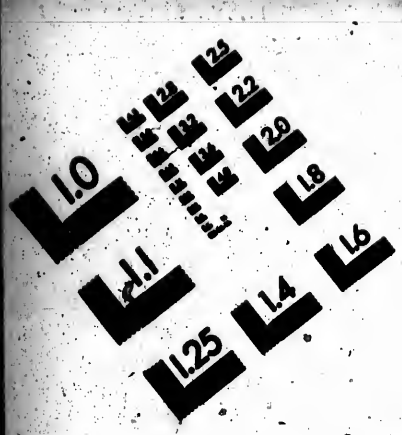

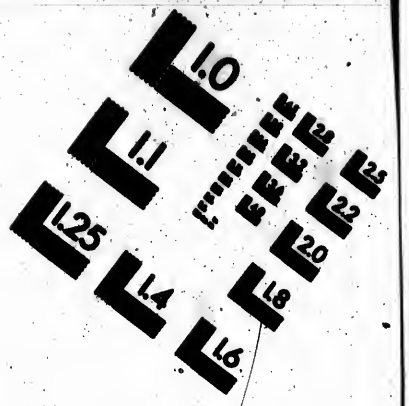

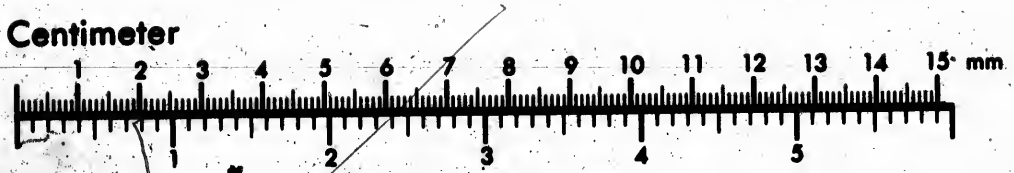

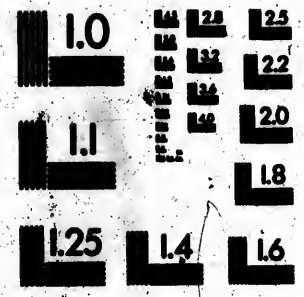

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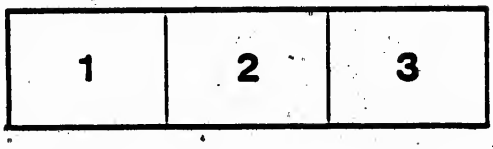

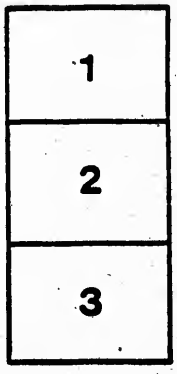

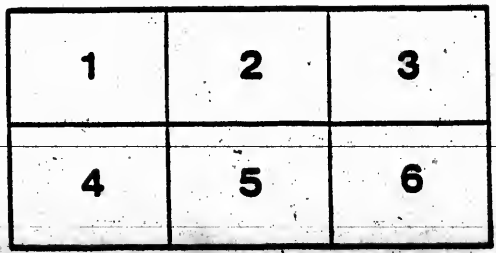

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1858

THE WONDERFUL WORKS OF GOD BY MAN,

29

AS DISPLAYED IN THE

Vastness of a Million Units!

A LECTURE,

DELIVERED AT TORONTO AND ELSEWHERE

BY JOHN DAMP.

PRICE, 12½ CENTS.

TORONTO:
THOMPSON & CO., PRINTERS AND PUBLISHERS, KING STREET.
1858.

Darkness of a Million Ghosts!

A LECTURE

BY JOHN DOE.

LECTURE

ON THE

VASTNESS OF ONE MILLION UNITS.

LADIES AND GENTLEMEN,—The object of the Lecture for this evening is to explain the vastness of One Million Units, and reference will be made to Astronomy, Mathematics, and other sciences, and a display of the wonderful works of God by man. Also to exhibit a diagram of One Million Units, which has been patronized by his Excellency the Governor General of Canada.

The age in which we live is a progressive one; progression is the order of the day. Whatever art or science we turn our eyes upon, whether mechanics or mathematics, astronomy, geology, physiology or phrenology, they all are on the progressive scale; almost every day we have brought before us new discoveries and inventions, and from all classes of men. It may be well said, time works many changes in man and in things, and it is universally acknowledged that we live in times of infinite importance. If we carry our thoughts back to the great Exhibition of 1851, we shall remember that there the mind was almost overpowered with the arts and sciences of all classes of men, and from all nations, and from that day down to the present time, the machine has been moving onwards, and onwards, and will continue to do so to the end of time. On beholding such an edifice of glass and cunning workmanship—the magnificent exterior of the palace, and the costly works of man within—one was impelled to say, *what is man?* and, *what is he not able to do?* Two very important questions. First, then, what is man? A question which the wisest of heathen philosophers have not been able to explain. *What is man?* Man is a world of mystery in himself. Man is a machine of the most exquisite workmanship. How symmetrically and how well is each part adapted to every other. Who designed the plan? The great I AM! who is the great architect of heaven and earth. Who was the maker of this machine? God—who made all things—the great Builder of heaven and earth. Who set the machine in motion? God—who is the great first moving power of all things in heaven and earth—"He breathed into man the breath of life and he became a living soul." Who is the preserver of this machine? God! "The very hairs of our head are all numbered." "He that keepeth Israel neither slumbereth nor sleepeth, for in Him we

live and move and have our being." The machine is of such a nature, that no improvement could be made when it first came from the hands of its Maker. What is man? Man is the masterpiece of God's creation—possessing 246 bones, 446 muscles, nerves, flesh, veins, heart, arteries, and about 20 millions of pores. A heart which performs its work under all circumstances of pain, trouble, and distress; and never stops to rest night nor day. The question could only have been answered by Him that made us, who is divine. The sweet singer of Israel, when contemplating himself, concludes—"I am fearfully and wonderfully made; marvellous are thy works, and that my soul knoweth right well." *What is man?* Man is "a living soul."

What is man not able to do? This is a field of study for all minds. A subject which never will be exhausted as long as time shall last. Though the discoverer may possess a mind like Newton, Luther or Melancthon, still the field is large and the work is great. Suffice it to consider what he has done and is now doing at the present time. The Almighty has been pleased to endow man with a noble mind, and placed him over every living thing, and blessed him and furnished him with all materials for his use; and with that mind, man has been able to give to all animals and things their proper names—to discover all arts and sciences—to invent all machines—to construct all instruments, buildings, &c. If we take the science of astronomy; the astronomer, with his powerful telescope, is able to discover worlds which have never yet been seen by the naked eye of man. This science, since the 16th century, has made great headway. In the days of Ptolemy, and up to the fifteenth century, it was believed that our earth was a fixture. Ptolemy's hypothesis was that this globe of ours was a fixture, and the sun, planets and stars were revolving round it; but in the fifteenth century, Copernicus, who was a bold and original genius, perceived that the clumsy and unnatural system of Ptolemy could not account for the motions and appearances of the celestial orbs. If Ptolemy's system be correct, then we behold the sun, that mighty luminary, flying through boundless space at the rate of 24 millions of miles every hour, or 597 millions of miles every day. Again, the planet Uranus would move round this globe at the rate of 445 millions of miles every hour, or more than seven millions of miles every minute, or one hundred and twenty-three thousand six hundred and seventy-seven miles in a moment. Again, if Ptolemy's hypothesis be true, we have other bodies moving round this globe at the rate of 14 hundred millions of miles in a single second, or the interval of time which the pendulum of a common clock takes in moving from one side to the other. Again, if Ptolemy's system be true, then we behold the sun, which is 18 hundred thousand times larger than this globe, revolving round this globe every day. Therefore, Copernicus adopted the Pythagorean system, which system had been believed five hundred years before Christ. With a bold and daring hand he dashed the crystalline orbs of Ptolemy into pieces; swept away his cycles and epicycles; placed the sun, that mighty luminary, in the centre of the system; removed the earth from its quiescent state, set it in motion through the regions of the firmament, in company with the other plane-

tary orbs. This theory was at first violently opposed by the Roman Church. Copernicus laid the foundation of all the discoveries which have been made since in this science. It was afterwards ably supported by the discoveries of Galileo, Kepler, Gessendi, Hevelius, Huygens, Cassini; and with the powerful telescopes which they invented, they were able to see the satellites of Jupiter, the phases of Venus, the spots on the Sun. This system of Copernicus was still more confirmed by the illustrious Sir Isaac Newton, in the year 1666, in the 24th year of his age. Contemporary with Newton were Hooke, Flamstead, Halley, Bradley, Roemer, Richer, Picard, and others, and then followed Sir Wm. Herschel and his son James Herschel and J. South. Sir Wm. Herschel with his powerful telescope made many discoveries and extended our views of God's wonderful work. In the heavens, in March 1781, he discovered a new planet beyond the orbit of Saturn, which is now called Uranus. And from the days of Herschel down to the present time, this science has been progressive. The Earl of Rosse, by means of the large and powerful telescope he has lately erected, has made many discoveries in the heavens. What is man not able to do? Man by his mind is able to walk amongst the stars of heaven, and exclaim, "the heavens declare the glory of God, and the firmament sheweth his handy work." "Day unto day uttereth speech, and night unto night sheweth knowledge"—"The heavens declare his righteousness and all people see his glory"—"The heavens, even the heavens are the Lord's, but the earth hath he given to the children of man"—"Great and marvellous are thy works, Lord God Almighty." What is man not able to do? With his mind he is able to look into the bowels of the earth. By the science of geology we have seen wonderful discoveries made, and strange secrets brought to light. By investigating the strata of the earth, we have gold, silver, copper, iron, and we may say, every material for our use. "THE earth hath he given to the children of men." Thus while the astronomer is beholding the works of God in the heavens, the geologist beholds his handiworks in the earth. Then we have the skilful physician who can analyse the body, and in so doing he is ready to say with the Psalmist, "I am fearfully and wonderfully made, and in thy book all my members were written"—"I am as a wonder unto many, but thou art my strong refuge." Then take the science of mathematics; a science which contemplates whatever is capable of being numbered or measured, this to the astronomer is his rule and guide, and the mainspring of all his movements.

But before we proceed any further, we will turn our attention to the diagram which is illustrative of the last named science. The diagram is one which I have had in contemplation for some time, and I am thankful I am spared to see it finished. The diagram is *One Million Units*. What? *One Million Units!* A word easily spoken, but not so easily comprehended. Yea, time would fail us to enlarge fully upon the word *million*. It is a proverbial name for any great number; it is the touchstone for all the higher numbers in arithmetic. When we say units, tens, hundreds, thousands, we seem as though we could see or comprehend their meaning; but when we say One Hundred Thousand, the mind

becomes less assured, although we may have a faint idea of its greatness. But when we say *one million*, then the mind becomes lost in its vastness or its magnitude. Man, however, as soon as he comes to himself, seeks for a plan to strengthen his mind and to enable him to comprehend *one million units*. But what is this number, great as it is, to higher sums which often occur in the science of mathematics, such as sextillions, septillions, octillions. In order that we may appreciate the science of mathematics, let us take a number of 57 figures, [321,987,654,321,987,654,321,987,-654,321,987,654,321,987,654,321,987,654,321]. That is to say, 321 nonnillions, (or 321 millions of millions of millions of millions of millions of millions of millions of millions of millions) 987 thousand 654 octillions, 321 thousand 987 septillions, 654 thousand 321 sextillions, 987 thousand 654 quintrillions, 321 thousand 987 quadrillions, 654 thousand 321 trillions, 987 thousand 653 billions, 321 thousand 987 millions, 654 thousand 321. Let us suppose the vast number which we have numerated to be years, and then compare them to eternity (if we may be allowed the expression), we find no comparison whatever. We may take a drop of water and compare it to the ocean, or one grain of sand to this globe; or the twilight to the full splendor of the midday sun, but we cannot compare any thing to eternity. We may try figures and so on, but still it is eternity. Let us suppose that vast number we have numerated, to be years; who can tell that number? No mind can at all comprehend it. Let us suppose every grain of sand on our globe to be years, and every drop of water and every blade of grass and every leaf, and add the number of years we have numerated, and then compare them to eternity, still there can be no comparison, for this great number will pass away and yet we have eternity. Where is the mind that can fathom eternity? Who can explain it? It is boundless in itself, having neither beginning nor end—it is boundless—it is endless—it is bottomless. I believe that the angels of Heaven cannot explain eternity; no, not even the great Archangel himself. If the angels had been flying through boundless space ever since they were created by God, even then they could not tell us what eternity is. Nor will man, in his glorified state, be able to explain it. It is *boundless*, it is *fathomless*, it is like God himself, who cannot be fathomed nor comprehended. *No immortal mind* can understand God. And we may say with the inspired writer, "Who by searching can find out God,"—"The Lord God omnipotent reigneth."

We now commence to examine what *one million* will do? Supposing it were sovereigns, it would build 666 churches, at 1,500 pounds for each church; it would build 2,500 schools, at 400 pounds for each school; it would be adequate for the formation of 5,000 miles of road at the rate of 200 pounds for each mile. If a person were employed in counting *one million*, and were to count one every second, it would take him 23 days before he would be able to perform his task, working 12 hours per day. Suppose one million of men standing side by side in a straight line, allowing three feet for each man, this line would make 568 miles, or a line reaching from Toronto to New York, or from Toronto to Quebec. One million of miles would go 40 times round the circumference of this earth,

which circumference is estimated at 24 thousand 912 miles, its diameter being about 8000 miles, and the number of square miles on its surface about 197 millions. Since the creation of the world, according to our chronology, but little more than two millions of days have elapsed; only little more than twice the number on the diagram. The diagram is on the decimal principle. We behold first the small square, containing one hundred units; the larger square contains ten thousand; and the diagram contains 100 of these squares, making ten hundred thousand or *one million*. It is believed that the decimal principle will be generally adopted. The money of Canada is to be on this principle; it is general all through the States. It is estimated that the population of the world at the present time is eleven hundred millions or eleven hundred times the number in the diagram. If a man were employed to count the population of the world, counting one person every second, and working twelve hours a day, it would take him 69 years. If we take the national debt of England at eight hundred millions of sovereigns, and a man were set to count that number, counting one every second of time, and working twelve hours a day, it would take fifty years before the task could be completed. Such facts help to assist the mind to comprehend one million units. A *million*, as great as it is, only counts as a unit in the science of astronomy. What great discoveries have been made in this science, and still are making up to the present time. If we take the *sun*, that mighty luminary which enlightens our day; all animated beings rejoice at his presence, millions of insect tribes awake and sport in his beams, the birds salute him with their concerts, yea, every thing that breathes feels the effect of his influence—man watches for the morning and rejoices at its approach; truly the light is sweet, and a pleasant thing it is for the eyes to behold the sun. He also gives circulation to the sap in trees—he causes the blossoms and leaves to shoot, and the fruits of the earth to ripen to a golden harvest for supplying the wants of man and beast. Where is the mind that can contemplate this mighty luminary which is the cause of light, and color, and heat, without exclaiming—"Behold He hath done all things well." Let us consider the vast distance this sun is from us—no less than 95 millions of miles; 95 times the diagram. In order that we may have a better understanding of this distance, we will suppose a cannon ball leaving the mouth of the cannon, and flying at the rate of five hundred miles an hour, as it is calculated to do, it would take twenty-one years and two hundred and forty-five days before it would reach the sun. Or suppose a steam locomotive to set out in the direction of the sun, and to go at the rate of 480 miles every day, it would require 547 years before this locomotive could reach the sun. The Sun's diameter is 880,000 miles, its circumference is two millions seven hundred and sixty-four thousand six hundred miles, and yet this is only one sun out of myriads perhaps that are flying through boundless space. The light that we receive from day to day comes from the sun in less than nine minutes of time, so that light travels more than ten millions of miles in a minute, or would go eight times round our earth while a person is counting *one*. It is not to be wondered that the sun appears so small to us, seeing its immense dis-

tance from our earth, yet its splendor is such that we cannot behold it with the naked eye. Let us then "Give thanks unto the Lord, to him that made great lights, for his mercy endureth forever."

But not only have we the sun; we have the moon, which is the nearest planet to us. The Astronomer, with his powerful telescope, is able to see mountains and plains, caverns and insulated rocks, hills and plains of almost every shape on the face of the moon. The mean distance of the moon from our earth is 237 thousand miles. The Earl of Rosse, with his large telescope, has been able to confirm the opinion of preceding astronomers, and has made many discoveries. Time would fail me to speak of Mars, Jupiter, Mercury, Venus, Saturn, Vesta, Juno, Ceres, Pallas, and Uranus. The last named is estimated to be 18 hundred millions of miles from our earth. To reach the nearest point of its orbit, a cannon ball, flying from the earth in that direction at the rate of five hundred miles an hour, would require a period of 390 years. "Come and see the works of God, he is terrible in His doing towards the children of men." "The heavens declare His righteousness, and all the people see His glory." We again take into consideration the nearest fixed star, which star is calculated to be no less than twenty billions of miles from our earth; that one billion is no less than ten hundred thousand millions; and that had Adam commenced counting a billion as soon as he was created, and continued counting down to the present time, counting two every second, and working night and day, and rested only one day every four years, (which will be leap year), he would not have counted one billion of units—when we think of these things may we not say, "Who by searching can find out God," or with Job, "Is not God in the height of heaven," and, "Behold the height of the stars, how high they are,"—"Look now towards heaven and tell the stars if thou art able to number them."

Man has made great discoveries in boundless space; but we fear not to say that there will yet be still greater discoveries made in the science of Astronomy. We have men night and day watching the movements of the heavenly bodies with their powerful telescopes, and we believe, could they apply ten thousand times the power to their telescopes which they now have, that they would behold worlds upon worlds, suns upon suns, flying through boundless space, which have never as yet been seen by any mortal eye; no eye but the omniscient eye of God, who made them and sustains them in their orbits.

If knowledge is power, and we believe it is, power to command, power to move, power is the moving principle of all things. Man possesses this power more or less, and if this power is employed in contemplating the works of God in creation, providence or redemption, may we not expect the help of God? for that "He is strong in power, not one who faileth." "Happy is the man that findeth wisdom, and the man that getteth understanding."

The diagram will assist us in forming an idea of the great number of letters which passed through the General Post Office in England, in the year 1856, which number was estimated at no less then 479 millions, or

479 times the diagram. Also from Genesis to Revelation, we have only three millions 560 thousand 480 letters, or about three and a-half times the diagram. The inhabitants of China are stated to be about 360 millions, those of Hindostan 180 millions, and those of England only about 30 millions. It has been stated that in the last ten years there have been landed at New-York from Europe nearly one million emigrants. The war between England and France, from 1808 to 1815, making 12 years, cost England alone, 1,159 millions of pounds sterling. She raised by loans 388 millions, by taxes 771 millions, making one thousand one hundred and fifty-nine times the diagram. Where is the *man* who possesses a mind, able to understand the great number of 1,159 millions? I answer by saying, we have no man of this mind. But the diagram will further aid and assist us in forming an idea of its vastness. From the birth of our Saviour, down to the year 1832, only 57 thousand 813 millions 523 thousand 200 seconds have elapsed.

What is man not able to do? He is able, by the help of Mathematics, to measure the towering Pyramid of Egypt, whose top reaches to the clouds, and whose foundations cover nearly 14 acres of land. This pyramid has been estimated at six millions of tons. The stones would be sufficient to build a wall round the whole of France, which wall would be 18 hundred miles long, 10 feet high, and one foot in thickness. The pyramid is five hundred and sixty feet high, about one hundred and seventeen feet higher than St. Paul's in London. It is said that some of the stones of this pyramid are about thirty feet long, much resembling the stones in the ancient temple of Jerusalem, which stones we are told by Josephus, were fifty feet long, twenty-four feet high, and sixteen feet in thickness. Some of the stones of this pyramid are covered with hieroglyphics, and it stands as one of the three wonders of the world. Man is able, with the power that God has given him, to traverse and measure the mighty oceans which belong to our earth, and even measure the earth on which we live and move. The Pacific Ocean, which is the largest in the known world, is estimated to measure eighty millions of square miles, or eighty times the diagram. This ocean contains more miles of water then there is dry land over the known world, which only covers forty-nine millions of square miles. Then we have the Atlantic Ocean, which most of us have had an opportunity of seeing and crossing. This ocean contains 25 milions of square miles—the Indian Ocean 18 millions of square miles—the Southern Ocean 25 millions of square miles—the Northern Ocean 5 millions—the Mediterranean 1 million, making a total of 149 millions of square miles of water, which is more than three times the quantity of dry land upon the face of the globe.

We are led from the preceding remarks to consider the wonderful works of Him, "Who hath measured the waters in the hollow of His hand, and meted out Heaven with a span, and comprehended the dust of the earth in a measure, and weighed the mountains in scales, and the hills in a balance: that stretcheth out the Heavens as a curtain, and spreadeth them out as a tent to dwell in." "Also lift up your eyes on high, and behold who hath created these things, that bringeth out their host by number, He

calleth them all by names of the greatness of his might; for that He is strong in power, not one faileth." "Hast thou not known? hast thou not heard, that the everlasting God the Lord, the Creator of the ends of the earth, fainteth not, neither is weary; there is no searching of His understanding." "The Heavens, even the Heavens, are the Lord's, but the earth hath he given to the children of men. O that men would praise the Lord for his goodness, and for His wonderful works to the children of men." "One generation shall praise thy works to another, and shall declare his mighty acts." Our time is short in this life to praise God, for every year, it is said that 25 millions of our fellow-creatures die and pass into eternity.

Our life is a dream,
Our time as a stream
Glides swiftly away,
And the fugitive moment refuses to stay.

Time like an ever rolling stream,
Bears all its sons away,
They fly forgotten, as a dream
Dies at the opening day.

Let us "Redeem the time, because the days are evil,"—"All thy works shall praise thee, O Lord, and thy saints shall bless Thee,"—"When I consider Thy heavens, the work of Thy fingers, the moon and the stars, which thou hast ordained, what is man that Thou art mindful of him." "Thou madest him to have dominion over the works of thy hands; Thou hast put all things under his feet." We may well say, "The lines are fallen unto us in pleasant places, yea, we have a goodly heritage,"—"Thine, O Lord, is the greatness and the power, and the glory, and the victory, and the Majesty, for all that is in the heaven and in the earth is Thine—Thine is the kingdom, O Lord, and Thou art exalted as head above all—both riches and honor come of Thee, and Thou reignest over all, and in Thy hand is power and might, and in Thine hand it is to make great, and to give strength unto all—now therefore, our God, we thank Thee and praise Thy glorious name." "For Thou hast created all things, and for Thy pleasure they are and were created." "For of Him, and through Him, and to Him, are all things, to whom be glory for ever. Amen."

Davenport Road, February 18th, 1858.

TEN THOUSAND UNITS,

OR ONE-HUNDREDTH PART OF THE DIAGRAM EXHIBITED.