Meteoric Showers ☄
 Star Clusters ☁
 A WHITE & WYCKOFF CREATION

and



Probe Shows Amy Alone In Her Plane

Somewhere in England, July 11 —(CP)— An inflated greatcoat held the secret of the mysterious "passenger" Amy Johnson was reported to be flying when she parachuted to her death in the Thames Estuary last January.

Eyewitnesses who saw Miss Johnson sink below the choppy waters of the estuary reported they had seen what they thought was the body of a man in the water near the crashed plane.

Captain Norman Edgar, chief liaison officer of the Air Transport Auxiliary, for which the noted long-distance aviatrix flew, cleared up the mystery in an interview with The Canadian Press, declaring it had been proved beyond doubt that Miss Johnson was alone in her plane when she baled out.

"I checked every air field in the country where she might have landed and know that she had no passenger," said Capt. Edgar who conducted the investigation into Miss Johnson's death.

"What people thought was the body of a man apparently was her greatcoat which floated away from the plane. When the air got under it, the coat probably looked like a body, leading people to believe there was a passenger."

Miss Johnson died because she disregarded a rigid rule of the A.T.A., not to fly above the clouds. Once above the clouds, she apparently hoped to find a hole through which she could come down to an air field, Capt. Edgar

Dr. Norman Lockyer BC 1680 (Sun)
BC 1950 (Pleiades)

RD — Friday, July 11, 1941. (Pyramid BC 2170)

Rays of Hope for England ^{C14} from charcoal pit
1850 ± 275 B



The sun that never sets on the British Empire makes an inspiring sight as it dispells shadows over watching crowd at Stonehenge, England. These Britishers, many in uniform, came out to see sun rise on longest day of year, annual tradition dating back to time of Druids.

LONDON CALLING. JULY 15, 1948

REGISTERED AT THE G.P.O. AS A NEWSPAPER

LONDON CALLING

THE OVERSEAS JOURNAL OF THE BRITISH BROADCASTING CORPORATION

No. 460. PUBLISHED WEEKLY

SUBSCRIPTION 10s. A YEAR



In the series of BBC broadcasts on 'Landmarks of Britain,' Brian Vesey-FitzGerald (whose talk is reproduced on page 16), took as his subject the great monuments of Stonehenge and Avebury. Our cover picture shows a part of Stonehenge, silhouetted against the 'illimitable sky.' 'There you are in a temple, and you are very small and isolated'

PRINCIPAL FEATURES

Ancient Secrets Locked in Stones



Cosmetics Industry

Agriculture Now



Towards A Real European Recovery

(Full contents on page 2)

*See Roman history -
Sun - 1680 BC Ptolemy 1950 BC.
1951 C¹⁴ charcoal in a hole - ceremonial?
1850 BC ± 275 yrs.*

Programme Schedules of the BBC's Short-Wave Services with details for the week August 15-21, 1948—pages 23-32



LONDON CALLING

THE OVERSEAS JOURNAL
of the
BRITISH BROADCASTING CORPORATION

All communications should be addressed to the Editor, LONDON CALLING, Broadcasting House, London, W.1. Yearly subscription, including postage, ten shillings sterling, should be sent to the BBC Publications, Scarle Road, Wembley, Middlesex, or to any of the other BBC addresses in various parts of the world, of which a full list is given on page 22

BBC Teaches 'English by Radio'

THIS July brings the fifth anniversary of the introduction in the BBC's external services of 'English by Radio,' probably the most widely heard BBC programme outside the field of news. These broadcast lessons began as one of the wartime services to European countries; they have developed into a major task of peacetime broadcasting.

For some time past, 'English by Radio,' while its place in the European Services has been fully maintained, has been a regular and important feature of the foreign-language services for the Far East, for India, Pakistan, and Ceylon, and for Latin-America.

Within the past few weeks, it has been introduced in the transmissions in Arabic, Persian, and Turkish for the Near East. Today, therefore, the lessons are available to students of English—in their own homes—in most parts of the world.

The present course has been planned in two parts, each of fifty-two lessons. Rapid speech, twenty-four special verbs, verb tenses and time concepts, and sentence patterns are dealt with in Part I. Part II is devoted to the English vowels, the meanings and usages of common words, and useful verbs and verb phrases. The author of the series is A. S. Hornby, formerly linguistic adviser to the Institute for Research in English Teaching, Department of Education, Tokyo, and the British Council, London.

To reinforce the original broadcasts, all the 104 lessons have been recorded by the BBC Transcription Service, and sets of the recordings are being shipped to broadcasting organisations in all the audience-areas affected, so that, at the discretion of the local body, the lessons may also be made available in the domestic programmes of the country concerned.

A booklet giving the texts of the lessons in Part I of the series has already been produced, and the texts of the second half of the course will be published shortly.

Two, three, or four voices, speaking in conversational form, are used in presenting the lessons, and they are accompanied, where neces-

sary, by an explanatory commentary in the appropriate local language. Present or past BBC announcers are the 'artists'—with the interesting exception that, when a young female voice was wanted, the audition showed a news-typist to have the desired qualifications.

An inevitable by-product of the enterprise has been the evolution of a specialised technique at the microphone. As A. S. Hornby has said, while the series is designed for the listener who already possesses the rudiments of the language, he has no teacher to explain unknown words or constructions; it cannot be assumed that he has access to a printed text; the size or nature of his vocabulary is unknown. The quality of speech in the broadcasts must be pure, but natural; there must be no regional or local accent—the ideal sought is the normal speech of an average Englishman of good education. The guidance given by the lessons must also be capable of quick and clear comprehension.

The measure of the success of the effort is the fact that, in five years, 'English by Radio' has become one of the most keenly appreciated programmes in the British output. World interest in the study of English is steadily increasing; this relatively new use of radio will expand with it.

'The University Programme'

The series of talks on higher education in England recently broadcast in the General Overseas Service under the generic title of 'The University Programme' has been recorded for the use of broadcasting systems overseas by the BBC Transcription Service. The talks, each given by an eminent authority, cover six groups of subjects taught in British universities: arts, medicine, social science, law, pure and applied science, and agriculture.

An explanatory booklet is available, giving details of the studies-counsellors under whose guidance the talks were produced, and of the individual subjects and speakers.

Shared Programmes

REPRESENTATIVES of the Broadcasting organisations of Belgium, France, Great Britain, Luxembourg, and The Netherlands have concluded a two-day meeting at Broadcasting House, in London. The object was to discuss the possibility of arranging with one another programmes whose object would be to underline the community of interests and the importance of co-operation between their countries, and to bring about increased understanding between their peoples.

Agreement was reached on the desirability of shared programmes in the field of symphony concerts, talks, and discussions, and detailed proposals are being referred by the representatives to their organisations.

It is hoped that these shared programmes will start in the autumn, and a further meeting will be held on the continent in November.

BBC News Division

AN event of first-class interest to the Corporation, and one that has affected everyone in News Division, was the recent creation of a General Newsroom. Reorganisation of the News Division, which had been anticipated for two years, was thus achieved.

The new organisation has been warmly praised by those outside professional experts who have seen it in operation: *The Newspaper World* and the *World's Press News* describe it as being designed to get the best possible results from journalists, writers, and technicians.

It is the greatest single news-unit of its kind in the world. Until the newsrooms were merged, national news bulletins heard in Britain were prepared in a newsroom at Broadcasting House, while bulletins for overseas audiences were produced in another newsroom—at 200, Oxford Street, the headquarters of the Overseas Services. At Oxford Street, also, editions of 'Radio Newsreel' for the Light Programme and for Overseas audiences were produced. Naturally enough, a far greater degree of close co-operation within the Division resulted from the reorganisation, besides a more profitable expenditure of time and energy.

News Division is responsible for sixty news broadcasts in twenty-four hours, excluding editions of 'Radio Newsreel' and news talks.

Of these, twenty-two are for the Overseas Services alone; twenty-three more are prepared in the course of the week. Foreign-language bulletins are prepared by their parent services, and so are not the responsibility of the News Division.

There are only six times during the twenty-four hours at which general news bulletins coincide in the domestic and overseas services.

T. R. P. Hole was appointed Editor succeeding A. P. Ryan, who resigned to join the editorial staff of *The Times*.

CONTENTS

A Law Student 'Reads in Chambers.' By Bruce Procope	...	3
Towards a Real European Recovery. By Graham Hutton	...	4
Keeping a Cow in Kensington! By Enid Bagnold	...	5
'This Thriving Cosmetics Industry.' By William Holt	...	6
British Agriculture Since the War. By L. F. Easterbrook	...	8
In a University Town. By the Rev. Dr. Roy Lee	...	9
Period Pieces. Book Review	...	11
Britain's Newsprint Shortage. By Macdonald Hastings	...	12
In Praise of the 'Good Shepherd.' The Weekly Letter, by Ralph Wightman	...	13
Arts of Stage and Screen Compared. By Norman Marshall	...	15
'Secrets Locked in Stones.' By Brian Vesey-FitzGerald	...	16
BBC Service for Europe in English and Other Languages	...	19
This Week's Listening: Principal Programmes	...	20-22
BBC Short-Wave Services: Programme Details Day by Day	...	23-32

'Secrets Locked in Stones'

(Concluded from page 17)

talent. It may have been accidental—it may not have been intentional—but you cannot deny that a line drawn between the two uprights of the central and tallest arch to the centre of the circle cuts the altar stone at right angles and runs almost centrally down the avenue, and then cuts the horizon on Lark Hill just at the point where the sun is seen to rise on Midsummer's Day, by anyone standing on the south-west of the circle and looking to the north-east. The rising sun is then seen framed between the uprights.

'And At this, We May Marvel Indeed'

It is not quite accurate now—it is a fraction of an inch out of the true—but that is due to the movement of the earth since Stonehenge was planned. When it was built, the line to the rising sun was dead accurate. Well, it may have been accidental—you can believe that if you like—but if it was, then this is the most miraculous coincidence in the history of the world. Oh no, it was designed intentionally. For, remember, they had no calendar, no writing, and they thought the earth was flat. And at this, we may marvel indeed.

But all that is as nothing to the secrets that are locked away in these stones that were hewn and raised by a people of whom we know nothing. History? There is history enough and to spare—and more of conjecture, conjecture and guesswork mostly.

More than 1,000 books and papers have been published about Stonehenge, but still we know nothing of the men who did this work that is so impressively permanent, nor of the gods—oh, I know that they must have worshipped the sun, that seems evident; but what else? Was all this planned just for the Midsummer's dawn?—nor of the gods, let me repeat, for whom they built so well, though we may still feel a spirit in the wrinkled, lichened stones, and know them to be alive when the mists swirl in the chill twilight.

Avebury, away to the north, is a little, grey village lying in an open bowl of cultivated plain, with the bare downs sweeping to solitude on every side, and little foliage to speak of except right in the village itself. It is a secluded place—a church, a manor house, an inn, two small shops, a few cottages, no more—off the main road, and miles and miles from a railway station. In fact, there is only one road through it, and there are not many 'buses on that road. There are not many of them, either, on the old Roman road from London to Bath—the Great West Road—that runs about a mile to the south.

It is not like Stonehenge, it is not an easy place to get to, if you do not want to walk. And that is a very good thing, because the right and proper way to come to Avebury is slowly, and on your feet, as men came when first it was formed. And the best way is to climb out of Marlborough and to walk along the ancient trackway—the Harepath on the map—and so drop down to the village over the slope of Avebury Down.

The track is old—it was many hundreds of years old when the Romans came—but it is still as clear, and as green, and as fresh as when the men who now lie buried in the tumuli by its side trod it on the way to the temple at Avebury.

For that is what this place was—a holy place. It was a temple, just as Stonehenge was, but a much older one, perhaps 1,000 years and more older, and a very much greater one. Avebury was a cathedral compared with the parish church of Stonehenge. It was the holy place for all this downland, and its site was very carefully chosen.

Stonehenge pulls all the roads of the south towards it as though it were a magnet. But Avebury was the magnet for a far wider area. And it was, I think, still a holy place when the Romans came to make their great road to the west, for it does a little bulge to round Silbury Hill. You can see Silbury jutting up as you come along the track—five acres of it—a stupendous green pyramid, packed chalk—and packed, remember, with hands.

It has been excavated three times, and nothing has been found in it; the largest artificial hill in Europe, and a mystery still. But, obviously, a holy place. And the Romans took their road round it—their engineers were not always so thoughtful. There must have been a powerful ju-ju on it, even then.

Avebury is nothing like as well preserved as Stonehenge. That is not, of course, just because it is so much older. The stones here are just as good as those to the south. It is because this is a village, and there have been people living here for many hundreds of years, and they have taken the stones to help build their houses. You may find many a sarsen in the walls of these cottages, and, more than that, they took and broke up the stones to fashion the road and paths to the front doors of the cottages.

So, there is, at first sight, little to impress about Avebury, though there is much to charm. From the down, you look at a small village, backed by trees, and surrounded, apparently, by a great, earth wall—you look at a circle. But at Avebury it is not what you see, it is the atmosphere of this landmark from the past, almost eliminated materially but still mysteriously powerful. You do not notice the stones: you do notice the mystery.

Down the hill and into the village, however, and you notice stones more than houses, and you see that the earthen ramparts are really the walls of a great ditch—thirty feet deep by thirty feet wide, and dug out of chalk with a deer's antler.

'These Stones Dwarf those at Stonehenge'

Avebury is built within a huge disc barrow, many many times greater than the rim of Stonehenge—fourteen acres and a half: a huge saucer, from which there ran an avenue of monoliths down to Kennet. The ditch has been emptied of centuries of rubbish, and stands now, formidable, as of ancient times; and that is right, that and the great sarsens against which gentle cattle rub their sides, more at home with mystery than humans can ever be, for these stones dwarf those at Stonehenge.

Greater by far than Stonehenge, older by far—so much we know, so much and no more. Even conjecture has not dared to put the Druids in Avebury. Fittingly, it is the greater mystery.

Charming, ghost-ridden Avebury—ancient beyond dreams, living now in a world of the dead; silent, so that you do not notice the noise of the tractors in the fields: silent, yes, but not sad. There is nothing sad about this land of chalk.

Do you remember Richard Jeffries, a Wiltshire man? He wrote this of early morning on these hills: 'Morning on the hills when hope is as wide as the world.' And so you feel, walking the old tracks, anywhere round here. It is a shadowy world, all this Ridgeway country. The hum of bees in the wild thyme accentuates solitude, emphasises space. This is the realm of the unknown dead. (*Broadcast in the BBC's General Overseas Service*)

Arts of Stage and Screen Compared

(Concluded from page 15)

polished lines. But, as every actor knows, a witty line has to be delivered to the audience with absolute precision. It needs split-second timing. To get a laugh, the timing must be varied, perhaps almost infinitesimally, to suit each audience.

And according to the mood and receptiveness of the audience the line must sometimes be a little overplayed, sometimes underplayed.

In the film of *The First Gentleman*, the actor playing the Prince Regent delivered his witticisms admirably, but the unvarying, mechanical reproduction in the cinema had to leave the audience out of account, and the result was most unhappy.

In real life, nobody can be a witty conversationalist without a highly developed sense of audience, even if that audience consists of only a single listener. It is the same with the wit in the theatre. But the screen actor can have no sense of audience, because, of course, there is no audience for him to sense.

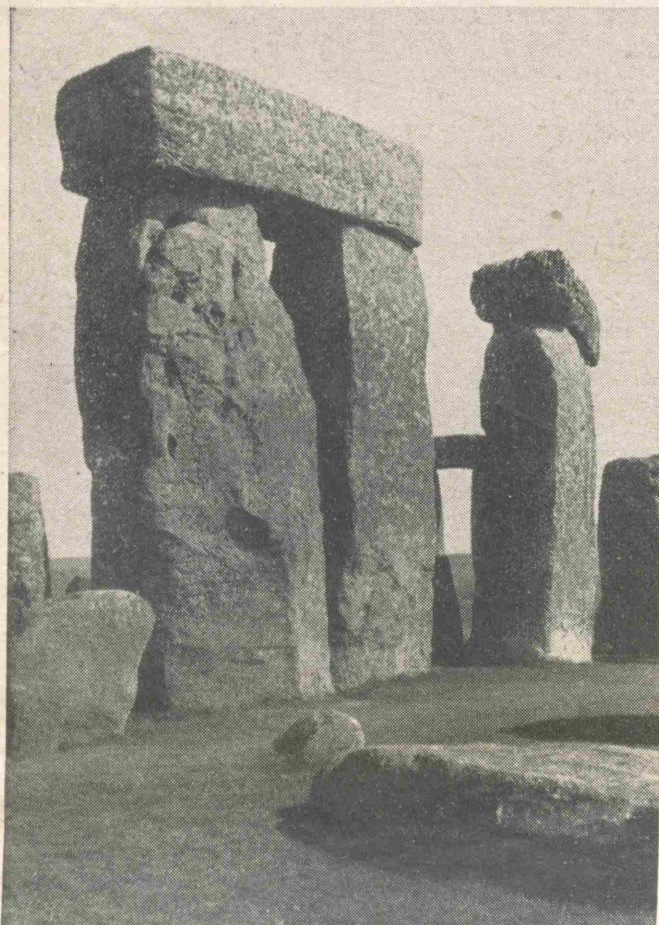
Frenzy, the play from a film, and *The First Gentleman*, the film from a play, confirm what has often been proved in the past—that it is easier to turn a film into a play than it is to turn a play into a film. In a play,

what is most important is what is heard. In a film, it is what is seen that matters most.

It is sometimes possible for a skilful dramatist to translate some of the visual action of a film into dramatic dialogue, but it is far harder for the script-writer to translate the words of a play into scenes of action.

If he does so, he has to cast away two-thirds of the dialogue of the play, and in doing that he destroys most of the quality of the play, because it is in words, and almost solely in words, that the playwright expresses himself.

On the other hand, a good film is one which expresses itself in terms of movement, using words only for scenes that cannot be done purely visually. In the cinema, words must be used simply, without subtlety. Or, as in the film of *Hamlet*, they must be familiar words, which one already knows so well that one can listen to them without effort, while one concentrates on the superb visual effects of what is one of the most pictorially effective films I have ever seen. (*Broadcast in the BBC's Regional Programme for India, Pakistan, and Ceylon*)



Stonehenge: 'we may still feel a spirit in the wrinkled, lichened stones . . . when the mists swirl in the chill twilight'



This impressive avenue of a double line of prehistoric megaliths leads into the remains of the ancient temple at Avebury, 'the holy place for all this downland'



'We may marvel at the magic which conveyed from afar and reared up these mighty stones' at Stonehenge, on Salisbury Plain, 'yet the physical side of that presents but little difficulty'

'SECRETS LOCKED IN STONES'

STONEHENGE is on Salisbury Plain, and it is to the Englishman very much what the Tower of London is to the Cockney. Everyone has heard of it, everyone is rather proud of it, but you hardly ever meet anyone who has been there.

And if that is true of Stonehenge—and it is true—it is a thousand times more true of Avebury, and not nearly so many people have heard of it, either, even though it, too, is world-famous—to archaeologists, at any rate, for it is the largest megalithic monument in Europe. Having said that, I ought to add that I do know it—like the back of my hand. I lived round there for fourteen years, and I have known it for forty.

Wiltshire is the navel of all the chalk country of England; but the Wiltshire chalk is itself divided into two by the golden Vale of Pewsey. South of the vale lies Salisbury Plain, and north lie the Marlborough Downs. Stonehenge was the capital of the southern part as Avebury was the capital of the northern. The queer thing is that Stonehenge is still the capital of southern Wiltshire and Avebury is still the capital of northern Wiltshire, though nobody lives at Stonehenge and Avebury is but a tiny village. The land falls naturally to

Everyone has heard of Stonehenge, but few have heard of Avebury; though, speaking in the 'Landmarks of Britain' series, BRIAN VESEY-FITZGERALD says that ancient Avebury, 'the holy place for all this downland, was a cathedral compared with the parish church of Stonehenge'

them, and they alone fit naturally the nakedness of downland.

I think Stonehenge disappoints most people when they first see it. There are so many pictures of it, and you hear such a lot about the size of it and the hugeness of its stones, and then you come over the crest of the rise—in a car, probably—and there it is before you, quite a distance away and a little below you, and it looks small, and brownish-grey, and anything but imposing. The plain is so huge and empty, and the sky is illimitable, as wide as the world.

In fact, of course, it is a miracle that it

stands at all, an even greater miracle that it stands in something like suitable isolation. Once, indeed, military buildings almost ringed it round. They have gone now, and it is properly cared for by the State, and little, stone pillars have been put up where great stones used to stand, so that you can see pretty well what the whole plan was.

There is a spell about this. You would not think so when you first see it, banded on either side by the blue-grey ribbon of main road, and with that white car-park and the little pay-box. But as you walk towards it, it grows, and the stones do become huge,

and the roads fade away, and the noise of the traffic dies, and, suddenly, you are in a temple and you are very small and isolated. It startles and subdues.

The human significance is there, as eloquent as the ruins of a castle, but the fashioning of it, the thoughts and the motives that conceived it are so remote, so far removed from anything that we can understand. We can understand a little about the Romans, the Saxons, the Normans, but this—this belongs to the blank in history. We may marvel at the magic which conveyed from afar and reared up these mighty stones, yet the physical side of that presents but little difficulty.

All the largest stones are sarsen—that is a type of stone, as granite is—and at the very furthest they came from the Marlborough Downs. The other stones came from the Prescelly Hills in Pembrokeshire, far away on the rim of Wales, but they are comparatively small stones, and the difficulty of bringing them to this bare spot on the chalk would not have been much of a problem to a people talented enough to plan so great a monument as this.

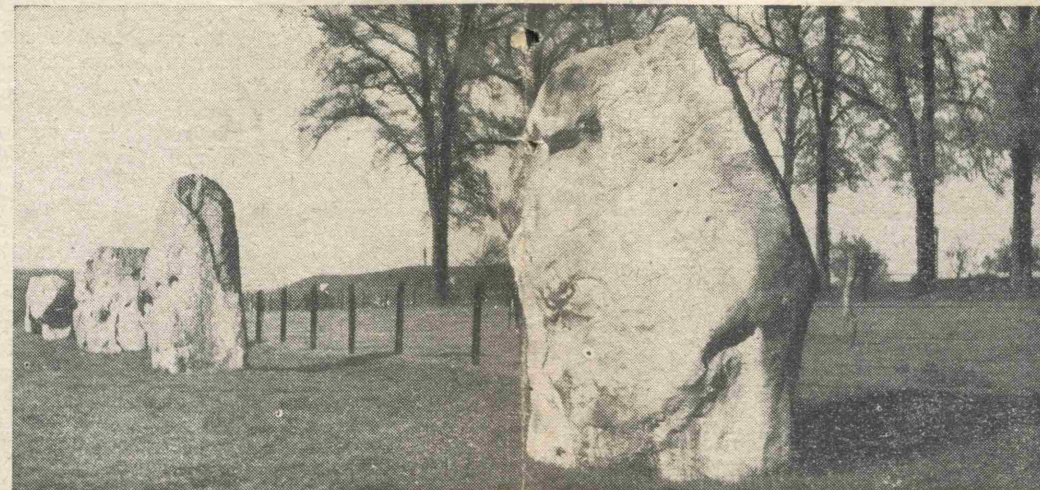
Talented? No, no that is altogether the wrong word. More, much more, than (Continued overleaf)



'The larger stones are sarsen . . . from the Marlborough Downs'



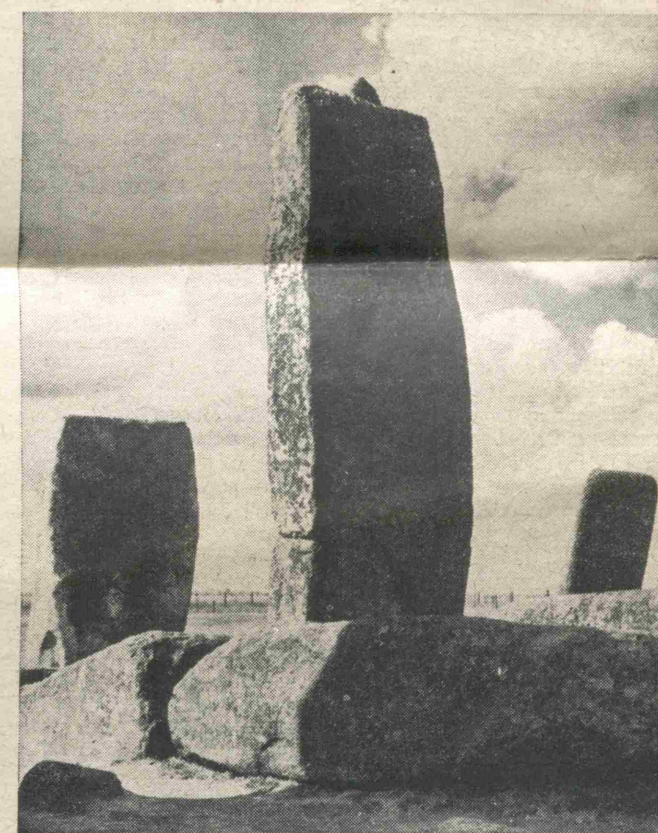
'Avebury, away to the north, is a little, grey village . . . You may find many a sarsen in the walls of these cottages'



Some Avebury stones. Avebury is older by far than Stonehenge, and nothing like so well preserved. . . . 'There is, at first sight, little to impress about Avebury, though there is much to charm'



'As you walk towards it, the roads fade away . . . and suddenly, you are in a temple . . . It startles and subdues'

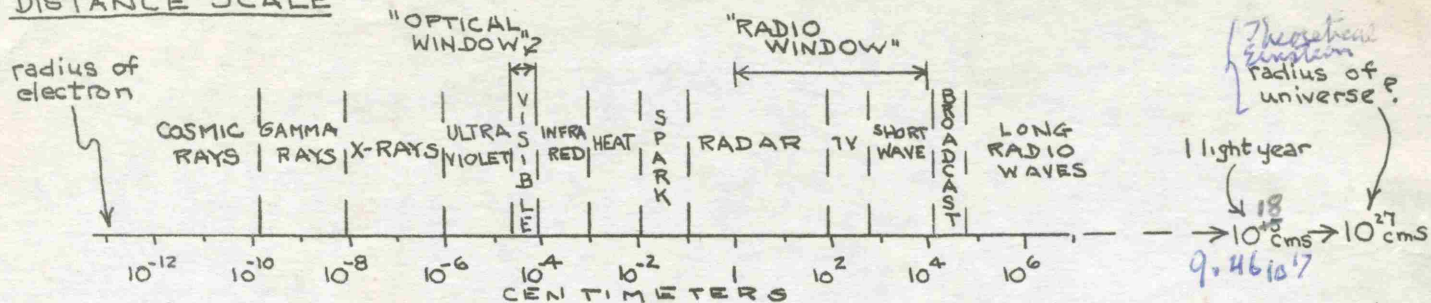


Centre of Stonehenge. The altar stone is lying in foreground

THE EARTH IN SPACE AND TIME

GEOLOGY I.

DISTANCE SCALE



About 10⁹ galaxies lie within the range of Palomar telescope (about 2 x 10⁹ light years)
Our galaxy ("Milky Way") contains about 10¹¹ stars within a lens 800 x 80,000 light-years

THE SOLAR SYSTEM

98% of angular momentum is in major planets. 99.87 of mass is in sun (losing 4 x 10⁶ tons/sec.)

ATMOS.	BODY	TEMPERATURE	DISTANCE (compared to earth - E)	DIAMETER (compared to earth - E)	MASS	DENSITY	ROTATION	REVOLUTION	SATELLITES
	SUN	11,000 °F	0	114 E		1.4			
none	MERCURY	-350 +770	.39E	0.4E	0.05E	4	88 d.	88 d.	0
CO ₂ , CH ₂ O?	VENUS	130	.72E	0.97E	0.8E	4.9	21 d.	<225d	0
N ₂ , O ₂ , etc	EARTH		1	1	1	5.5	1 d.	1 yr.	1
<0.1% O ₂	MARS	86 ?	1.52E	0.53E	0.11E	3.96	24.5 h	1.9 yr	2
	ASTEROIDS			up to 485 mi.					
NH ₃ , CH ₄	JUPITER	-216	5.2E	11.1 E	318 E	1.34	10 hr	12 yr	12
	SATURN	-243	9.54E	9.4E	95 E	0.71	10 hr	29 yr	9
CH ₄	URANUS	-300	19.2 E	4.1 E	14.5 E	1.27	10.7 hr	84 yr	5
	NEPTUNE	-330	30.1 E	3.9 E	17.2 E	1.58	15.7 hr	165 yr	2
	PLUTO	-348	39.5 E	0.5E?	0.8E?	?		248 yr	0?

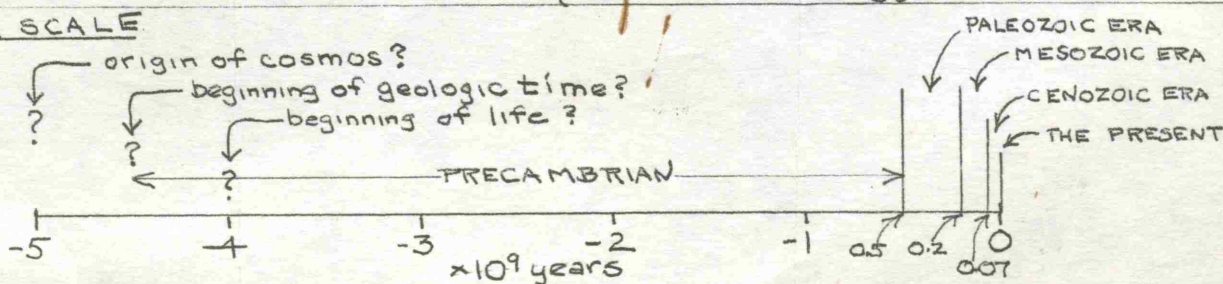
AGES OF EARTH AND COSMOS

METHOD

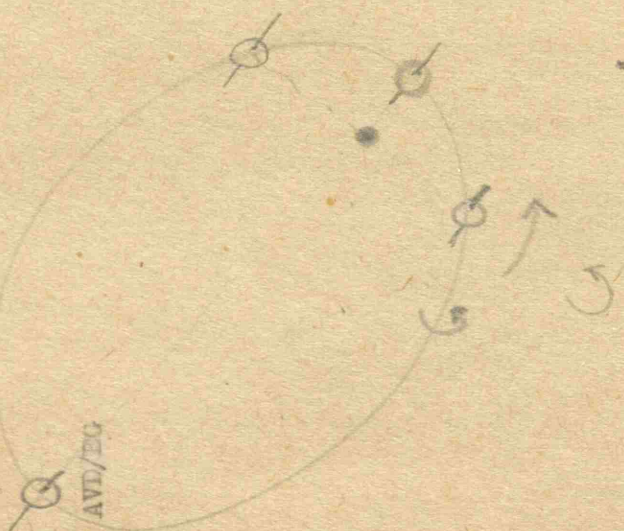
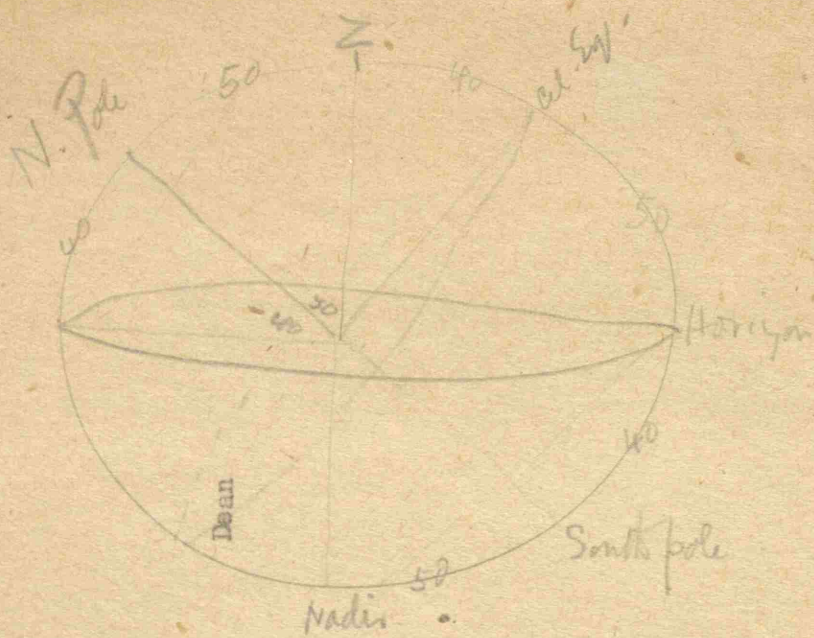
	METHOD	AUTHORITY	AGE	FORMATION OF
Fallacy: rates not constant, radioactive heat etc	Cooling of crust	Kelvin 1862 " 1897	20-400 m. 20-40 m.	Earth
	Salinity of ocean	Holmes 1898 Joly 1898 Conway 1943	2-4 b. 90 m. 150-250 m	
	Sedimentary thicknesses	Holmes Sollas 1905	1-7 b. > 26 m > 350 m	Ocean
Radioactive ages	Content of U ²³⁵ , U ²³⁸ , Th ²³² U ²³⁵ /U ²³⁸ ratio (1:139)	Rutherford	< 10 b. < 6 b.	Crust "
	Ages of individual minerals (Pb, U, He, A, Rb, etc)		> 3.5 b.	"
	Ages of lead ores	Holmes Masuda 1958	> 3 b. 4.55 b.	" "
Astronomic methods	Earth-Moon system		2-4 b.	solar system
	He content of meteorites		60m-7b	"
	Spectral classes of stars		5b-100b	our galaxy
	Kinetic energy of stars		few b.	"
	Distribution in separation of binaries		< 10 b.	"
	Dynamics of star clusters and galaxy clusters		2-5 b.	Universe
Red shift	Hubble Omer	2b 4b 6b	" " "	

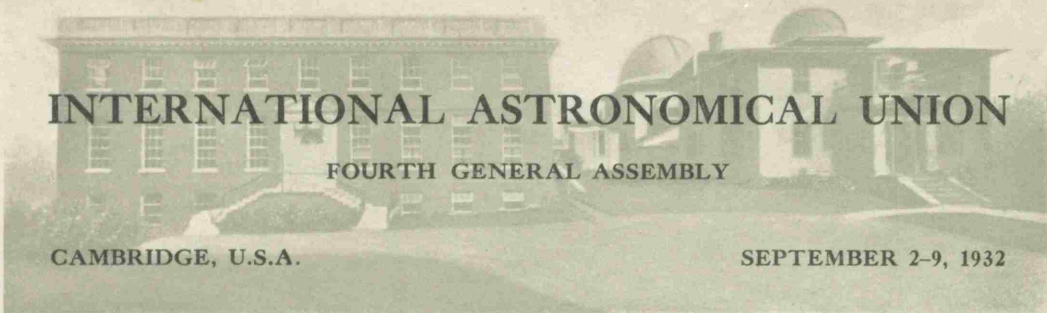
See Chap-5 Text p466

TIME SCALE



After
Radioactive elements 4 to $7 \cdot 10^9$
Earth — to $3 \cdot 10^9$
Planets order of 10^9
Sun $< 8 \cdot 10^9$
Stars 10^7 to 10^{10}
Double stars $< 10^{10}$
Gal. Clusters $3 \cdot 10^{10}$
Arms of galaxies 10^7 to 10^8
Clusters of galaxies $< 10^{11}$
Red shift (v. uncertain) $3 \cdot 10^9$.





Scale 3000×10^6 miles = 3000 miles (geographic)

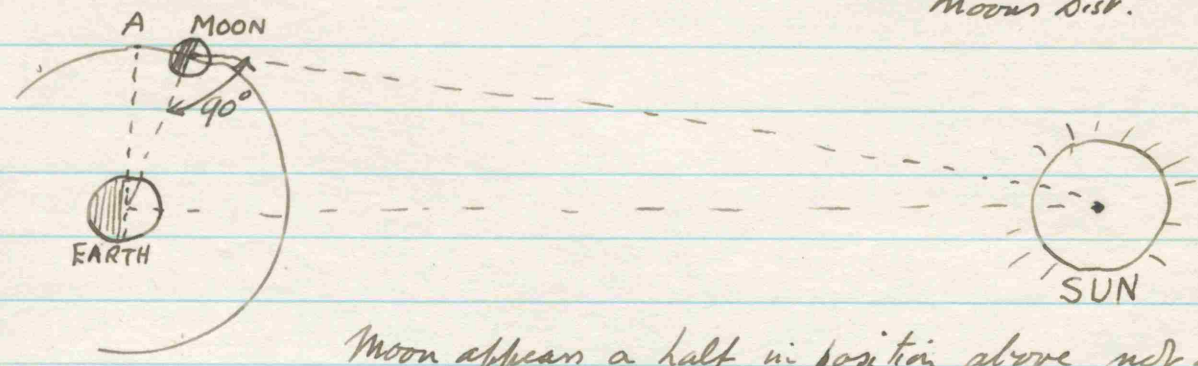
10^6 miles : 1 mile or $1/1,000,000$

		DIST.		DIAM	MOONS
SUN	Halifax	—	Victoria	0.86 mi = 4550 ft. ✓	—
MERC.	Windsor	36 miles	Vancouver	.003 mi = 16 ft. ✓	—
VEN.	Cape Sable	67 mi.		.007 = 40 ft. ✓	—
EARTH	Sackville	93 mi.	New West.	0.079 = 42 ft. ✓	1
MOON		0.24 mi. =		.002 = 10 ft. ✓	
MARS	Federickton	141 mi.		.0042 = 22 ft. ✓	2
JUP	Quebec	484 mi.	Calgary	.087 = 464 ft. ✓	9+1?
SAT	Sackville	888 mi.	Regina	.072 = 380 ft. ✓	10
URA	Brandon	1783 mi.	Sault	.031 = 164 ft. ✓	4
NEP	Vancouver	2793 mi.	Halifax	0.33 = 175 ft. ✓	1
PLUTO	in the Sun.	3700 mi		—	—

Read. Through Time & Space. Ch. 5 Planets

Distance of the Sun

(1) Aristarchus Method . Ratio $\frac{\text{Sun's Dist.}}{\text{Moon's Dist.}}$



Moon appear a half in position above not at post A. i.e. $\hat{EMS} = 90$
not at AES = 90

\therefore 1st quarter will be shorter than 2nd quarter

Aristarchus took this to be 12 hours. i.e. time to move from M position to A is 6 hours. or 4° of orbit.

Observing \hat{AEM} gives \hat{MES} & hence ratio $\frac{EM}{ES} = \cos \hat{MES}$

Aristarchus got ratio $\frac{1}{19}$ since he greatly overestimated \hat{AEM}

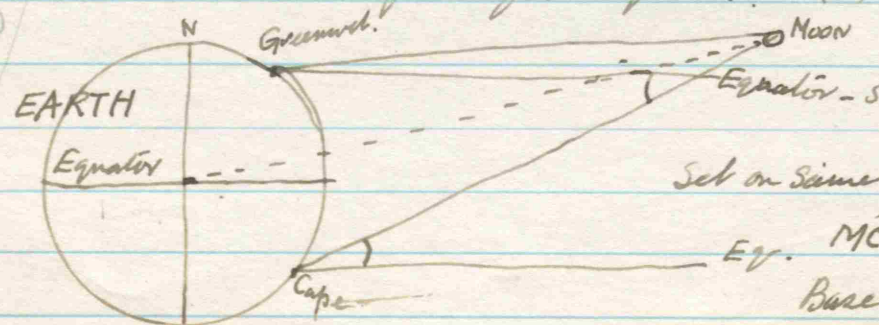
True value is $\frac{240000}{98000000} = \frac{1}{390}$ approx.

i.e. Sun is about 400 times more distant than Moon.

(2) Trig Survey

Base line Greenwich to Cape of Good Hope.

(a) observe angular posⁿ of moon (b) from Lunar dist. + Kepler's 3rd Law deduce Solar dist.



Set on same star & take angle to moon

$$\hat{MCE} - \hat{MGE} = \hat{GMC}$$

Base GC is known.

Direct survey for Sun's centre is only accurate to about 3% Moon not good hence value of Eros surveys.

not given in Lecture 16

