

LITTLE BLUE BOOK NO. **1581**  
Edited by E. Haldeman-Julius

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Albert Edward Wiggam

(Reported by George G. Whitehead)

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## ENVIRONMENT vs. HEREDITY

Debate Between Clarence Darrow  
and Albert Edward Wiggam

*Reported by George G. Whitehead*

Why do men differ? Does heredity or environment wield the greatest influence? Clarence Darrow, criminal lawyer, philosopher and agnostic, and Albert Edward Wiggam, author and lecturer, attempted to untangle some of the intricacies of this human enigma in a recent debate at Cleveland's public auditorium. Darrow argued that environment is the chief influence in man's development. Wiggam, whose *The Fruit of the Family Tree* and *New Decalogue of Science* are considered authoritative, emphasized the heredity phase of the discussion. Peter Witt presided as referee and timer.

"Very few persons," contended Darrow, "can trace their greatness to their ancestors. Voltaire probably was the greatest intellect who ever lived on this planet. His father was not even a lawyer. He was a notary.

"Who were the ancestors of Henry Ford and John Rockefeller?" he asked. "Get out your human 'stud-book' (*Who's Who in America*) and tell us. Even I didn't have any ancestors to speak of," he added with a typical chuckle.

"Who were Lincoln's ancestors? A lazy, shiftless ne'er-do-well was his father. His mother was named after a race horse. Where did he get his greatness? It was an infinite thing—chance.

### SPEAKING OF STATESMEN

"What about our so-called 'great statesmen'? What about your Ohio Harding? What about Coolidge? Jonathan Edwards must have sired him. Who were Hoover's ancestors? His father was a blacksmith. And Hoover is the only Englishman ever to be elected president.

"The environment of no two people is alike. Some say the rich man's children are more honest. Well, they don't have to steal. There are poor but honest people, and we have the rich but honest, although not so often.

"There would be no poverty," Darrow told his audience, "if people gave 100th part of the attention to the distribution of wealth that they do to produce it. Prosperity is a myth. The selfishness that results in widespread poverty can be overcome by training, and in no other way.

"Yes, men differ," he continued. "Some are rich: others are intelligent. Some go to jail: others go to Congress. What makes you call

a man 'smart'? That only means that he has been talked about a lot. Was Rockefeller's an inheritance of brains? No, just an inheritance of opportunities—opportunities to develop that negligible brain a child has at birth. Money brings these opportunities.

"Man, at birth, has no knowledge at all. He gains his knowledge from his environment. The potentialities in a man may be governed by heredity, but the actualities are determined by his surroundings. A weak nervous system makes one a drunkard, perhaps, or a poet: a stolid nervous system makes one a hangman, a judge, or even a preacher. Beyond that there is no evidence that heredity has anything to do with the individual. Life is a terrible tragedy all through. The question is not why this is true, but how it may be remedied."

### WARMS UP TO HIS SUBJECT

As he went deeper into this subject, Darrow rammed his left hand further down into his trousers pocket, and used his right hand for appropriate and characteristic gestures. When he had need for greater emphasis than he could achieve with his right hand, he brought his gigantic shoulders into play.

His knowledge of the cause and treatment of crime led him to discuss heredity and environment extensively from that angle. "No heredity can overcome the hardest environment," asserted Darrow. "Tens of thousands of men live in a comparatively easy environment and pass their lives as useful citizens, with no taint of criminality to their names. The same man, under a hard environment, would be found in prison. On the other hand, perhaps most of the inmates of prisons would have lived as respected citizens if their environment had not been so hard.

"One cannot be born a criminal. No man is branded with a 'mark of Cain.' Criminality exists only in reference to environment. Heredity has everything to do with making the human machine strong and capable, or weak and useless; but when the machine is made and thrown on the world in its imperfect shape, environment has everything to do in determining what its fate shall be.

"The fact that an individual's political and religious faith depends almost entirely upon his place of birth and early youth shows the strength of environment in forming and shaping opinions and beliefs." Darrow further maintained that this environmental religion is not

essential to the stability of a nation or race. "If we were born, for instance, in Turkey, we would be Mohammedans; in China we would follow Confucius; in India, Buddha. It is a matter of circumstances or environment.

"The world is full of inequalities. To some men everything is easy, to others everything is hard. There are all kinds of environment—some better and some worse.

"Every human being comes from a single cell, as does every other animal, but the cell that produces a human cannot produce any other kind of animal, although it sometimes produces a very deceptive imitation. The child in the cradle, I grant, is purely the product of heredity. Heredity may also determine the ultimate size of the individual, and may determine the quality of the mind, whatever that may be—I don't pretend to know. But after birth—what then?

### SELECTIVE BREEDING

"Many people measure success in terms of prosperity. Prosperity is something entirely for the prosperous. The masses have none of it. Poverty and crime persist. How can we remedy this? By choosing the parents of the

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children who will compose the next generation, or by furnishing an ideal environment for the children of the parents who choose each other?

"Our scientists have experienced with guinea pigs and such, but I claim man has never laid a hand on any animal without hurting it, from the viewpoint of the animal.

"Selective breeding, if applied to men, would give rise to endless discussion. What ideal could we choose? The fat man? Or the thin one? The tall? The short? If we decided to have only the intelligent, what could we do? Eliminate everybody?

"Would we want clever ones? I think not. Some of us would be better off if we didn't know as much as we do. Selective breeding serves only the selfish purpose of the breeder, without thought of the subject's welfare, but improvement of environment serves to develop the faculties that nature has given the individual. Character and environment determine the destiny of the human machine," concluded the veteran philosopher.

He was given an appreciative ovation that brought a grateful smile of acknowledgment.

### WIGGAM IS INTRODUCED

Albert Edward Wiggam, Darrow's opponent

in the Cleveland skirmish, has made heredity a life-time hobby. He insists that "we can breed the race forward or backward, up or down. We can breed long noses or short noses, straight noses or crooked noses. We can breed people who are lop-eared and lop-sided, mentally and physically. We can breed a race of bald heads, both inside and out."

Among other things, Wiggam insists that intelligent people live longer; bright people are more moral; geniuses have good health; beauty and brains go together; popular notions usually are wrong; the intelligent classes are dying out.

Wiggam, a strange combination of evangelist and scholar—a sort of cross between Billy Sunday and Einstein—burst upon the American public a few years ago with a happy way of talking science. H. L. Mencken referred to Wiggam's book, *The New Decalogue of Science*, as an exhibit of "Methodism in a laboratory apron."

Arguing for heredity, as opposed to environmental influence, Wiggam took the platform, carrying as evidence an armful of books, a sheaf of papers, and an elaborate jigsaw puzzle of lacquered wood.

"From dogs to kings, from rats to college

presidents," began the scientist, "blood always tells. If Roosevelt had been born in Africa, he probably would not have been the Roosevelt he was, but he would have been the 'Buanna Tumbo'—the big hunter, the mighty man with the big stick. You can put good heredity into bad environment and not wreck the heredity, but it is impossible to 'make a silk purse out of a sow's ear.'

"In the Stone Age big men ruled the smaller ones by force of physical strength. As the environment developed and became more complex, the differences between men became more pronounced. What was the cause of that?" he inquired.

### WIGGAM EXHIBITS PUZZLE

At this point Darrow's opponent, a man fifteen years his junior, tall, erect, bespectacled, satisfied the curiosity of the audience by reaching for the blocks of wood which he had laid upon the table promiscuously, when he began.

"This," he said, "is a device used by the General Electric Company to determine a man's mechanical potentialities. If he can assemble these pieces in a given length of time he will almost invariably develop into an able me-

chanic. If he takes longer than the allotted time, he will probably never develop any ability as a mechanic, no matter how long he tries. Frequently this test, applied to two men with equal educations, singles out one or the other by a startling margin. Environment, apparently, had no effect on those men, had it?

"Intelligence is that quality, I think, which enables an individual to get along without education. Education, by the same token, is that which enables a man to get along without using his intelligence. The boy in school who is taught the multiplication table need not rely on his intelligence thereafter to know how much is nine times nine. He knows, from constant drilling, that it is—" Here he turned to Darrow—"whatever it is."

Darrow, who had been chuckling to himself, suggested that it would be 75.

"Exactly," said Wiggam laughing. "The boy knows that it would be 75. Is that, Mr. Darrow, a sample of what environment has done for you?"

"The differences in men are present at birth. They are not brought about by environment. Tests can determine whether a child has musical talent or not. If it has not, it is useless for the child to study music."

## STUDY MADE OF ADOPTED CHILDREN

Wiggam then produced figures compiled at Leland Stanford University in California, for the purpose of determining what effect, if any, environment has on the intelligence of adopted children. The findings, he related, revealed that environment has practically no effect.

"Herbert Hoover, whom Mr. Darrow has mentioned, although I don't recall whether he said Mr. Hoover was intelligent or just president, was not blessed with an ideal environment in his youth. Yet, he seems to have met with considerable success. And Alfred E. Smith, whom I consider a really great man and one whom I know to possess the most remarkable memory for facts and figures ever seen in an official of the state of New York, got his start in a fish stall. What part did environment play in his phenomenal rise?

"You can educate a hen to the best of your ability, but that will have no effect upon her eggs. Did you, Mr. Darrow," he asked, "ever see a really educated egg?

"Are you aware that morality among the children of the wealthy is higher than among the children of the poor? Why is that, do

you think? I think that it is because the wealth of the parents indicates an 'inborn intelligence, and that inborn intelligence has come to the children through heredity.

### CRIME PRODUCT OF STUPIDITY

"Crime, you know, is not the product of intelligence, but of stupidity. I will not admit that I am or anyone else is necessarily the tool of circumstances, the victim of environment, nor yet the child of fortune. I claim that I am and everyone else with native intelligence can be 'the master of my fate, the captain of my soul.'"

Rebutting Darrow's references to some of the world's great, Wiggam asked: "Would Mr. Darrow have us believe that rail-splitting and reading a few books by the light of a wood fire made Lincoln great? He forgets that Nancy Hanks was a highly intelligent woman, and that Lincoln traced his American ancestry to the first families of Virginia.

"If Mr. Darrow is to be believed, then our great political figures today are moulded by the fish markets and the lowly countrysides in which they spent their youth. I maintain that man at his highest represents not a chance

result of environment, but a conquest of environment."

Wiggam stated his conviction that the great mass of the people live and die in poverty for lack of intelligent leadership, and that this lack is due to the fact that ignorance has procreated ignorance for generation after generation.

### CALIFORNIA EXPERIMENT, REVIEWED

Substantiating his eugenic arguments he told of examinations made of 1,000 exceptionally bright children in California. All of the 1,000 were taken from the public schools, but not one came from a lowly laborer's home. And of 62 men in the Hall of Fame, 25 per cent were found to be of the same blood as the 1,000 children.

"In Arizona and New Mexico," he continued, "we find a large number of invalids who have gone there for their health's sake. We find these tubercular strains daily producing more and more tubercular children even in this climate known to be especially inimical to the disease. These children are the results of their heredity. The only way we can breed healthy children is by permitting only healthy parents to breed.

"My friend Darrow refers slightly to the 'human stud-book,' as he calls the collection of biographies of great men. Nevertheless, if we trace the ancestry of our outstanding individuals, we will never fail to find indubitable proof that the qualities that make them great were present in large degree in the men and women of whose blood they came.

"Only four out of 100 great Americans, chosen at random, came from lowly parents," Wiggam went on. "The rest came from parents who had demonstrated intelligence in various ways. I submit this as pertinent proof of the overwhelming influence that heredity has upon the differences of men."

### "BLOOD TELLS," SAYS WIGGAM

Continuing along this line, Wiggam cited instances showing how heredity passes a strain of crime down through several generations. Illustrating the possibilities of a good strain of blood he referred to the long line that produced from the same ancestry Winston Churchill, General U. S. Grant, Mrs. Theodore Roosevelt, Dr. George E. Vincent and Grover Cleveland. He called attention to the fact that from the one strain of Jonathan Edwards and Sarah

Pierpont have come 12 college presidents, 265 college graduates, 65 college professors, 60 physicians, 100 clergymen, 75 army officers, 60 prominent authors, 100 lawyers 30 judges, 80 public officers, such as governors and mayors, three congressmen, two United States senators and one vice-president of the United States.

"The average man has little to do with progress, except to be around when it happens," he asserted. "Brains make the main difference between men. If brains don't help a man to rise to wealth and power, what are they good for?"

"What are we trying to do on this earth? Get ahead of our ancestors? No. We are trying to get ahead of the rest of the people who are still living. Modern civilization has defeated itself biologically. It has given the best of the laboring classes a chance to rise to wealth—where they stop having children. That is the most discouraging phenomenon of history.

"In the germ cells are contained the abilities which enable the individual to rise above his environment. That is heredity. It is the only optimistic doctrine the human race can face today."

As the debate ended, without the formality of a judges' decision, Darrow and Wiggam

grasped hands, and the 2,000 who heard the discussion at once began several hundred impromptu debates of their own.

### SAYS DARROW IS "MARVELOUS"

Having been associated with Mr. Darrow in many similar events with a variety of opponents, we were interested to learn Mr. Wiggam's reaction to the Chicagoan. "My impressions were most delightful," he answered wholeheartedly. "Of course," he added, "Mr. Darrow has a perfectly marvelous facility for getting the audience to think about something else besides the immediate problem under discussion. He knows from long experience that most juries and audiences decide, not upon the basis of cold logic, but upon the basis of emotions. And he is a past master at touching every variety of human emotions.

"I like Mr. Darrow immensely," he added. "We thoroughly agree, privately, as being enemies of prohibition and capital punishment. In fact, when we got through our debate we were not so terribly far apart on heredity and environment. Of course, I approached the problem from the purely experimental and statistical side, while he approached it from the

general standpoint of social psychology and human considerations."

Anyway, the crowd voted it "a great show."

## CLARENCE DARROW TEARS PROHIBITION APART

*C. Samuel Campbell*

Before the brilliant wit of Clarence Darrow and the applause of a vast audience which crowded the Metropolitan Opera House of Philadelphia on March 20, 1930, prohibition suffered a significant defeat. Even before Darrow opened the debate on "Should the 18th Amendment Be Repealed?" the audience, by means of its applause, gave evidence of its favorable attitude toward the affirmative side. And all through the debate the applause for Darrow out-thundered that given to Clarence True Wilson, who defended the 18th Amendment.

Lounging carelessly against the rostrum, Darrow delivered an attack on the Prohibitionists which Philadelphia will long remember. His weapon was that rapier of keen wit for which he is so widely renowned. With it he thrust and pierced the Prohibition defense mercilessly.

Before that brilliant attack, Wilson seemed

almost helpless. Against Darrow's cutting wit he employed all of the oratorical tricks he knew; but the audience remained cold to almost all of his arguments. At times it even booed and hissed him. And whenever he seemed to have made a point, Darrow's rapier would pierce his argument, bringing forth roars of laughter and applause from the audience.

Perhaps it was a sensing of forthcoming defeat that led Wilson, in his opening speech, to admit that he knew he could never expect to defeat Darrow in an argument; though he did hope, he told the audience, to make Darrow see "some of the many benefits" which Prohibition had brought to this country. And it would prove its further worth when it was given a fair trial, which, he assured all, it hadn't received during the past ten years.

But Darrow was more concerned with the injustice of Prohibition than with its failure. In reference to its having had a fair trial, however, he informed Wilson that "the United States has spent more to enforce this law than it has to enforce the rest of the criminal code."

To Darrow's claim that he, or any man, had the right to take a drink when he wanted it, Wilson answered that the object of the Prohibitionist was not to prevent him from tak-

ing a drink, but to destroy the liquor traffic. "Which means," retorted Darrow, "that he is willing for me to take a drink, but he insists that I musn't get it."

Wilson spent some little time trying to make it clear to a somewhat unwilling audience that liquor wasn't needed by the human being, and that man would, therefore, be better off without it. But once again Darrow's keen brain tore his argument to shreds. Was the automobile a necessity? he asked. Then why did Wilson use one? Didn't he know that the automobile's death toll was something like 30,000 annually? Darrow assured Wilson that he could get along for quite a while on bread and water, but he felt sure that he wouldn't care to.

It was here that Darrow showed himself the more tolerant and intelligent of the two—and the more humanely interested in mankind and its search for happiness. It wasn't the satisfaction of our necessities that brought man happiness and made life worth while, he told Wilson. It was the fulfillment of our wants that made life worth living. Here he gave Wilson a brilliant lesson in humanitarian tolerance and love for humanity, albeit a lesson which one suspects would be totally unintel-

ligible to a member of that profession whose chief business seems to be the robbing of mankind of all the happiness he can gather in his short life.

He assured Wilson that if he wanted to forsake pleasure in this world on the strength of a promised future reward, he was certainly entitled to forego it for himself, but that he had no right to insist that all men do likewise. As for himself, said Darrow, he "would take the cash and let the credit go." He "might wake up some day and find that there wasn't any future reward."

Then Darrow turned to art and culture. What was their relation to Prohibition? Darrow pointed out that he had never heard of any Prohibitionist who had ever given the world a great piece of literature; that if we took from the world the literature which had been given to it by men who had drunk, there would be little left. Darrow cleverly left to the audience's imagination the type of poetry a man would write if he were locked in a room with a pitcher of ice-water.

Wilson resorted to frantic appeals, after the manner of the Fourth-of-July orators, to the patriotism of the audience, and to their love for the flag, the country and the Constitution.

And he seemed genuinely surprised and disappointed at the response of laughter with which the audience greeted these appeals. It proved very disconcerting to Wilson to find an audience composed of men who had learned to think for themselves.

Darrow scorned the idea of the "the sacred Constitution." Had they ever made any great effort to uphold the 15th Amendment? Did they care if the Negro hadn't the right to "get rooms in the Willard Hotel"? "What do they care about the Constitution!" he exclaimed.

Darrow also told Wilson that he didn't care what happened to the 18th Amendment. "All it does," he said, "is to authorize Congress to pass a law to make it effective. It is the Volstead Act under which liquor law violators are indicted."

Then Darrow thrust mercilessly at the Methodist Episcopal Board of Prohibition, Temperance and Public Morals, of which Wilson has been General Secretary since 1910. He investigated its origin and found that a number of Methodists, fearing the Pope's coming to America, had gotten together and had beaten the Pope to it. He referred to the association's building as "the place in which they rent offices to Congressmen to keep them under control."

In further ridicule, he wanted to know what right they had to put "Prohibition" and "Temperance" together in the name of their association. "Temperance," he said, "is absolutely opposed to prohibition." And what was this thing called "Public Morals"? Darrow supposed that it might mean "the preventing of immorality in public." In connection with this, he asked if they had ever objected to theft or murder, reminding them of the poisoned liquor. He asked if they had ever objected to the election of a crook to Congress. And he arrived at the conclusion that the only "public morals" they were concerned with was "the heinous crime of taking a drink" and whether "your breath smelt of liquor." "I tell you they are raving crazy," he said, "and should be kept away from reasonable beings."

Darrow was also concerned with Wilson's consideration of Prohibition as a religious movement. Darrow assured him that if, in his wandering over the earth, he ever came across a god, that god wouldn't be a Prohibitionist. "He might appeal to my understanding, he might appeal to my reason, he might even appeal to my logic; but he wouldn't be a Prohibitionist!" he said.

Then he launched into a clever satire on

Noah's gathering of animals for his ark. He described the collecting of bears from the polar regions, the collecting of elephants from Africa, the catching of kangaroos that had hopped across the ocean from Australia, the collecting and mating of mosquitoes and bed-bugs, the rounding up of a pair of dinosauria and the storing of the rations for their enormous appetites in quantities to last 150 days. Then he told of how, after the subsiding of the waters and the turning loose of the animals, Noah, this man whom God had selected from the whole population of the earth, had made wine and got drunk!

Despite the fact that the Bible says that Noah "found grace in the eyes of the Lord," that he was "a just man and perfect," that he "walked with God," and that he had been "seen righteous" before the Lord, Wilson's only defense was that he had never heard of any man, with the exception of Darrow, selecting Noah as an example of a righteous man.

But Darrow went further. If Wilson considered Prohibition a religious movement, said Darrow, he undoubtedly meant that it was a Christian movement; and on these grounds Darrow introduced the miracle at Cana where Christ is reported to have changed water into

wine. Lest Wilson have his doubts as to the nature of this wine, Darrow quoted the governor at the marriage feast on the excellent quality of it. And then, in answer to Wilson's absurd attempt to dismiss the entire argument with the statement that Darrow must not forget that this wine was made of water, Darrow cuttingly assured him that it was just this which made it a miracle.

As a natural consequence to this—and it seemed that Darrow was fainting for this opening—Wilson quoted verse after verse from the Bible, “to let Darrow know what the Bible really said about drinking.” It is almost needless to say that, though he quoted from all parts of the Bible, he failed to quote from the words attributed to Christ. Darrow reminded him of the source of his quotations, amongst whom was Solomon. Solomon, said Darrow, was no Prohibitionist. His writings against wine were nothing more than reactions to hangovers. And then Darrow thrust into that opening for which, to all appearances, he had fainted. What he wanted to know, he told Wilson, was who had founded Christianity, anyhow. Was it Christ or these men whom Wilson had been quoting? “No,” smiled Darrow, “of all the books that have ever been

printed, the Bible has more Katzenjammers in it than any other."

The reaction of the audience against Wilson was at one of its highest pitches when he made a criticism of W. W. Atterbury, president of the Pennsylvania Railroad, for his appearance on the side of the wets before the House Judiciary Committee in Washington. Atterbury's stand against Prohibition, said Wilson, was controlled by his personal appetite, while he enforced Prohibition on his employes both on and off duty. It was here that shouts of "That's a lie" came from many points in the house.

Darrow pictured the persecutions of the past, most of which, he reminded the audience, were religious. "But it has been reserved for today," he continued, "to see the time when they poison the drinks of men." Wilson, however, tried to dismiss this reference to governmental poisoning of alcohol by saying that this alcohol, which was meant for use in mechanics and the arts, was already marked poison. If a man was foolish enough to drink a thing marked poison, it was natural for him to die. From the balcony came a significant cheer of "And he ought to."

But Darrow, in his final rebuttal, reminded

Wilson that it was never marked poison. He told of the great quantity which was diverted into bootleg channels and "was always marked pre-war." It was in this rebuttal that he deserted his humorous and witty attitude. He became deadly serious. He pointed out the box seats to his right and sections of the orchestra from which much of Wilson's supporting applause had come. He charged these people, much to their indignation, with inhumanity and with wilful murder. Tearing at the hypocrisy of these Prohibitionists, shaming them for their applause for such a vicious cause that not only permitted but also encouraged this inhuman poison-inquisition called Prohibition, he closed the debate. And the humaneness of the man towered high above the vicious cause against which he had fought so nobly and his opponent who had supported that cause.

The building thundered its appreciation of its genuine sympathy with his attitude. There was to be no judges' decision. There was to be no popular vote. But in that house there was no one who could have felt the need of either after a fair comparison of the applause for Darrow with that which had greeted Wilson and his losing cause.

## FACTS YOU SHOULD KNOW ABOUT NATURE

*Clarence Darrow*

I am an evolutionist, and a pretty good one for a lawyer. But any lawyer who is interested in any science is pretty good for a lawyer, because lawyers, as a rule, are not supposed to know very much outside of the law, even if inside.

If the Bible said creation took place 6,000 years ago, that was evidence enough. Mr. Bryan didn't believe in evolution. He knew nothing about evolution, and admitted it.

If anything in this world has ever been proven it is the theory of evolution. Evolution means growth, the gradual development of forms of things. There are evidences of this everywhere. In biology we have a history of life, a passage from simplicity to complexity, the gradual development or descent of forms of life from low organized types.

As regards the origin of the species, we can trace the relation of one form to another, and all organic existences, even man himself, can be traced back to his beginning in the lower forms of life.

The formation of the worlds is a process of evolution. Planetary bodies are evolved from nebular or gaseous matter. Whether it be plant, or animal, or society, or language, or art, or anything else, we have always an example of evolution.

Some cities couldn't have been built fifty

years ago. We hadn't reached the sky-scraper period. Our ships, our trains, every mode of transportation, bears evidence of evolution.

Evolution does not mean that the world is getting better, or getting worse. All evolution means is that one form grows out of another. It may be better and it may be worse; there's no way of telling.

I can't say even brains are a good thing, because those who don't have them seem to have the best time. Those who have the least brains have the least doubts, or no doubts. The more brains they have the more they doubt—the more they doubt everything, even their gods.

We are here for a little while and then we're gone. I don't know what we're here for, or where we're going, if anywhere. I am mixed up in this scheme of things, but I don't know what it's all about. We come on this stage of action, and then, the Christian Scientist says, we pass on. I don't know.

By means of the microscope and telescope we find things infinitely small and infinitely large. Tables, for example, are composed of millions of millions of molecules, or atoms of matter, revolving around each other, and each atom, in proportion to its size, is probably as remote from the other atom as the earth is from the sun. Nothing is solid, unless it is the human head.

We know that worlds are being formed—coming into existence by the condensing of nebulous matter. And that they may, some time, be in condition to sustain life, as we

know it here on the earth. And we know that some worlds have passed through all the stages of heat and life and are now dead masses. like our moon.

We know that nothing is fixed, but everything is in process, undergoing change and transformation. The universe is in a state of flux. Nothing is finished, and so far as we can see, never will be finished.

The magnitude—the enormity of the universe, is just beginning to dawn upon us. Mark Twain, with his sense of humor, tells us about Captain Stormfield's visit to heaven, in order to convey to the mind some idea of the remoteness of the worlds.

Captain Stormfield died and started heavenward on a comet. After traveling at the rate of 200,000 miles a minute for about 30 years, he arrived with a roar at the Pearly Gates. But at the wrong gate. [Read the book.]

We live on the earth, which isn't so much. Of no particular importance, except to us. It is just a little orb going round the sun—just a fleck of star dust. The sun is 1,400,000 times larger than the earth, Saturn over 700 times larger than the earth, and Jupiter a great deal larger than Saturn.

The earth was once a gaseous mass, whirling in space. It solidified and cooled off on the outside. It's hot enough inside. Fiery-hot. About fourteen miles down you will find hell for fair. This used to be the Christian's hell, but they have moved it somewhere else. I don't know where, and they don't either.

And their heaven, they have somehow lost since the telescope came into use.

The beginning of life was when the animalculae came out of the ooze and the slime of the sea. Two or three hundred million years have elapsed from the primordial cell to the present day.

There was an age that developed the fishes, and the age of reptiles, the age of monsters, some measuring 60 to 100 feet long. If Noah had put a couple of Mastodons in his ark, and enough hay to last them a week, it would have sunk his craft.

Today we have three or four million, more or less distinct types, half of which are insects. Of these creatures, we are told that Noah placed a pair of each in the ark.

All forms of life had a common origin. All are made after an original pattern. All the backbone mammals are constructed in about the same way. Man, monkey, horse, deer, whale, are all out-growths of one idea.

The human embryo passes through the stages of development, beginning with the fish, grows as a vegetable, and is finally covered with hair, like an ape, except in the palms of the hands and soles of the feet. The child, before birth, passes every stage in the evolutionary process. Ask your doctor. He will tell you that this is a fact.

The seal is a fish and an animal, the whale is an animal, breathes air and suckles her young. Nature mixes everything up.

The rocks are the Books of Remembrance. They give us a complete record of the past. Go into the Field Museum of Chicago, or the Central Park Museum of Natural History in New York, if you want to know the minute history of the world of animate and inanimate things.



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