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FANTASY

magazine

formerly Science Fiction Digest combined with The Time Traveller

JULIUS SCHWARTZ EDITOR

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Offices: 87-36 — 162nd Street, Jamaica, New York

10 Cents per Copy \$1.00 for Twelve Issues

Vol. 5, No. 2

July, 1935

Whole No. 32

FANTASY MAGAZINE

Back Numbers For Sale

February, 1933; "The Woman of the Wood," by A. Merritt (part 1), interview with Editor Bates, etc. March, 1933; "The Woman of the Wood" (conclusion), interview with Farnsworth Wright, etc. February, March, 1934; Variety of fantasy fiction articles. May, 1934; interview with Donald Wandrei; "Return to Venus" by Rae Winters, "The Outpost" by H. p. Lovecraft, etc. October-November, 1934, December-January, February-March, 1935; Variety of fantasy fiction articles. April, 1935 "The Nymph of Darkness" by C. L. Moore, etc. May, 1935, variety of articles. June, 1935, "Anaphylaxis" by A.W. Bernal, Autobiography of S.G. Weinbaum, etc. All back numbers are fifteen cents each. Supply is limited.

Science Fiction Digest Company 87-36-162nd Street, Jamaica, New York

TIME TRAVELING IS IMPOSSIBLE!

by MILTON KALETSKY

We present herewith the most scientific, logical, and thoro treatment ever made on the much-debated question of the possibilities of time traveling. Milton Kaletsky, who takes the negative side, is a college graduate with A's in his physics and higher mathematics majors. While we personally believe Mr. Kaletsky's arguments definitely settle the question of time traveling, we will be interested in hearing from any of our readers who may have different ideas on the subject.

1

Occasionally there appears a story in which the characters travel to past or to future times in a non-material form. In such cases, the author assumes that they can only watch events occur and that they are incapable of participating therein because of the absence of their physical selves. That this mode of time traveling is absurd should be immediately apparent: if it is admitted that the characters cannot participate in whatever occurs because they are physically absent, how could they hear with immaterial ears and see with non-existent eyes, inasmuch as hearing and seeing depend on the physical presence of the respective sensory organs?

II

Probably the best method of proving the impossibility of traveling in time is by use of Logic, the science of correct thinking, the science of the rules of proper reasoning. Scientific theory comes and goes and is but theory; even scientificlaws are occasionally altered. Logic however, is universal, every rational mind on earth reasoning similarly. In logic there are no theories, only facts, and this science is the closest approach to a truth of nature that exists.

The discussion of time traveling must be preceded by an exposition of the logical idea of contradictories. Contradictories are two statements such that if either is true, the other must be false; and if either is false, the other must be true.

An example of contradictories is: a) a thing exists, and, b) that thing does not exist. Obviously, if it is true that a thing exists, it must be false that it does not exists. And if it is false that a certain thing exists, it must be true that it does not exist.

What is to be remembered is that it is impossible, in the strictest sense of the word, for two contradictory statement sto be true simultaneously. Thus, it is impossible for the thing in the above example to exist and not exist at the same time.

Applying this principle to the problem of time traveling, let us assume that construction of the time machine was begun on January 1, 1935, and completed on July 1, 1935. Should the time traveler return to any date in 1934, this situation is produced: a) the time machine exists in 1934, and, b) the time machine does not exist in 1934 (asconstruction was not begun until 1935). Such a situation is logically absurd. The time machine cannot both exist and not exist at the same time. Time traveling into the past inevitably leads to the simultaneous existence of these contradictory conditions. But the latter is an impossibility. Hence, leading as it does to logical absurdity, to an impossibility, time traveling into the past is also impossible.

As for traveling into the future, suppose the traveler to journey at some rate such as one year per hour, i.e., he travels for one hour earth-time and finds himself one year in the future. Specifically, he starts his voyage at 9:00 a.m. and at 10:00 a.m. on the clocks he has taken with him he terminates his motion thru time, finding himself then on earth one year later. How much time has actually passed? 1 year? 1 hour?

The problem resolves itself into this: how much older the entire universe became while he was time traveling. If he traveled one year in one hour, then only one hour elapsed on earth, yet he finds himself on earth one year later. In other words, he caused every living thing on earth, the solar system, the galaxy, the entire universe, to age by one year, the but one hour passed.

This is sheer nonesense. A year cannot elapse in one hour for the simple reason that an hour is defined as less than a year. A fraction and the whole cannot be equal; a year and an hour cannot elapse in the same interval of time because they are different intervals of time, by definition. (Had the traveling in time required no time at all, or only a minute fraction of a second, the paradoxicalsituation is only aggravated). Time traveling into the future would produce the simultaneous existence of contradictory conditions in this equality of time intervals defined as unequal. Hence leading as it does to logical absurdity, to an impossibility, time traveling into the future is impossible.

Ш

One of the cardinal principles of inductive logic, the science of original thinking, by following the rules of which most present scientific knowledge was arrived at, is that for a hypothesis or theory to be accepted, there must be positive evidence for it. The absence of evidence against a hypothesis is not sufficient to justify assumption of its validity. For example, there is no evidence against the assumption that somewhere in the universe there is a solid chunk of radium a million miles thick. Logic, however, forbids the acceptance of this hypothesis because of the lack of evidence for it.

Similarly with the hypothesis of the possibility of time traveling. We do not know what "time" is; we do not know whether that which we describe as the passage of time has any real objective existence; the idea of traveling in time was merely the invention of an author with a fine imagination; and no one has even the vaguest idea how this feat can be accomplished. Indeed there is some indication that time traveling has never been and never will be realized! For if at any time in the past a successful time machine was developed, it is reasonable to assume that sooner or later the inventor thereof or other persons would have traveled sufficiently far into what was to them the future to have arrived within recorded history. Similarly, should a time machine bebuilt at any future time, it is equally reasonable to assume that eventually someone would return into what would be the past to him and would thus arrive within historical times. But there is no legend, no myth, no record-

This Article is Continued on page 192



by Mort Weisinger (pinch-hitting for Julius Schwartz)

I don't know whether Ye Editor Schwartz has broken his typewriter or whether his snoopitive research was at a low ebb this month. At any rate, he's allowing me to fill his spot for this issue, tho he may quickly regret it. I've deliberately held back this copy until I was certain that Chr was howling it was deadline. That guy Schwartz won't get the chance to scrap this.

I've been out of circulation for so long I even forget which was the last cover Williamson copped, etc. So, what's chances of dishing out some personal sidelights on some of the more interesting figures in the fantasy field? So which? So here we go...

Take Paul Ernst. Paul's pet philosophy, when I met him last year in Chicago, ran something like this: "I'd like to sell only two stories a year—to fifty different magazines." I persuaded Paul to come to New York. He met authors and editors...now he's selling all over the lot, Horror and Terror, the Thrilling group, and there and there. Paul is a very methodical writer, turnturning out ultra-meticulus—and excellent—copy. He works a regular six hours a day—makes a real business out

of it, and the way they feature his name way up on the cover proves how good he is.

There's Lester Dent. Tho I've repeatedly pointed out to Lester that many, if not all, of his Doc Savage novels stress a heavy s-f theme, Dent tugs at his very red beard and grunts: "Don't call me a science fiction writer. All them guys are nuts!" Dent's pet ambition is to own a penthouse—so that he can call it a Denthouse.

Let's talk about Arthur I. Burks. Arthur is one of my closest friends. Whenever some tough situation pops up-and he alone knows how many times that happens-I go to Arthur for some advice. He's done me so many favors that I very much doubt if I will ever get the slightest chance to reciprocate. Burks is one of the most versatile and prolific writers in the pulp game—one of the real big time writers. I'll never forget the time I walked in on him, unexpected, and he was busy hammering on those typewriter keys. "Get the hell out!" he roared. "I'm busy!" Later, he apologized and asked me to take in a show with him.

Howard and Donald Wandrei. A

neat team. They live together in a cosy place of their own in the Village, do their own cooking, and make writing seem like one swell game. To them it's everlasting fun. They like to contact editors, mix with pulpsters, and their greatest fun is seeing which one of them can first break into a

new market.

Ray Cummings? Before I met him I was curious about him. A friend told me "he looks just like he writes." I met Cummings soon afterward and I'm still trying to figure out how to apply that crack.

Well, that's all.



BOOK REVIEW

"The Circus of Dr. Lao"
by Charles G. Finney

published by The Viking Press, New York, at \$2.00

Whoopee! I'm off!

Whee, what a book. The greatest crazy accumulation of words it has ever been my good (or bad) fortune to read. Of all the ununderstandable things I have ever read, this takes the cake. The author is either a genius or a fool, I can't say.

The story is semi-ridiculous, and if taken seriously is liable to upset the mind of the reader. Credence must not be allowed to enter the thoughts while reading. You may start on a train of thought that will get you nowhere.

Several interesting character studies are contained in this work.

The Circus of Dr. Lao comes to the town of Abalone, Arizona. The Circus is an accumulation of the wild dreams and myths of mankind. Dr. Lao, withered old Chinaman; Apollonius of Tyrana, wizard of a Christlike appearance; a mermaid, living and nude; a Sphinx, bi-sexual and talkative; a live Medusa, who actually does turn people into stone; a Sea Serpent with a tale to tell; a Greek Satyr, who upsets a prim young school-mistress; a unicorn; a hound of the hedges, a vegetable concoction; and something which is either a bear or a man, no agreement is reached.

The characters of the visitors to the circus are as crazy a menagerie as the circus itself.

I've never read anything like this before. I can't make up my mind: either it is a masterpiece of the foolishness and inconsequence of mankind; or its the worst accumulation of senseless drivel ever published.

I can't give the book a rating because I can't make up my mind what it deserves.

Hooray! Whoopee-

[Editor's Note: Well, the boys have taken him away. I hope he gets a nice comfy padded cell. Join us after reading the book.] — Chr.

A BIOGRAPHICAL SKETCH OF

ROBERT E. HOWARD

by ALVIN EARL PERRY

Conan! Solomno Kane! King Kull! These names mean action—adventure romance—to thousands of fantasy fans thruout America; they are the heroes of adult fairy tales (rather gory ones it must be admitted) penned by he who is perhaps the greatest "actionist" writing fantasy today—Robert E. Howard!

This much-read author is a Texan. He was born January 22nd, 1906, in the small village of Peaster, some forty-five miles west of Fort Worth, and still resides in the Lone Star State, tho farther west.

At the age of fifteen, the future creator of Conan began writing with the intention of devoting his life to it; but it wasn't until the Fall of 1924, while attending Howard Payne College at Brownwood, that he made a sale. The tale was "Spear and Fang," bought by Weird Tales for the princely sum of \$16. It was very short and dealt with the imagined prehistoric struggles of the Neanderthal men and the Cro-Magnons.

Physically, Mr. Howard is a remarkable man. He stands almost six feet, is a decided brunette but for his blue eyes, rather heavily built, has a 45 inch chest, is 17 inches about the neck and perhaps 37 at the belt. And, he says "no one ever accused me of being handsome." He admires E. Hoffmann Price immensely, calling him "a talented writer and a splendid gentleman."

Jack London is this Texan's favorite

writer; and he prefers tequila to brandy, beef to pork, and likes his eggs fried hard. Jack Benny and Gracie Allen are his air idols, while Lionel Barrymore and Edna May Oliver hold his attentions in the movies. His sole ambition is to be a successful author, and he enjoyed writing "The Shadow Kingdom" better than any other tale.

Tho he claims to have lead an ordinary life, when it is realized that he has been everywhere of interest in the vast Southwest, plus a large portion of Old Mexico and has witnessed the settlement of the Plains country, the development of the Rio Grande territory, and the Central West Texas oil booms, one easily sees the modesty of the statement.

As to his fictional characters, we'll let Mr. Howard speak for himself. He says: "The first character I ever created was Francis Xavier Gordon, El Borak, the hero of 'The Daughter of Erlik Khan' (Top-Notch), etc. I don't remember his genesis. He came to life in my mind when I was about ten years old. The next was Bran Mak Born, the Pictish king ('The Kings of the Night,' etc. Weird Tales) He was the result of my discovery of the existence of the Pictish race, when reading some historical works in a public library in New Orleans at the age of thirteen. Physically he bore a striking resemblance to El Borak. Solomon

Kane ('Red Shadows,' etc., Weird Tales) I created when I was in high school, at the age of about sixteen, but, like the others I have mentioned, several years passed before I put him on paper. He was probably the result of an admiration for a certain type of cold, steely-nerved duellist that existed in the sixteenth century. King Kull differed from these others in that he was put on paper the moment he was created, whereas they existed in my mind years before I tried to put them in stories. In fact, he first appeared as only a minor character in a story which was never accepted. At least, he was intended to be a minor character, but I had not gone far before he was dominating the yarn. Conan simply grew up in my mind a few years ago when I was stopping in a little border town on the lower Rio Grande. I did not create him by any conscious process. He simply stalked full grown out of oblivion and set me at work recording the saga of his adventures. It was much the same, tho to a lesser extent, with Sailor Steve Costigan (Fight Story Magazine, Action Stories, Jack Dempsey's Fight Magazine, etc.), Kid Allison (Sport Stories) and Breckinridge Elkins (Action Stories.)

The distinctive style of writing developed by Mr. Howard—swashbuckling, raw, magnificently bloody—is utterly off the trail and has proven consistently popular with Weird Tales readers. Those who have never perused one of his Conan yarns, should do so; they will never regret it.

A

STRANGE HUNTING

A traveling salesman was diligently engaged shaving the stubble from his face in a hotel off Broadway one a.m. when an insistent knocking at the door interrupted him. He opened the door to find an excited stranger.

"Can I help you?" he asked.

"Yes, yes!" the newcomer exclaimed. "I am in search of a sound."

"Come in," invited the puzzled host. "I don't know what you mean. There's a Long Island Sound nearby, people upstairs make a lot of unseemly sounds, and I can sing a bit—"

"It was in here," thundered the visitor, "and I want it."

Satisfied that the man was harmless and that an asylum attendant would arrive eventually, the salesman invited his guest to be seated.

"My name," said the excited fellow is Jack Johnston."

"The fighter?"

"No, and I'm not crazy," the guest went on. "I'm a radio author and—"

"And not crazy?" suggested the host, with arched brows.

"I stage the Buck Rogers in the 25th Century at WABC," went on Mr. Johnston. "In a broadcast in a few days we will use a psychic ray, and we can't find a sound effect for it—that is, we couldn't, but you have one. I heard it as I wos going by your door. And I want it."

"Yeah," the salesman said, "I get you, now. I know the program, and the sound was my electric razor."

THE "REXMEL"

by RALPH MILNE FARLEY

The sight of Bill Fiske, walking into "The Seaman's Rest," so startled me that I sprang to my feet, upsetting my coffee.

He ambled over toward me, grinning sheepishly.

"Why the look of horror?" he asked, sitting down across the table from me.

Is it really you?" I gasped, taking a clean seat, beyond the drip of my overturned coffee.

"Certainly," he replied. "Who did you think it was?"

"But you shipped on the Mary B, a week ago," I objected, unconvinced.

"Yes, and no," said he. "I'll tell you. Just as the Mary B was about to sail, I see all the rats leaving her. Swarming up the hawsers onto the dock. Now I'm not superstitious; but I know, as everyone else knows, that when the rats all leave a ship just before she starts on a voyage, it's a sign she's going to be lost on that trip. So I goes to the captain, and tells him I'm quitting.

"'What for?' says he with a grin. Seen the rats leaving?'

"I admitted as much. Then he laughed and laughed.

"I fooled the rats,' says he, 'and the rats fooled you. Turn about is fair play,' says he, still laughing.

"'What do you mean?' says I.

"Then he takes a circular from his pocket, and shows it to me. It's all about how some German scientist made an investigation to find out just why rats always leave sinking ships. And finally,

after years of study, this German fellow discovered that doomed ships always have a peculiar smell about them, sort of musty, too faint for a human to notice, but particularly annoying to varmints. So the reason rats will leave a a sinking ship, is not because they are prophets or anything, but merely because they can't stand her smell. A sinking ship is a stinking ship, it says.

Well, anyhow, this German chemist was able to make up exactly the same smell out of coal-tar, or something—those Germans are great hands at making colors and smells—and so he went into the business of selling it, at five dollars a package, to rid houses and ships of rats. It's called 'Rexmel', R-E-X-M-E-L—get that—'Rexmel,' 'wrecksmell,' 'cause it smells like a wreck.

"The Captain of the Mary B had bought a package of Rexmel, and sprinkled it in the hold; and that was why the rats were all leaving.

"But I dunno. Maybe I am superstitious, but still I wouldn't ship on a craft that the rats had all left. So the Mary B sailed away, with the captain and crew all laughing at me. I feel kindo' foolish now, come to think of it."

He paused, and looked at me sheepishly across the table.

"Bill," said I levelly, "have you seen the afternoon's papers?"

"No," he replied. "What's up?"
"Nothing much," said I casually.
"Merely that the Mary B is reported
This Story is Concluded on Page 186

SCIENTIFILM SNAPSHOTS

by FORREST J. ACKERMAN

Space-Story Scoop!

John Russell Fearn, the Wells II of England, informs of "Once in a New Moon' whose central theme-sensational for the screen—is that of a portion of Earth torn loose and hurled into interplanetary depths! The completed picture, which has been showing in England, screens the super-scientale of a dead star that collides with the moon. the suddenly increased gravitational attraction wrenching an entire English village off Earth and out into space! The sturdies survive the astounding transplantation, political factions are formed, and there is a romance on the pirated planetoid. There is a happy ending as the kidnaped community returns to Earth.

(It is not clear to me, from the information I have on hand at this writing, whether the village is actually shot into space, or whether it hangs suspended somewhere in the stratosphere, but either event must be interesting.)

Rene Ray, the heroine, it is perhaps news to note, played her first picturepart as an extra in the ace-high "High Treason," film of the future.

"Plan 16"

RKO, following up "Most Dangerous Game," "King Kong," "She," and its other 'unusual adventure' stories has announced Preston Foster to play in the picture of an inventor who creates a magnetic ray which influences ships off their courses and into unknown perils.

"The Phantom Fiend"

featuring Elizabeth Allan, heroine of "Mark of the Vampire," is reviewed as a blood-curdling paralyzer-picture. From Britain, it is based on Mrs. Belloc Lowndes' novel, "The Lodger."

"Dancing on the Moon"

a Paramount color-cartoon, features a slick model rocket which shoots off Earth, transporting animal characters for an evening's entertainment, to our satellite.

Tarzan Tales

"Tarzan in Guatamala" is completed, a serial, I believe, which may or may not be all-same as "The New Adventures of Tarzan" announced last column; "Tarzan and the Green Goddess is to star Herman Brix; while jungle Johnny, the bonafide 'Tarzan', his mate, Maureen, and 'Cheeta', will be back with us in about another six months in a tale of the times titled "Tarzan and the Vampires." The picture's climax is scheduled to be reached in a hidden valley of giant bats...

Merritt Movie

MGM will probably produce his shivery scientifantasyarn, 'Burn, Witch, Burn!' a film to frenzy fans! More of this in the months to come. To prepare the public, "Witch of Timbuctoo," a weirtale, will precede.

Stratosphere Stories

"Death from a Distance," a Chesterfield production, and "Air Hawks," Columbia film of an aeroplane-exploder ray, are now playing around the coun-

try. "Air Hawks" may possibly be the outcome of "Above the Clouds," tale of a diamond death-ray bolt, which I forecast in my August, 1935, column. "Study in Blue"

a fantasy in color synchronized with sound. Possibly the most astonishing, intriguing, fascinating filmagic I have ever seen. A sensational short subject not to be missed by any science-fantasy enthusiast. At five performances I attended, ordinary andiences applauded; so count on devastating delight, all you fortunate enuf to find it at a filmhouse! It's super-super!

"Transatlantic Tunnel"

is the newly descriptive title for Gaumont's undersea epic of the traffic-cylinder from London to New York.

Bela Lugosi Abroad

The Hungarian horror-actor is in England, scheduled to make one fantasy film for Gaumont, "Secrets of the Marie Celeste"!

Scientifilmistakes

It was a bad break, of course, that, as older readers know, Wells' "Island of Lost Souls" was banned in Britain, so that our English cousins never saw the evolutionaryarn. The French played it, but one of their cinemagazines did a funny job of translating the title into English-they called it "Island of Cost Souls' (rather an expensive-sounding production!) The best (or worst), however, occurred recently when I was securing scientifilm stills from one of the Distributing Exchanges. should I make the form out to?" asked the clerk (for release of the stills). "FANTASY Magazine," said I, of course. But later when I noticed the slip (with which two carbon duplicates went), I discovered myself to be a representative of 'FANCY Magazine'!

"Popular Science"

Paramount has released an interesting color subject of this title.

"Liebe, Tod und Teufel"

From Stevenson's story, "The Bottle Imp," this UFA film, in German, unfolds a fantasy of a bewitched bottle which fulfills for the owner his every wish—at the expense of his soul being claimed by the devil.

SRO Contest Results

Due to the amazing total of fans who sent . in their Scientifilm Review Opinions-two! -each winner receives two Prizes.

The Contest was originally calculated to give all interested domestic and foreign fans ample opportunity to enter; but due to our unfortunately unpredictable date of appearance, the close of the Contest came too early for many who might have wished to prepare and send their submissions.

Clay Ferguson, Jr., the prominent young stf artist, named his favorite reviews in order of merit as: "Dr. Jekyll and Mr. Hyde," "By Rocket to the Moon," and "The Cataclysm." He chose them because of their length and elaborate detail. Complimented my "Jekyll-Hyde" review because in it I "did something very commendable gave a good-sized section from a speech. by one of the characters in the picture, that had a definite bearing on science fiction." I was very pleased to find my conviction concerning that review borne out at least by one prominent fan, as there was some unfavorable comment on the review at the time it appeared. Mr. Ferguson's entry contained other approving paragraphs, and included some good suggestions. Accordingly, he has had his subscription lengthened four issues, been sent the scientifilm story "Last Man on Earth," received a

This Column is Concluded on Page 188

On the Other Side of the Pond

by Walter H. Gillings, Our English Gorrespondent

England, home of H. G. Wells, has many fervid readers of Amazing, Wonder, and Astounding Stories. It has long been their regret that we have no such magazines of our own. But the fact remains: there is no British publisher bold enough to cater for our unorthodox tastes.

For we are regarded over here as a strange species, we science fiction fans. In fact, science fiction itself is looked upon as such queer stuff that it cannot appear in print, except on rare occasions. Thus it comes about that English science fiction writers, like J. M. Walsh and John Russell Fearn, cannot find a market for mss. in England, and have to send them to America.

For several years now I have been doing my utmost to persuade British magazine publishers that there is a demand for science fiction in England; but they still persist in thinking that the demand is not sufficient to ensure the success of an experiment such as Gernsback made in America in 1926. Those of them, that is, who can comprehend what science fiction is.

I do not say that science fiction is completely unknown in England. For now and again science stories are published in book form. But these appearances are so rare that such books are regarded by their reviewers as something absolutely out-of-the-ordinary, which can only be compared with the stories of Wells and Verne. As if they were the only people who have ever

written science fiction!

But when a science story appears in a magazine, it is, indeed, an important event. Nine times out of ten, it appears in a publication that appeals only to boys. For if editors have any use for science fiction at all; it is only as "blood-and-thunder." They completely ignore the fact that there are thousands of adult readers—some of them even with whiskers—who are just as interested in science fiction, provided it is fit for their consumption.

The first science story I ever read was Burroughs' "At the Earth's Core" which ran as a serial in a boy's paper when I was a child. Another early specimen I remember was George Goodchild's "Message from Space," described as "a thrilling story of flying adventures, telling how Mars saved the Earth," which was serialised in the Chrildren's Newspaper in 1921. This is one of the most treasured exhibits in my science fiction museum.

Another is an ancient novelette, with a picture of a tight-laced lady and a be-whiskered gentleman gazing thru the window of a space-ship, on the cover. The title is "A Honeymoon in Space" the author, George Griffith. This serves to show that science fiction was published way back in the old days, apart from the stories of Wells.

But it took Amazing Stories to convert me to science fiction, when I discovered it in 1927. Soon afterwards I made it my mission in life to persuade

publishers to pay more attention to its development, and to exploit its possibilities. Some job, believe me! For we British are slow to adopt new ideas (altho science fiction is at least 100 years old).

I had hopes of forming a national society with this object in view, but beyond the establishment of a Science Literary Circle in 1930, which lasted less than a year, I did not get far with the project. There were a number of interesting developments, however, which, altho we were not responsible, gave us a feeling of encouragement.

For instance, in 1931, Pearson's Magazine (which originally published Wells' "War of the Worlds") ran a serial on the giant insect theme—title "Winged Terror," by G. R. Malloch a British magazine writer. Then, in the Writer, a monthly devoted to our would-be authors, appeared an article suggesting that a Science story Boom' was in the offing. This mentioned Amazing Stories and its contemporaries, and recommended budding authors to try their hand at science fiction and send it to America.

At the same time, Chums, a prominent boy's magazine, reprinted two stories that had appeaced two years be-

fore in Air Wonder Storie. They were the work of Jack Williamson and Ed Earl Repp, American authors. On the strength of this, I wrote an article in the Writer, urging British authors to send their science fiction to English editors.

But I'm afraid it didn't help much. If the authors responded, the editors didn't, except with rejection slips.

It was about this time, too, that J. M. Walsh, who was already well known as a mystery writer, turned his attention to science fiction, and published his "Vandals of the Void" in book form. It is strange to think that he and John Russell Fearn, who are so familiar to American fans, are unknown over here to the general public, so far as their science fiction is concerned. But it is not their fault. It is because editors will regard their work as too original to be palatable.

But both of them are optimistic enough to believe, like myself, that one day—however distant it may be—a science fiction magazine will be published in England. At least there are encouraging signs that editors are becoming science fiction conscious. Of these, and of developments since 1931, I hope to tell in a future article.

e e s

A GLASS NAVY

An inventor whose name is being withheld suggests that beer bottles be immediately salvaged by all good citizens for the common cause of a glass navy, which would be unseen by the enemy, utterly invisible from the air, land, and sea, and blend in perfect camouflage into the pale green of the ocean's coloring.

N. Y. Daily Mirror

THE ART OF TIME TRAVEL

by THOS. S. GARDNER

3. The Fourth Dimension

True, time travel must involve the fourth dimension because science has shown that in many physical equations a fourth dimension must be taken account of and is always a function of time. Strange to say, the constant that appears in equations involving time is the same constant that appears in the new equations of wave mechanics That constant is i. square root of minus one. The fourth dimension exists so far as physical science is concerned. It must be used and interpreted—however that is the physicist's fourth dimension. The geometrical fourth dimension has no proof of existence. Time travel stories involve the fourth dimension as having reality. Most time travel stories involving the fourth dimension speak of revolving a body into the dimension and then moving along that dimension. Thus one may have two-way travel and oneway travel. In two-way travel, the subject can go into the future or past and return to his own time. Sometimes authors say only the future and return as the past is fixed. In one-way time travel the person travels into the future only and cannot return. The third and most interesting form is a geometrical projection of the subject's body into the future or past without a corresponding physical projection. Thus the three dimensional shadow travels, and not the matter within the body.

That has been used many times, and

Palmer in "The Time Ray of Jandra" gives an excellent description of this, theory. Manning's "Voice of Atlantis" describes a projection in which the thoughts of the operators go into time and not the body. It is mental time traveling. "The Time Projector," by Keller and Lasser reaches the acme of perfection in regard to projection. In this story the operators are able to catch future events only.

The means of being revolved into the fourth dimension are carefully scouted by most authors. Williamson, in "The Moon Era," develops an anti-gravity force that moves the operator into time as well as space. The scientific explanations may be found in a few stories. Leinster's "Fifth Dimension Projector" describes means of rotating a body at four right angles-the hypothetical metal ammonium being used, and then magnetic fields at right angles. E. E. Smith's "Skylark of Valeron" gives a logical explanation of rotating magnetic fields that push a body into the higher dimension.

It is true that the fourth dimension is the most probable means of travel in time, in the true meaning of the phrase. However the proof such travel is nonexistent. The most interesting and often amusing incidents occur as authors attempt to explain their fourth dimensional projectors. After reading a description one is reminded of a junk shop.

Behind the Scheme of Things

by D. R. DANIELS

Third Prize-Winning Story in our September, 1934, Cover Contest

Loyara, the Master, sat upon the high places of Infinity and dreamed. Dimensions, spaces, galaxies, suns, planets blended or flowed or ebbed about him. They came into being at his wish, whirted out measureless eternities at the lift of his hand—were gone. Loyara was above them all, above space and time, above sex; but we call Loyara he, because it is so impersonal.

When he wished it new suns were born; nay, if he thought it, and took the mental trouble to have it so, new cosmoses swam into being, lived out their peroids of existence, then vanished into the nothingness from which they had sprung. Space and time meant thought to him, laws did not live, for he was master of all laws, and they had their cause only as he imagined it.

Of course, there was the time, or rather, the period, when he created the Space Entities which were thinking planets in themselves and able to reason and weave almost as Loyara did. After creating them, he promptly forgot them, intending to return his mind to them after a few cosmic eons. When he did, he found they had progressed so far that they were now creating universes on their own account, and quickly bridging the gap to omnicience.

So Loyara left them to scheme for another eon or two.

By then they were advanced till they had become a menace to Loyara. For they had taken it into their mental processes to become Masters. Loyara did not like it in the least.

Matters were quickly gliding to an interesting dilemna, until Loyara happened to remember that the Space Entities were only the figments of his imagination, and he treated them accordingly. But he often wondered what might have happened if that idea had come first to the Space Entities.

And he also wondered if he, Loyara, were nothing more than the figment of imagination of a Greater Being.

It came upon him to follow that line of reasoning back thru the reaches of possibility into which it extended, to discover if it were true. But he knew that in all liklihood to do so would destroy him as the Space Entities had been destroyed, unless he could treat the Greater Being in a similar manner.

So he decided to let the thought go for a time. There were too many other interesting reasonings to exhaust before he tempted non-existence.

Then once while Loyara was dreaming, a picture came to him.

He thought of a cloud wrapped planet circling a light and heat giving sun. He thought of the dwellers evolving on that planet—four digited beings they would become, gradually growing in intelligence, their race shaping itself thru the agos. And he thought until these beings were men.

Of a sudden he pictured it all as it might be were the planet and the sun shaped properly and left to develop. And he saw the possibilities of the thought.

His reasoning leaped shead to when the

other stories showed the literary ability displayed by Mr. Hatch. Many were well written, but none had that smooth flowing cohesiveness evident in "Blackout."

Lastly, we selected the story because his study of the picture is shown in the accuracy of his description. One could not doubt that the story was written around the picture, which could not be said of some of the entries. They had stories wherein the scene occurrd, but it was dragged in. The story might just as well have been laid on an ocean liner, with a man jumping into a rowboat. "Blackout" altho following the picture accurately, actually never takes place in the plane, or even outside the building. Hatch kept his story in the proper location, and yet brought in the difficult air scene without vanking his characters bodily into a plane and making them perform a senseless leap.

Many of you will say that I am trying to encourage Mr. Hatch, and praising him unduly, since the story really is nothing sensational. Taking its place in the contents page of Wonder Stories or Amazing Stories it would possibly get nothing more than an average rating, but I am convinced that if Mr. Hatch were to aim his talents at one of the science fiction magazines, after first learning their policy, he would produce a yarn that would rank high. He has a fine style, a good command of language, and is clever and original. He can write. Therefore, I hope he will take my word for it and try, not once, but a hundred times.

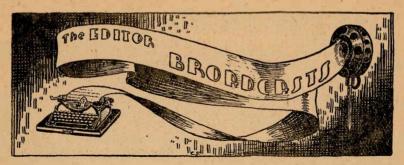
I took the editor's license to make a few revisions in the yarn, and I hope Mr. Hatch will observe carefully what I have done to his story to improve it (it was done to all winners) and try to fathom my reasons for the changes. If he is in doubt, I ask that he write me. I shall gladly criticize any manuscript he may write, in advance of his submitting it. His only obstacle to a steady writing career is of a technical nature, only overcome by actual steady writing, studying of markets, and mastering of writers' tricks, taboos, etc.

a a s

SCIENTIFILM SNAPSHOTS - continued from page 181

still from "F. P. 1," and may have two original "Scientificinematorially Speaking" manuscripts to add to his collection. In place of the quarter cash, also due him, he requested a special scene from "The Werewolf of London," which has been supplied.

The well-known writer, Mr. J. Harvey Haggard, was Second Winner, naming "The Young Diana" his favorite because I was "enabled to present it in detail" and because he was "not familiar with the production." Both he and Mr. Ferguson expressed a desire to read reviews of the silent scientifilms, those of the early talkie era, and foreign fantastic productions. Mr. Haggard flattered that he does not believe I need suggestions in composing my film-columns. He has been sent two exciting scientifilm scenes, an 8 X 10 inch studio-portrait of his favorite actor, Warner Oland, is entitled to a manuscript, and has had two months added to his FM subscription.



Is science fiction juvenile? This question, raised in our last issue, has brought forth some interesting replies. Milton A. Rothman, of Philadelphia, writes his views:

"Let me put in my bit about the science fiction juvenile discussion. I suppose that I have a right to, because I am one of the high school students being discussed. find that science fiction is extremely valuable in broadening the imagination, and besides that theoretical value. I have learned much real science from it. I have not had physics vet, but from reading science fiction I can talk a little about inertia, acceleration, foot-pounds, electro-magnetic radiations, and the Einstein theory. Two authors whom I think are the most valuable in the dissemination of this kind of information are Edward E. Smith and John W. Campbell, It. If stories like 'The Mightiest Machine,' 'Invaders from the Infinite,' 'The Battery of Hate,' and the 'Skylark' stories are juvenile. I'd hate to see some real advanced stuff. In 'The Time Stream' 'The Final Wae,' 'The Man who Awoke' 'The Eternal Cycle,' or any of Bob Olsen's fourth dimension stories are puerile, then Einstein is a moron!"

Carl E. Woolard, of Flint, Michigan, sends in a most interesting letter concerning this subject:

"The references to the juvenility of the

readers of science fiction, in the June FAN-TASY, are probably the beginning of a long discussion pro and con. In this letter, I shall attempt to add my non-partisan voice to it.

"The following quotations from early numbers of science fiction magazines show that some of the best known science fiction authors and fans of today began reading stf in their high school days:

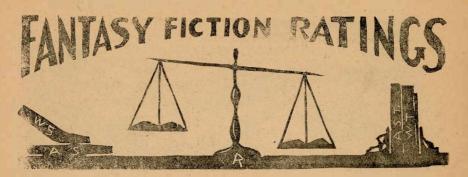
"' I am only nineteen and have only a highschooleducation nevertheles. I wish to express some opinions.' (Jack Williamson, in the October, 1928, Amazing).

"'I, too, am one of your younger readers. I am fifteen and a freshman in the chemistry course of Union College.' (P. Schuyler Miller, March, 1928, Amazing)

"'Altho I am but seventeen and have not had the honor of a business acquaintance. I feel that others comment on the "trash" I read when they see the cover.' (Raymond A. Palmer, in the October, 1928, Amazing).

"'25 cts a month is an awful lot for a hard-working boy who only makes five dollars a week to pay.' (Conrad H. Ruppert, November, 1929, Science Wonder)"

When Clay Ferguson, Jr., drew the illustration for our recent Cover Contest, he, too, had an idea for a story in mind. It is called "She Who Wins," and will appear next month.



A, excellent; B, very good; C, good; D, average; E, fair; F, poor; G, bad August Wonder Stories August Astounding Stories d Galactic Circle, Williamson Reign of the Reptiles, Connell Worlds of If, Weinbaum d Rebellion, Stuart Man with Four-Dimensional Eyes, d Son of Redmask, Schachner С Branches of Time, Daniels Upper Level Road, Van Lorne d Lost in Space, Haggard C Star that would not Behave, d August Amazing Stories Man of Iron, Rocklynne d Kingdom of Thought, Eshbach C Phantom Dictator, West c Music of the Spheres, Byrne Golden Planetoid, Coblentz d July Weird Tales Never-Dying Light, Burtt d Avenger from Atlantis, Hamilton C Inner World, Verrill Waiter Number 34, Ernst d Liners of Time, Fearn b Jirel Meets Magic, Moore c Curse of the Valedi, Meek Summer Marvel Tales Grave Must be Deep, Zaata d On a Train with a Madman, House d Mars Colonizes, Breuer C Honor of Don Pedro, Knapp Man from Makassar, Jacobi d d Violet Death, Meyrink Annabel Reeves, Farley d d Wondersmith, O'Brein Elfin Lights, Drake

Coming Next Month - A Unique Feature

A Short Short Story based on the September, 1934, Contest Cover by the artist, Clay Ferguson, Jr., in which he gives his own conception of "the story behind the picture"

SERVICE DEPARTMENT

Below is presented an addenda to the list published between September, 1934, and June, 1935. We thank the readers who supplied us with the names of so many of the stories given below.

- 1876 January 1 Journey into the Unknown Julian Hawthorne Appleton's
- 1899 July The Lost Continent Cutcliffe Hyne Pearson's (pe-code)
 August Stories of the Sanctuary Club Meade & Eustace Strand
 September The Monster of Lake Lametrie pe
 October The Purple Terrot Fred M. White Strand
 December 16 Man: Ages Hence Annonymous Evening Post
- 1900 January Honeymoon in Space George Griffiths pe 6
 Stories of Other Worlds George Griffiths pe 5
 Nature's Next Move Barry Pain pe 5
 April Within an Ace of the End of the World Robert Barr MacClure's
- 1903 January Dr. Cox's Discovery Herbert Wood Cosmopolitan
- 1904 February At Jupiter's Call H. F. Farnham p
- 1905 February The Golden Flood Edwin Lefevre MacClure's 4
 April From the Deep Sea Henry C. Rowland p 2
 May Mr. 'iggins Invisible Cloth E. J. Appleton p
 November With the Night Mail Rudyard Kipling MacClure's
- 1906 February The Monster Flea E. J. Knight-Adkin pe 5
 The Sound Machine E. J. Appleton p
- 1908 March The Purple Pileus H. G. Wells Short Stories
 May The Scourge of the World H. A. & G. A. Thompson Live Wire
 September The Ray of Hope H. D. Smiley
 October The Microbe of Fear Charles S. Pearson p
- 1909 March Land of the Lost Roy Norton p 6 October A Hole thru the Earth - Camille Flammarion Strand
- 1910 August Just Back from Mars R. K. Carter National 2
- 1911 March Love and the Ages Charles D. Cameron bb
- 1912 January The Mind Master Burton E. Stevenson p 6 November 1 The Flying Eye - Jacques Futrelle p
- 1913 March Absolute Zero Morgan Robertson New Story
 April The Poison Belt A. Conan-Doyle Straud
 May The Destroyer Burton E. Stevenson p 5
 June 1 The Battle Below Water Edwin Balmer p
 November The Horror of the He!ghts A. Conan-Doyle Everybody's
 December The Horror S. B. H. Hurst Short Stories
 An Experiment Alexander Crawford ""
- 1914 January The Woman from Yonder Stephen F. Whitman Century
 February 23 The Millenium Engine Levitt A. Knight p
 March The World Set Free H. G. Wells
 June 23 Beyond the Threshold Joseph Ernest p
- 1915 October Saving the Nation Cleveland Moffett MacClure's 5

TIME TRAVELING IS IMPOSSIBLE! - continued from page 174

ed event which can be safely interpreted as an account of a visit of people from either the past or the future. This is a good indication, but only an indication, that time traveling was never realized in the past and will never be realized in the future.

Summarizing, there is absolutely no evidence substantiating the hypothesis of the possibility of time traveling. Logic requires that this hypothesis be rejected at once, even without taking into account the powerful arguments against it.

IV

The belief that time traveling ought to be possible because time is a dimension is based on the fallacious notion that time is a dimension like those of threedimensional space. This is not so. Time is not a geometrical extension, but a 4th independent variable in addition to the three independentspace variables: rightleft, backward - forward, up - down. Those who have studied the calculus will recall the problems in which the position of a body was expressed as a function of the time, that is, in those problems time was a variable. Yet the body was not supposed to be time-traveling nor moving along any fourth dimension. When time is spoken of as a dimension, the term is used in its sense of a measureable property. In modern mathematics, time is, as stated above, merely another independent variable.,

V

If the voice of authority carries any weight, we may point out that Sir James Jeans discusses the possibility of time travel on page 109 of his "New Backgrounds of Science," concluding that

this mode of travel is impossible.

VI

For those familiar with the calculus of functions, this proof that time traveling is impossible is given:

dx | dt is the rate of change of x with respect to t, where x is any quantity, and t is the time. If dx-dt=one, the change in x is one unit per unit change in t. If $dx \mid dt = 2$, the change in x is two units per unit change in t. Etc. dx | dt may have any real or imaginary value, except when x happens to be time. Then dt I dt is the sate of shange of t with respect to t, where again t is time. Were a time traveler to travel at some rate such as two seconds per second, or one year per hour, as in the discussion in part II, then the rate of change of t with respect to itself would be 2, in the first case, or 8766 (no. of hours in a year) in the second case. But recall that the derivative of a variable with respect to itself is one and cannot be anything other than one. Hence dt | dt can equal nothing but 1. and if dt | dt = one, the change in time is one unit per unit change in time. which is not time traveling but merely ordinary existence, ordinary passage of time. That is, time traveling would require the derivative, dt | dt, to have impossible values, impossible because of the inherent nature of our universe. Hence, because it would require the existence of an impossibility, time traveling is also impossible.

Q. E. D.

Author's Note: Readers will see that the This Article is Concluded on Inside Back Cover

Time Traveling is Impossible (continued from page 192)

foregoing arguments, based on logic and mathematics, and not on any abstractions nor on hypothetical "methods" of time traveling, cannot therefore be refuted by anything other than logic and mathematics. All arguments based on ad hoc axioms are by their very nature inadequate to refute the above discussion. Anyone familiar with logic and mathematics who wishes to continue this discussion is inviled to write the author, care of FANTASY.

ROBERT E. HOWARD



An Impressionistic Linoleum Cut by Duane W. Rimel

[Note: This cut arrived too late to be included with the article on page 177.]

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