*Rome," Richard Frederick Littledale, LL. D., D. C. L., pp. 37-39. London: Society for Promoting Christian Knowledge, 1905.*

**Immaculate Conception,** THE DOGMA DEFINED.— Since we have never ceased in humility and fasting to offer up our prayers and those of the church to God the Father through his Son, that he might deign to direct and confirm our mind by the power of the Holy Ghost, after imploring the protection of the whole celestial court, and after invoking on our knees the Holy Ghost the Paraclete, under his inspiration we pronounce, declare, and define, unto the glory of the holy and invisible Trinity, the honor and ornament of the Holy Virgin, the mother of God, for the exaltation of the Catholic faith and the increase of the Christian religion, by the authority of our Lord Jesus Christ and the blessed apostles Peter and Paul, and in our own authority, that the doctrine which holds the Blessed Virgin Mary to have been, from the first moment of her conception, by a singular grace and privilege of Almighty God, in view of the merits of Christ Jesus the Saviour of mankind, preserved free from all stain of original sin, was revealed by God, and is, therefore, to be firmly and constantly believed by all the faithful. Therefore, if some should presume to think in their hearts otherwise than we have defined (which God forbid), they shall know and thoroughly understand that they are by their own judgment condemned, have made shipwreck concerning the faith, and fallen away from the unity of the church; and, moreover, that they by this very act subject themselves to the penalties ordained by law, if by word, or writing, or any other external means, they dare to signify what they think in their hearts.— *Extract from the Bull "Ineffabilis Deus," of Pope Pius IX, Dec. 8, 1854, promulgating the dogma of the Immaculate Conception of the Virgin Mary; cited in "Dogmatic Canons and Decrees," pp. 183, 184. New York: The Devin-Adair Company, 1912.*

**Immaculate Conception,** ITS SIGNIFICANCE.— Who can believe that, it being in the power of God the Son to prepare a spotless holy temple wherein to dwell incarnate for nine months, he preferred to have one which had been first profaned by the stain of original sin?

Who can imagine that God, who could become incarnate by preparing for himself a mother immaculate in her conception, should have preferred a mother who had first been stained by sin and once in the power and slavery of Satan?

To admit such suppositions is shocking to Christian minds. . . . It being in the power of God to preserve Mary unstained from original sin, there is every reason to believe that he did it. God is able; therefore he did it.—"*Catholic Belief," Joseph Faà di Bruno, D. D. (R. C.), p. 218. New York: Benziger Brothers.*

God the Son, by assuming this perfect human nature, which he took from the Blessed Virgin, was born in the flesh.— *Id., p. 208.*

NOTE.— The Scripture plainly teaches that Jesus, when born of woman, assumed sinful flesh (Heb. 2:14; Rom. 8:3), and thus became united with man in his fallen condition. This doctrine of the immaculate conception of the Virgin Mary separates Jesus from the human family in its present state, by giving him a "perfect human nature," free from the stain of original sin, and thus prepares the way for the introduction of that human mediation which is one of the prominent features of the Roman Catholic system. The very essence of Christianity being the experience, "Christ in you, the hope of glory," it thus appears that the dogma of the immaculate conception of the Virgin Mary strikes at the very heart of Christianity.— EDS.

**Immaculate Conception,** EXPLAINED BY A ROMAN CATHOLIC.— Mary was preserved exempt from all stain of original sin at the first moment of her animation, and sanctifying grace was given to her before sin could have taken effect in her soul. Simultaneously with the exclusion of sin, the state of original sanctity, innocence, and justice, as opposed to original sin, was conferred upon her, by which gift every stain and fault, all depraved emotions, passions, and debilities were excluded. But she was not made exempt from the temporal penalties of Adam — from sorrow, bodily infirmities, and death.

The person of Mary, in consequence of her origin from Adam, should have been subject to sin, but, being the new Eve who was to be the mother of the new Adam, she was, by the eternal counsel of God and by the merits of Christ, withdrawn from the general law of original sin. Her redemption was the very masterpiece of Christ's redeeming wisdom.—"*Immaculate Conception," William Bernard Ullathorne, p. 89; quoted in Truth (R. C.), December, 1914.*



**Immaculate Conception,** SOME OBJECTIONS TO THE DOCTRINE OF.— (1) The doctrine contradicts the express Biblical teaching of "Christ alone without sin," and the teaching of antiquity for eleven centuries. (2) It supposes the creation of one *sui generis*, neither strictly human nor divine. (3) It interferes with the reality of the incarnation, since by this doctrine Christ did not partake of that human nature which he came to redeem. (4) It takes away from Christ's glory in the miracle of the incarnation by conferring a portion of it upon Mary. (5) It is the climax of a monstrous doctrine which ought to have been nipped in the bud — a doctrine which attributes to Mary a more perfect love and sympathy towards sinners than to Christ, with a more accessible and powerful mediation than that of the Son of God, and indirectly aims at exalting Mary to an equality with the incarnate Son of the Highest.— "*Modern Romanism Examined," Rev. H. W. Dearden, M. A., pp. 240, 241. London: James Nisbet & Co., 1899.*

**Immaculate Conception.**— *See* Infallibility, 249, 250.

**Immortality.**—*See* Nature of Man.

**Increase of Knowledge,** STUDY OF PROPHECY AS TIME OF END APPROACHED.— But I may say, that I did not out of choice apply myself to the study of the prophecies: I found myself forced to it by a kind of violence, which I could not resist.

Two things led me to it: 1. The cruel and horrible persecution [revival of persecution in France, preceding Revocation of the Edict of Nantes.— EDS.], which at this day makes such terrible ravage and desolation in the church: endeavoring some consolation under the deepest sorrow I ever felt, by searching into the grounds, we may have to hope for a speedy deliverance of the church, and not finding them other where, I inquired after them in the prophecies, which foretell the destiny of the church, and the most remarkable changes through which she is to pass.—"*The Accomplishment of the Scripture Prophecies," Peter Jurieu, "Advice," pp. 6, 7. London, 1687.*

**Increase of Knowledge,** SIR ISAAC NEWTON ON.— But in the very end, the prophecy should be so far interpreted as to convince many. Then, saith Daniel, many shall run to and fro, and knowledge shall be increased. For the gospel must be preached in all nations before the great tribulation, and end of the world. . . . An angel must fly through the midst of heaven with the everlasting gospel to preach to all nations, before Babylon falls, and the Son of man reaps his harvest. The two prophets must ascend up to heaven in a cloud, before the kingdoms of this world become the kingdoms of Christ. 'Tis therefore a part of this prophecy, that it should not be understood before the last age of

the world; and therefore it makes for the credit of the prophecy, that it is not yet understood. But if the last age, the age of opening these things, be now approaching, as by the great successes of late interpreters it seems to be, we have more encouragement than ever to look into these things. If the general preaching of the gospel be approaching, it is to us and our posterity that those words mainly belong: "In the time of the end the wise shall understand, but none of the wicked shall understand." Dan. 12: 4, 10. "Blessed is he that readeth, and they that hear the words of this prophecy, and keep those things which are written therein." Apoc. 1: 3.—"*Observations upon the Prophecies of Daniel and the Apocalypse of St. John,*" *Sir Isaac Newton, part 2, chap. 1, pp. 250, 251. London: J. Darby and T. Browne, 1733.*

**Increase of Knowledge,** EVENTS OF FRENCH REVOLUTION LEAD TO PROPHETIC STUDY.— The prophecies respecting the downfall of the anti-Christian usurpations, must have their accomplishment in some era; it may be the present. It is therefore surely worth our while to inquire how far the predictions of God's Word will agree with the rise and progress of known events.

Thus it has appeared to me, and the more I examine and think upon the subject, the more I am convinced that the last days spoken of by God's servants the prophets, are fast approaching.—"*The Signs of the Times, or the Overthrow of the Papal Tyranny in France,*" *J. Bicheno, M. A., p. 9. London: J. Adlard, 1808.*

But the consequences of this terrible convulsion to the church were most important and beneficial. She was thereby shaken out of the sloth which had crept over her; was driven in her terror to the Scriptures, her only anchor and pole-star; and found, to her joy, that they were no longer a sealed book, but that the mystery of God was drawing to its close, and that the events of every year explained something previously unknown. Multitudes, no doubt, thus strengthened their faith, who have never published the results; but many did immediately publish, and the sudden perspicuity of interpretation is very observable.— *The Morning Watch, or Quarterly Journal on Prophecy, December, 1829, Vol. I, p. 540. London: James Nisbet, 1830.*

**Increase of Knowledge,** UNSEALING THE BOOK OF PROPHECY.— The wonderful events which have taken place since the year 1792, have so much increased the number of facts forming prophetic data, as to have introduced a new era for prophetic history; and writers of the present day, in their attempts to elucidate the prophecies, possess advantages very superior to those enjoyed by their predecessors.—"*Combined View of the Prophecies of Daniel, Esdras, and St. John,*" *James Hatley Frère, Esq., p. 2. London, 1815.*

**Increase of Knowledge,** JOHN WESLEY ON PROPHECIES ABOUT TO BE FULFILLED.— Happy is he that readeth, and they that hear the words of this prophecy." Some have miserably handled this book. Hence others are afraid to touch it. And while they desire to know all things else, reject only the knowledge of those which God hath shown. They inquire after anything rather than this: as if it were written, Happy is he that doth not read this prophecy. Nay, but happy is he that readeth, and they that hear and keep the words thereof: especially at this time, when so considerable a part of them is on the point of being fulfilled. —"*Explanatory Notes on the New Testament,*" *John Wesley, on Rev. 1:3. Philadelphia: John Dickens, 1791.*



**Increase of Knowledge,** THE KNOWLEDGE OF SALVATION.—"Many shall run to and fro," hither and thither, like couriers in the time of war, and "knowledge shall be increased:" knowledge of the most important kind, the knowledge of God's salvation. Then, those who are wise themselves, shall endeavor to enlighten others; to "turn them from darkness to light," and from sin to righteousness.—"*The Cottage Bible,*" *Thomas Williams's note on Daniel 12:1-13 (Vol. II, p. 937). Hartford: Case, Tiffany & Co., 1853.*

**Increase of Knowledge,** SIR ISAAC NEWTON ON OPENING OF PROPHECIES.— Amongst the interpreters of the last age there is scarce one of note who hath not made some discovery worth knowing; and thence I seem to gather that God is about opening these mysteries. The success of others put me upon considering it; and if I have done anything which may be useful to following writers, I have my design.—"*Observations upon the Prophecies of Daniel and the Apocalypse of St. John,*" *Sir Isaac Newton, part 2, chap. 1, p. 253. London: J. Darby and T. Browne, 1733.*

**Increase of Knowledge,** ACCOMPANIED BY WORLD TRAVEL.— The natural meaning [of the phrase, "many shall run to and fro." Dan. 12: 4. — EDS.] must be upheld, i. e., wandering to and fro.—"*Daniel and Its Critics,*" *Rev. Charles H. H. Wright, D. D., p. 209. London: Williams and Norgate, 1906.*

Why should not that expression be used in the sense in which it is employed in Jeremiah 5: 1, namely, of rapid movement hither and thither? — "*Daniel and His Prophecies,*" *Rev. Charles H. H. Wright, D. D., p. 321. London: Williams and Norgate, 1906.*

**Increase of Knowledge,** SPIRIT ANIMATING COLUMBUS.— In the execution of my enterprise to the Indies, human reason, mathematics, and maps of the world have served me nothing. It has accomplished simply that which the prophet Isaiah had predicted,— that before the end of the world all the prophecies should have their accomplishment. — *Christopher Columbus, quoted in "Examen Critique," A. von Humboldt, Vol. I, pp. 15-19; cited in "The Reign of Christ on Earth," Daniel T. Taylor, p. 294. Boston: Scriptural Tract Repository, 1882.*

In a letter to his sovereign, dated Jamaica, July 7, 1503, Columbus, after saying he must hasten and finish up his work of divine inspiration, namely, the opening up of the whole earth to the spread of Christianity preparatory to the coming of the Lord, added as follows: "According to my calculations there remain now to the end of the world but one hundred and fifty years!" How very striking it is that the great discoverer of the earth's Western Hemisphere should have been impelled to his task and have enthusiastically performed it all under a deep and solemn conviction of the fast approaching, and, we may say, the actual imminence of the Great Consummation.— *Id. (Taylor), p. 295.*

**Increase of Knowledge,** ERA LONG FORESEEN.— Nor should the prophecy of Daniel be forgotten, touching the last ages of the world: "Many shall go to and fro, and knowledge shall be increased;" clearly intimating that the thorough passage of the world (which now by so many distant voyages seems to be accomplished, or in course of accomplishment), and the advancement of the sciences, are destined by fate, that is, by divine Providence, to meet in the same age.—"*Novum*

*Organum," Francis Bacon (died, 1626), book 1, p. xciii; in Bacon's Works, Vol. IV, p. 92. Spedding and Ellis.*

**Increase of Knowledge,** JURIEU, ON INVENTION OF SEA COMPASS.— Why did God reserve the invention of the sea compass to these last times? wby was it not known three or four hundred years ago, what it was to sail upon the ocean far from the shore? was there less curiosity, covetousness, or industry among men formerly than now? for what reason would God that one half of the world should live in ignorance of the other for so long a time? Why hath God in these latter days more visibly favored the designs which men have always had, to enrich themselves by commerce and trade, going in pursuit of riches to the end of the world? For my own part, I cannot but look upon this as a work of a most wise Providence, discovering to us unknown people, whose conversion he intends to bring about within a short time.— *"The Accomplishment of the Scripture Prophecies," Peter Jurieu, "Advice," p. 13. London, 1687.*

**Increase of Knowledge,** ALL LANDS NOW EXPLORED.— The same task [the penetration of every unknown tract, to which eighteenth-century explorers set themselves.— EDS.] has occupied modern explorers, who pride themselves on not passing over in their surveys the smallest corner of the earth, or the tiniest islet. With a similar enthusiasm are imbued the intrepid navigators who penetrate the ice-bound solitudes of the two poles, and tear away the last fragments of the veil which has so long hidden from us the extremities of the globe.

All then is now known, classed, catalogued, and labeled! Will the results of so much toil be buried in some carefully laid down atlas, to be sought only by professional savants? No! it is reserved to our use, and to develop the resources of the globe, conquered for us by our fathers at the cost of so much danger and fatigue. Our heritage is too grand to be relinquished. We have at our command all the facilities of modern science for surveying, clearing, and working our property. No more lands lying fallow, no more impassable deserts, no more useless streams, no more unfathomable seas, no more inaccessible mountains! We suppress the obstacles nature throws in our way. The isthmuses of Panama and Suez are in our way; we cut through them.— *"Great Explorers of the Nineteenth Century," Jules Verne, p. 378.*

**Increase of Knowledge,** TRAVEL AND SPREAD OF INFORMATION.— One very remarkable feature of this Day of God defies adequate description. We might call it acceleration, concentration, condensation; but there is no fit word for it. Centuries are practically crowded into years, and years into days. Travel is so rapid that what would have taken months, one hundred years ago, is now easily accomplished in weeks, perhaps in days. We keep in touch, day by day, with the whole world, so that, in the morning papers, we read the news from Japan and China, India and Africa as naturally as from London and Dublin, New York and Chicago. So much can be done, in a brief space of time, and over a vast space of territory, that practically time and space are annihilated, and nothing seems any longer impossible to human achievement. The last fifty years have brought to the race an absolutely new era and epoch, abundant illustrations of which it would be easy to adduce.— *"The Modern Mission Century," Arthur T. Pierson, D. D., p. 44. New York: The Baker and Taylor Company, 1901.*

**Increase of Knowledge,** SPREAD OF GEOGRAPHICAL STUDY.— The first [geographical society] was founded at Paris in 1821, the second at Berlin in 1828, and the third, which is now the most influential, at



London in 1830. The largest is the National Geographic Society at Washington, which had 30,000 members in 1908. There were in 1901 no less than 89 active geographical societies in Europe, with more than 60,000 members, 6 in Asia, 8 in North America, 5 in South America, 3 in Africa, and 4 in Australia,— 115 altogether. There are also more than 150 different geographical journals or magazines published regularly in all parts of the world. It may safely be said that this argues a more widespread interest in geography than exists in any other science.— *"International Geography," H. R. Mill, p. 12. New York: D. Appleton & Co., 1909.*

**Increase of Knowledge,** "THE CENTURY OF WONDERS."— The nineteenth century is conceded to be a century of wonders. Judged by human progress along the highway of scientific discovery and invention, and by the general widening out of the horizon of human knowledge, it is not only unsurpassed, but it leaves all previous centuries far behind. Mr. Gladstone thought that a single decade of years might be found, within its limits, during which the race had advanced farther than during five hundred decades preceding. This estimate is probably not an exaggeration; but, if so, what must be true of the whole century!

The catalogue of its achievements is both long and lustrous. In modes of travel, it has given us the railway and steamship, and come near to aerial navigation [now achieved]; in labor-saving machinery, it has invaded every department of handiwork; in transmission of thought and intelligence, it has bequeathed us the telegraph, ocean cable, and telephone, and, last of all, wireless telegraphy; in the department of fire and light, the lucifer match, gas, and electricity; in the new application of light, photography, the Röntgen ray, and the miracle of spectrum analysis; in the department of physics, the conservation of energy and the molecular theory of gases, and solidified air; in the application of physical principles, the velocity of light, and the phonograph; it has demonstrated the "importance of dust" and the "ethics of dust," and unveiled great mysteries of chemistry; it has multiplied the elemental substances by the score; in astronomy, unveiled new worlds; . . . in physiology, this last century gave us the cell theory and the germ theory; in medicine and surgery, anesthetics and antiseptics; . . . it has improved prison discipline, revolutionized the treatment of lunatics, introduced aniline dyes, and given us a new set of explosives; it has carried on investigation in anthropology and archeology, and has explored land and sea until the secrets of ages have been unlocked.— *"The Modern Mission Century," Arthur T. Pierson, D. D., pp. 41, 42. New York: The Baker and Taylor Company, 1901.*

**Increase of Knowledge,** THE STEAMSHIP COMES AT A PROVIDENTIAL HOUR.— There was one other force which was needed to fully equip the church for its universal activity, and to draw the nations of the world together into a net, as the peoples of old had been drawn into the Greco-Roman Empire. That was the power of steam, which was to bind the lands together with bands of steel, turn the oceans into a Mediterranean, make the locomotive an emissary of God's kingdom, and the steamer a morning star to herald the day. That invention was not ready to begin its task of annihilating space until the dawn of the nineteenth century. But it was ready in time, for not until then was the purified church itself roused to a fidelity grand enough to undertake the work for which God had been preparing this equipment. It was in 1807, while the young men at Williamstown [Massachusetts] were praying and studying about missions, that Robert Fulton was making the first trip of the "Clermont" from New York to Albany.— *"Introduction to Foreign Missions," Dr. Edward Lawrence, p. 20.*

**Increase of Knowledge,** WHEN TRANSATLANTIC STEAMSHIPS WERE COUNTED IMPOSSIBLE.— As to the project, however, which was announced in the newspapers, of making the voyage directly from New York to Liverpool [under steam alone], it was, he had no hesitation in saying, perfectly chimerical, and they might as well talk of making a voyage from New York or Liverpool to the moon.— *Report of Lecture by Dr. Lardner, quoted in Liverpool Albion, Dec. 14, 1835.*

**Increase of Knowledge,** FULTON'S FIRST STEAMSHIP, 1807.— Fulton's biographer [Dyer] describes the trial: "Before the boat had made the progress of a quarter of a mile, the greatest unbeliever was converted, and Fulton was received with shouts and acclamations of congratulation and applause. The vessel, 'Clermont,' made her first voyage from New York to Albany, 140 miles, at the average rate of five miles an hour; stopping some time at Clermont to take in water and coals.

"The whole progress up the Hudson was a continual triumph. The vessel is described as having the most terrific appearance. The dry pine-wood fuel sent up many feet above the flue a column of ignited vapor, and, when the fire was stirred, tremendous showers of sparks. The wind and tide were adverse to them, but the crowds saw with astonishment the vessel rapidly coming towards them; and when it came so near that the noise of the machinery and paddles was heard, the crew, in some instances, shrunk beneath their decks from the terrific sight; while others prostrated themselves, and besought Providence to protect them from the approach of the horrible monster, which was marching on the tide, and lighting its path by the fire that it vomited."

Mr. Dyer had sailed in the "Clermont," and remembers the sensation created by her appearance, and the high admiration bestowed on the projector of so great an enterprise. That sensation in 1807 was precisely the same as the "Margery" created among the vessels on the Thames in 1815. In 1816, the Marquis de Jauffroy complained that the "Fulton" steamboat on the Seine had taken the "paddle wheels" invented by him and used at Lyons thirty-four years before, but also abandoned by him. To this charge Mons. Royou replied in the *Journal des Debats*, thus: "It is not concerning an invention, but the means of applying a power already known. Fulton never pretended to be an inventor with regard to steamboats in any other sense. The application of steam to navigation had been thought of by all artists, but the means of applying it were wanting, and Fulton furnished them." The "Fulton," of 327 tons, was built in 1813, and the first steamer for harbor defense, was built under Fulton's direction, 2,740 tons, launched in 1814.—"*Wonderful Inventions*," *John Timbs, p. 258. London, 1868.*

**Increase of Knowledge,** BEGINNING OF STEAMSHIPS IN BRITAIN.— [Symington, in England, had preceded Fulton in steamship building, but his scheme was frowned down. Some objected that the river and and canal banks would be washed away by the stirring of the waters. After Fulton's success, Dyer revived the matter in England.— EDS.]

"We don't doubt the success of steamboats in the wide rivers and harbors of America [said the engineers], but in our comparatively small rivers and crowded harbors they will never answer." Even such scientific engineers as John Rennie and Peter Ewart, both advised Dyer to relinquish the attempt to introduce steamboats, as sure to prove a waste of time and money to no purpose. However, when conviction came over the public mind that steam navigation would answer here — but not until after more than 5,000 tons of steamboats had been launched on the Hudson in 1816, did it so come — then began the spread



of steam navigation, since extended with such marvelous rapidity and perfection as to atone for the sluggish beginning.

The success of these enterprises was not likely to pass unnoticed by the shipowners and builders of the greatest port in the world; and we find that in 1814, a steamboat was employed between London and Richmond. George Dodd, son of Ralph Dodd, the well-known engineer, from 1814 to 1828, had more to do with establishing steamboats on the Thames than any other individual. He it was who started the Richmond packet, in 1814 — the first steamboat which succeeded in *plying for hire* on the Thames. He had to contend against the Watermen's Company, who for a long time succeeded in preventing any steamboat plying for hire unless navigated by free watermen. The "Richmond" was not, however, the first steamboat *seen* on the Thames. Sir I. M. Brunel, as may be read in his "Life" by Beamish, made a voyage to Margate in a boat of his own, propelled by a double-acting engine, and met with such opposition and abuse that the landlord of the hotel where he stopped, refused him a bed! — *Id., p. 261.*

**Increase of Knowledge,** ESTABLISHMENT OF TRANSATLANTIC STEAMSHIP SERVICE.— What may be the ultimate fate of this excitement [arrival of steamships "Sirius" and "Great Western" in New York, from England] — whether or not the expense of equipment and fuel will admit of the employment of these vessels in the ordinary packet service — we cannot pretend to form an opinion; but of the entire feasibility of the passage of the Atlantic by steam, as far as regards safety, comfort, and dispatch, even in the roughest and most boisterous weather, the most skeptical must now cease to doubt.— *New York Courier and Enquirer, April 24, 1838.*

**Increase of Knowledge,** PROGRESS IN STEAMSHIPS.— It is a far cry from the year 1838, when the steam conquest of the ocean was achieved definitely and commercially, to 1912. Yet in these seventy-four years progress has been marked. The pioneer liner "Sirius" [from England to New York, 1838] was driven by paddle wheels, and with the collective energy of three hundred twenty horses resolved into harnessed steam, her engines were able to give her an average speed of seven and a half knots — eight and three-fourths miles — per hour. At the time, this was considered an amazing engineering achievement, but it pales into insignificance when ranged beside the pace of the crack liners of today. . . . They travel three and a half times faster than did the "Sirius," but their engines are more than two hundred times as powerful in order to cross the North Atlantic in a quarter of the time occupied by the little vessel which led the way. This comparison offers a graphic idea of the enormous strides that have been made by the marine engineer in the space of three quarters of a century.—"*Steamship Conquest of the World*," *F. A. Talbot.**

**Increase of Knowledge,** TRANSPORTATION CHANGES IN NINETEENTH CENTURY.— From the earliest historic and even in prehistoric times till the construction of our great railways in the second quarter of the present century [the nineteenth], there had been absolutely no change in the methods of human locomotion.—"*The Wonderful Century*," *Prof. Alfred Russel Wallace, p. 7.*

**Increase of Knowledge,** THE FIRST STEAM RAILWAY.— The first public steam railway in the world was formally opened in England, Sept. 27, 1825. The Stockton and Darlington was thirty-eight miles in length. The line was laid with both malleable and cast-iron rails, and cost £250,000. Its opening was attended with great curiosity and ex-

citement. There was to be a competition between various kinds of motive power, horses, stationary engines, and a locomotive being tried. The train consisted of six loaded wagons, a passenger carriage, twenty-one trucks fitted with seats, and six wagons filled with coal. George Stephenson [the builder of it] drove the locomotive. "The signal being given," says a writer of the time, "the engine started off with this immense line of carriages, and such was the velocity that in some parts the speed was frequently twelve miles an hour, and the number of passengers was counted to be 450, which, together with the coals, merchandise, and carriages, would amount to near ninety tons.

"The engine, with its load, arrived at Darlington, traveling the last eight and three quarter miles in sixty-five minutes. The six wagons loaded with coals, intended for Darlington, were then left behind, and obtaining a fresh supply of water, and arranging the procession to accommodate a band of music and numerous passengers from Darlington, the engine set off again, and arrived at Stockton in three hours and seven minutes, including stoppages, the distance being nearly twelve miles."

The passenger coaches, with their rough, uncomfortable seats, were in great contrast to the plainest passenger cars of today, but people crowded the "wagons" with feelings of mingled curiosity, delight, suspense, and fear, and there were six hundred persons on the train when it returned to Darlington.

In 1829 the Stephensons invented the steam blast, which, continually feeding the flame with a fresh supply of oxygen, enabled the "Rocket," their prize engine, to make steam enough to draw ten passenger cars, at the rate of ten miles an hour.

In 1830 the Liverpool and Manchester Railway was opened in spite of bitter opposition from landowners and canal companies, who sought in every way to prevent the building of the road. The surveyor and his assistants were attacked with guns and pitchforks and sticks.—"*The World's History and Its Makers: Achievements of the Nineteenth Century.*" *

**Increase of Knowledge,** First Railway Expectations.— In 1825, Mr. Nicholas Wood, in his work on railways, took the standard at six miles an hour, drawing forty tons on a level; and so confident was he that he had gauged the power of the locomotive, that he said: "Nothing could do more harm towards the adoption of railways than the promulgation of such nonsense, as that we shall see locomotive engines traveling at the rate of twelve, sixteen, eighteen, and twenty miles an hour." . . .

[The London] *Quarterly Review* gravely observed: "As to those persons who speculate on the making of railroads generally throughout the kingdom, and superseding all the canals, all the wagons, mail and stage coaches, postchaises, and in short every other mode of conveyance by land and by water, we deem them and their visionary schemes unworthy of notice.—"*Wonderful Inventions,*" *John Timbs, p. 297. London, 1868.*

**Increase of Knowledge,** When Railways Were Counted Impossible.— Henry Meigs, a member of the New York Legislature in 1817, a young man of fine talents, lost his influence, ruined his prospects, and came to be regarded as a proper subject for a strait-jacket, because he expressed his belief that steam carriages would be operated successfully on land.—"*When Railroads Were New,*" *C. F. Carter, p. 8.*

**Increase of Knowledge,** When Railways Were New in France.— The council of ministers, on being acquainted with His Majesty's project



[to go by rail from Paris to Rouen, 1843], held a sitting, and came to the conclusion that this mode of traveling by railway was not sufficiently secure to admit of its being used by the king, and consequently His Majesty went to Bizy with post horses.—"*Railways of England,*" *William Acworth, p. 19.*

**Increase of Knowledge,** A Massachusetts Town Avoiding a Railway.— Dorchester, Mass., in a town meeting assembled in 1842, instructed its representatives in the legislature to use their utmost endeavors to prevent, if possible, so great a calamity to our town as must be the location of any railroad through it.—"*When Railroads Were New,*" *C. F. Carter, p. 11.*

**Increase of Knowledge,** First Railway Office in New York City. — Cornelius Vanderbilt opened a railway office on Manhattan Island in 1844, and that was the beginning of the railway methods that have grown into such enormous proportions on the island today, with ninety-six railway corporations and all of their direct and indirect interests represented here. All of this means the interests of 280,000 miles of railway.— *New York Herald, Jan. 22, 1911.*

**Increase of Knowledge,** Growth of Railways in United States.— The American railway system has grown as follows:

| | Miles | | Miles |
|---|---|---|---|
| 1850 | 9,021 | 1890 | 167,191 |
| 1860 | 30,626 | 1900 | 198,964 |
| 1870 | 52,922 | 1910 | 249,992 |
| 1880 | 93,267 | | |

The United States have the most wonderful system of railways. Their mileage is far greater than that of all Europe, which in 1910 had only 207,432 miles of railway. . . . The great republic possesses forty per cent of the railway mileage of the world.— *J. Ellis Barker, in the Nineteenth Century and After, London, May, 1918, pp. 941, 942.*

**Increase of Knowledge,** Railway Crossing of Australian Continent.— At 428 miles from Augusta the route [of the railway connecting Western Australia with South Australia, completed in 1918] debouches suddenly on to the famous "Nullarbor," an absolutely level and treeless plain — a plain as big as France, averaging 600 feet above the sea level. . . . For 330 miles on the "Nullarbor" the line runs without a curve — the longest tangent in the world. There is no surface water, but an extensive boring is producing fresh water in large quantities. . . . It renders possible one of the longest railway runs in the world. From Tropical Townsville, sheltered behind the barrier Reef, the traveler may soon run by way of Brisbane, Sydney, Melbourne, and Adelaide, to Perth, on the surf-beaten shores of the Indian Ocean — a run of 4,000 miles. He may do this in the running time of 150 hours. —"*Engineering,*" *London; reprinted in Literary Digest, New York, May 18, 1918.*

**Increase of Knowledge,** Birth of Modern Postal System, of 1839-1843.— Coleridge, when a young man, was walking through the lake district, when he one day saw the postman deliver a letter to a woman at a cottage door. The woman turned it over and examined it, and then returned it, saying she could not pay the postage, which was a shilling. Hearing that the letter was from her brother, Coleridge paid the postage in spite of the manifest unwillingness of the woman. As soon as

the postman was out of sight, she showed Coleridge how his money had been wasted, as far as she was concerned. The sheet was blank. There was an agreement between her brother and herself that as long as all went well with him, he should send a blank sheet in this way once a quarter; and she thus had tidings of him without expense of postage. Most persons would have remembered this incident as a curious story to tell; but there was one mind which wakened up at once to a sense of the significance of the fact. It struck Mr. Rowland Hill that there must be something wrong in a system which drove a brother and sister to cheating, in order to gratify their desire to hear of one another's welfare.—"*A Short History of Our Own Times*," *Justin McCarthy, pp. 10, 11. London: Chatto and Windus, 1904.*

**Increase of Knowledge,** COMING OF THE ELECTRIC TELEGRAPH.— It is a somewhat curious coincidence that in the year [1837] when Professor Wheatstone and Mr. Cooke took out their first patent "for improvements in giving signals and sounding alarms in distant places by means of electric currents transmitted through metallic circuit," Professor Morse, the American electrician, applied to Congress for aid in the construction and carrying on of a small electric telegraph to convey messages a short distance, and made the application without success. In the following year he came to this country [England] to obtain a patent for his invention; but he was refused. He had come too late. Our own countrymen were beforehand with him.—*Id., p. 9.*

**Increase of Knowledge,** FIRST LONG-DISTANCE ESTABLISHMENT OF TELEGRAPH, 1844.— The system is daily extending. It was, however, in the United States of America that it was first adopted on a great scale, by Professor Morse, in 1844, and it is there that it is now already developing most extensively.—*Speech in 1847 by Sir Robert Inglis, President of the British Association; quoted in "Lives of the Electricians," W. F. Jeans, p. 285. London.*

**Increase of Knowledge,** MORSE ON THE TELEGRAPH AS A GIFT OF PROVIDENCE.— If not a sparrow falls to the ground without a definite purpose in the plans of Infinite Wisdom, can the creation of an instrument so vitally affecting the interests of the whole human race have an origin less humble than the Father of every good and perfect gift? I am sure I have the sympathy of such an assembly as is here gathered together, if in all humility, and in the sincerity of a grateful heart, I use the words of Inspiration in ascribing honor and praise to Him to whom first of all and most of all it is pre-eminently due. "Not unto us, not unto us, but to God be all the glory"— not, What hath man, but, "What hath God wrought!" [the words of the first long-distance message, sent by Morse from Washington to Baltimore, May, 1844.— EDS.] —*Prof. S. F. B. Morse, in speech, Dec. 31, 1868; quoted in "Lives of the Electricians," W. F. Jeans, p. 315. London.*

**Increase of Knowledge,** TELEPHONY.— Long-distance transmission from coast to coast by metallic circuits has been successfully accomplished during past year. By the use of well-known and commercially practicable apparatus, the human voice may now be clearly transmitted over the span of 3,400 miles between New York and San Francisco. This transcontinental line is now in regular commercial use, and already the traffic over it has reached sufficient proportions to justify the expense involved.— *The American Year Book, 1915, edited by Francis G. Wickware, B. A., B. Sc., p. 560. New York: D. Appleton & Company, 1916.*



**Increase of Knowledge,** WIRELESS TELEPHONY.— In September, 1915, the human voice was carried by wireless transmission from Arlington, Va., near Washington, to Honolulu, a distance of 4,900 miles. Two weeks later words spoken at Arlington were received by the station on the Eiffel Tower in Paris. Since the first successful transmission, messages have been sent from Arlington to Mare Island, San Diego, Darien, and Paris.—*Id., p. 561.*

**Increase of Knowledge,** MODERN INVENTIONS COUNTED GOSPEL AGENCIES.— The development of scientific invention in the past hundred years is sufficient to bewilder the careful thinker. He feels almost like Alice in Wonderland. It is said that when the battle of Waterloo was fought, in 1815, all haste delivered the thrilling dispatches in London three days later. How does that appear in contrast with wireless telegraphy and wireless telephony? All the world is now becoming a vast whispering gallery.

The *Watchman and Examiner*, in a July issue, refers to three events which it calls modern marvels. The first is the Institute of American Electrical Engineers' simultaneous convention in Boston, New York, Philadelphia, Atlanta, Chicago, Salt Lake City, and San Francisco. Telephone connection was made so that speakers in each city were perfectly heard by the members of the Institute in all the other cities named. At the close, each city furnished a song. Atlanta's song was "Way Down South in Dixie," other cities furnished other songs, while Philadelphia closed with "The Star Spangled Banner." When the first notes of this last song were heard, the president of the Institute asked all to stand, and the five thousand men composing the Institute in the seven cities stood loyally while this national song was being sung. The song was heard in the different places, and also the applause at the close. The second wonder was the sending of two thousand words from Nauen, Germany, to Long Island by wireless telegraphy, beating the cable message of the German government by over seven hours. The third of these remarkable events was the hearing of the human voice at the wireless telephone in New York City, by an operator in Honolulu.

Such astonishing facts are suggestive of the greatness of the world's future. God is developing these agencies for the welfare of the human race, and the progress of his kingdom in this world. They are intended to be conveyors of his truth. Satan is quick to employ new inventions in his work, and he uses them most effectively; but they are also channels for the work of the kingdom. God wants his people to control them in his service; and the day is coming when they will. These things are developments in the providence of God, and foretokens of a far greater era of spirituality for this world than it has ever seen.— *The Christian Statesman, Pittsburgh, Pa., August-September, 1916.*

**Increase of Knowledge,** A LIFETIME'S MEASUREMENT.— There ought to be no reluctance of imagination. No dream should be too bold to be dreamed by inhabitants of a world which has passed through the marvels of the last half-century. Lord Avebury, writing for the New York *Times* the other day, remarked: "Though not eighty, I am older than any railway company in the world, any gas company, any steamboat company, any telegraph, telephone, or electric light company."

One need only ponder these words — pondering is required before it is possible to realize that they can be true — to get a sense of the world of yesterday. No electric light, no telephone — any man of forty can remember that he lived in that world, but nobody can quite remember what it was like. Fifty years ago all Africa, except its coast,

was a blank on the map; Asia was a dwelling place of mystery; Japan was unborn; United Italy had no existence, and the German Empire was still a dream. Transportation was primitive; business was done on the basis of the country store; the feats of modern engineering were unattempted; electricity was an interesting toy; machinery had only begun its revolutionizing services. Ex-president Eliot's saying — that the world has been practically remade in the last half century — is a moderate and truthful statement.— *The World's Work, New York.**

**Increase of Knowledge,** THE RISE OF MODERN MISSIONS.— The closing years of the eighteenth century constitute in the history of Protestant missions an epoch indeed, since they witnessed nothing less than a revolution, a renaissance, an effectual and manifold ending of the old, a substantial inauguration of the new. It was then that for the first time since the apostolic period, occurred an outburst of general missionary zeal and activity. Beginning in Great Britain, it soon spread to the Continent and across the Atlantic. It was no mere push of fervor, but a mighty tide set in, which from that day to this has been steadily rising and spreading.—"*A Hundred Years of Missions,*" *Rev. Delevan L. Leonard, p. 69. New York: Funk and Wagnalls Company, 1895.*

**Increase of Knowledge,** EUROPE'S MESSAGE TO BRITAIN ON BIRTH OF MODERN MISSIONS.— It is like the dawn promising the beautiful day after the dark night. It is the beginning of a new epoch for the kingdom of God on earth. Your undertaking and its success fills our hearts with joy and our eyes with tears. The history of Great Britain is sanctified by this unparalleled mission. What harmony among different persuasions! You call on the wise and good of every nation to take interest in the work and bear a part. Such a call was never heard of before. It was reserved for the close of the eighteenth century to be distinguished by it.— *Message of Basle (Switzerland) Believers, days of 1796-98; cited in "A Hundred Years of Missions," p. 91.*

**Increase of Knowledge,** WM. CAREY'S PIONEER MISSIONARY SOCIETY. — Carey's Baptist society [1792], which originated in his brain, was the model for the scores and hundreds which followed after. Thus was ushered in the happy day of voluntary societies, organizations sustained by such as are interested in the promotion of the objects sought.

And the year of grace 1792 is *annus mirabilis,* the famous date from which to reckon backward and forward. Well may it stand side by side with 44 A. D., when the Holy Ghost said, "Separate me Barnabas and Saul for the work whereunto I have called them; " or 53 A. D., when in vision Paul was bidden to lay the foundations of the gospel in Europe. Whatever has been accomplished since can be traced to forces which began to operate a hundred years ago.—"*A Hundred Years of Missions,*" *Rev. Delevan L. Leonard, p. 70. New York: Funk and Wagnalls Company, 1895.*

**Increase of Knowledge,** THE HOUR AT HAND, DELAY IMPOSSIBLE.— Even Andrew Fuller, in 1787, replied to Carey's urgency for immediate action: "If the Lord should make windows in heaven, then might this thing be." The fact, published by his contemporaries in 1793, and verified by all the history since, is thus expressed by Dr. Ryland, another unbeliever in immediate duty, like Fuller: "I believe God himself infused into the mind of Carey that solicitude for the salvation of the heathen which cannot be fairly traced to any other source."—"*Short History of Christian Missions,*" *George Smith, LL. D., F. R. G. S., p. 160, revised edition. Edinburgh: T. & T. Clark.*



**Increase of Knowledge,** ORIGIN OF THE IDEA OF BIBLE SOCIETIES.— [Mary Jones, Welsh girl, walked twenty-five miles with six years' savings to buy a Welsh Bible — only to find that Mr. Thomas Charles, minister, had no copies save a few spoken for, and knew not how to get further copies.— EDS.] Poor Mary! When she heard this answer, her disappointment was so great that she burst into tears, and sobbed as if her heart would break. Mr. Charles was deeply moved, and tears filled his eyes, partly in sorrow for his country, where the Word of God was so scarce, and partly in pity for Mary. He could not bear that she should return home in grief and disappointment. "You *shall* have a Bible," he said, and he gave her one of the reserved copies. Mary's tears were now tears of joy as she paid for her treasure. "Well, David Edward," said Mr. Charles, turning to the elder, who had been weeping too, "is not this very sad — that there should be such a scarcity of Bibles in the country, and that this poor child should have walked some twenty-eight or thirty miles to get a copy? If something can be done to alter this state of things, I will not rest till it is accomplished."—"*Little Hands and God's Book,*" *William Canton, p. 22. London: The Bible House.*

**Increase of Knowledge,** DIARY RECORDING BIRTH OF BRITISH BIBLE SOCIETY.— March 7, 1804. Memorable day! The British and Foreign Bible Society founded. I and others belonging to the tract society had long had it in view; and after much preparation, in which we did not publicly appear, a meeting was called in the London Tavern, and the society began with a very few. . . . Nations unborn will have cause to bless God for the meeting of this day.— *Entry in George Burder's Diary, quoted in British and Foreign Bible Society's Centenary Report, "After a Hundred Years," p. 2.*

**Increase of Knowledge,** WONDERFUL DEVELOPMENT OF THE PRINTING PRESS.— If the spirit of the man [Gutenberg] who invented printing from movable type could animate his striking statue outside the big Hoe building [New York] and step down from his pedestal, how he would marvel at the triumphs of his beloved art at the dawn of the twentieth century!

R. Hoe & Co. have just completed the construction of the largest printing press in the world. . . . It is a double octuple press, and so called, but in reality is much more than this, inasmuch as it combines the ability to do printing in colors as well as in black. . . . Altogether there are 18 plate cylinders in the machine, each carrying eight plates the size of a newspaper page. . . .

The full capacity of the machine, when printing all black, on eight rolls, is equivalent to 300,000 four-, six-, or eight-page papers per hour.

The maximum product of the machine when running as a color press is 50,000 twenty-four-page papers per hour, with two outside pages printed in three colors and black; the other pages in black only. Papers with any number of pages from four to twenty-four, with four colors and black on the outside pages, the other pages in black only, can be obtained at a speed of 50,000 to 100,000 per hour. . . . Running at a speed of 300 revolutions per minute of the cylinders and using eight rolls of paper, the consumption of paper will be at the rate of 108 miles an hour, six feet wide, or 216 miles an hour three feet wide. The weight of this paper would be about eighteen tons.— *Statement to Publishers, from R. Hoe & Co., March 29, 1916.*