

SCIENCE*FICTION NO. 1

JAN. 1946 FAPA/VAPA

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The love story of a man of science in
a not-unlikely future.

"but doth suffer..."

by ROBERT BLOCH

The first time I saw Lorraine she was combing her hair in front of a mirror. The movements of the comb made little golden ripples against the smooth white shores of her brow.

Sometimes the little things like that hit you the hardest. But what's the use of explaining? I fell in love with her.

We were introduced immediately, of course. It's never hard to get acquainted at one of Sid's parties. Usually I felt like an outsider there, but with Lorraine present everything changed.

Apparently Sid had been talking, because she seemed to know all about me, and about the work I'd been doing. She was friendly, casual, but with a certain intensity. I suppose that's what really attracted me -- the vibrant quality, the enthusiasm and sheer vitality of her personality. Again, there's no use attempting to analyze her power. I was hopelessly infatuated from the start.

Lorraine had been assigned to a Rocket Sector in New City and she was eager to talk about her work. The party ebbed and flowed around us while we talked. I don't think either of us was conscious of the passage of time.

It came as a shock when the darkhaired man tapped her on the shoulder.

"Time to go, darling," he said.

"Hello, Matt." She turned. "Matt Collins, this is Don. You've heard Sid speak of him, I suppose?"

Matt nodded, a bit curtly. I sensed jealousy -- and something else.

Many of Sid's guests disapproved of his asking me, and I knew it. But his parties are always a bit unconventional, and Sid's not the sort to let prejudice govern his friendships.

Matt was obviously uncomfortable. He had to force himself to respond. "Oh yes, Don. Sid's always talking about your brilliant work. Dehydration, isn't it? I've seen some of your graphs. We use them in Transport."

He didn't look at me. He looked at Lorraine -- at the golden waves cascading down her back.

"We really must be going, dear," he said. Lorraine rose. She smiled, held out her hand. I pressed it. Surely a gesture of course. But Matt scowled.

They left together. I stared after them, and Sid drifted over.

"Gorgeous, isn't she?" he murmured.

I nodded.

"But not for you, Don."

I nodded again. But something inside me rebelled. Why not for me? Why not?

Back at quarters, I went through the routine mechanically. All the next day I thought of her, doing my work in a daze.

Feld noticed it too.

He was watching me carefully all day, and about four o'clock he made up his mind.

"Better get a check-up, Don. You're not functioning up to standard."

Feld is probably the only man in the world who can order me around, but I've never known him to take advantage of it. He knew as well as I did that it was an order, but he was decent enough to make it sound like a suggestion.

I had hoped to contact Lorraine that evening, but I knew it was useless arguing with him. It's his job, after all, and he's responsible. He took me over right away in the giro.

It was just the usual routine. I hate it, the blackout worst of all. Sometimes it brings peace, but this time I fought it. It robbed me of my memories of Lorraine, robbed me of my chance to think about her.

Perhaps I'm a little bitter about the whole thing. Dr. Tal and the whole lab staff have done wonders for me. Certainly I felt refreshed, invigorated, afterwards. It had helped, you see.

Fortunately, they didn't

use the probe. They decided it was all mechanical, and when consciousness flooded back they knew no more than they had before.

But I remembered Lorraine.

It didn't take me long to teleflash her. We arranged to meet that evening. Sid was giving another party and it would be less conspicuous that way. I had sense enough not to want to attract any attention, and she was tactful enough to leave the responsibility up to me.

She came, and without Matt. That proved she was interested after all; it wasn't hopeless.

We talked. We walked, after the affair was over. We planned to meet again. Already the conversation had assumed an intimacy. We no longer spoke of our work, but of ourselves.

Lorraine was wonderful. No self-consciousness, no embarrassment, nothing to mar the communion of minds.



"... the first time I saw Lorraine..."

It was the first of several meetings. I can remember every detail with a clarity that is at once precious and painful. No sense in going over the whole story .. probably dull enough to an outsider.

Only the climax is important. It came one afternoon during Rest Day. It had to come.

After all, she had encouraged me. I knew she did not share the general prejudice; knew she was generous, understanding, and kind. ~~She~~ liked me, wanted to be with me.. and I could hope for the rest.

Of course I told myself it was impossible, fought against it. But it had to come. ~~And~~ so.. I told her that I loved her.

We were sitting on a bench overlooking the Flight Ground, high above the field. I remember how she pulled away from me and stood up, turning her head so I couldn't see the look on her face.

The wind whipped the golden cascade of curls across her shoulders as she faced me once more, and I saw there were tears in her eyes. She couldn't speak, but she was crying.

I couldn't cry. I could only watch her as she moved her hands pitifully in ivory patterns of bewilderment and fear.

"No, Don," she whispered. "No, we can't.. don't you see? We can't.. ever.."

Then Matt appeared, out of nowhere. He didn't speak, nor did I. Maybe he'd been spying on us. I didn't know, and it didn't matter.

What mattered was the way Lorraine turned to him instinctively, and held out her arms.

He led her away. Neither of them looked back. Neither of them said a word.

I never saw Lorraine again. They said she had been transferred the next day. Matt went with her. I don't go to Sid's parties any more. I've learned my lesson; I just keep working.

After all, I should have known it was hopeless; What Lorraine did was natural, inevitable, and I don't suppose I ever really expected it to turn out any other way.

They can use all the high-sounding phrases they like, but admiration and respect don't add up to anything more than .. admiration and respect. They have gone to a great deal of trouble to praise and honor my brain, but they can never know what it is to live in my body.

I understand all that. But it doesn't make any difference in the way I feel about Lorraine. I will always love her, always endure the torment of that love.

Or perhaps not always. The brain they thought enough of to seal it up in this perfect plastic body must surely learn some day to control the glands and organs that, after all, depend on it. Eventually it must learn to banish the emotions that have lingered so uncountably long after the flesh.

But in the meantime there is memory, that perfect memory, that made this brain too valuable to lose. To keep me from forgetting even a single moment of the rapture.. or the pain.

ZOMBIE...?

BY JAMES BLISH

Semanticists are prone to leap up and down in controlled but intense fury at the use of the word "life". There is no life, according to the keepers of the Abstraction; only Living Things.

There was a time when this was a useful concept for the biologist. Surrounded by hypotheses as to the nature of "life", from the Mechanism of T. H. Huxley and Ernst Haeckel to the Vitalism of Descartes, it was useful for him to remember that, in his world, nothing was "alive" unless it possessed all of a list of ten characteristics: irritability, reproduction, growth-by-intesusception*, contractility, and so on. Several centuries of observation had failed to turn up any substance except protoplasm which possessed all of these ten, and after a while it became convenient to use "living substance" and protoplasm interchangeably - in effect, an eleventh characteristic had been added, the possession of the specific physicochemical construction of protoplasm.

Biology today has been suffering from this eleventh assumption. Aside from the discovery that protoplasm has no "specific" construction, but varies constantly from moment to moment, we have blundered into the country where indisputably non-protoplasmic creatures dwell, creatures which possess that thing the semanti-

cists insist we must not call "life" without possessing anything like its classical characteristics. Principle among these are the filterable viruses.

Discovery of the viruses - called "filterable" because they will pass through the porcelain pores of a Berkfield filter, which stops every known bacterial form - presented biologists with this stumper: Is an organism alive if it possesses nine out of the ten characteristics? Eight? Seven? Five? Where is the line to be drawn?

The viruses, causative agents of tobacco mosaic rust, scarlet fever and (it is suspected) the common cold, reproduce like wildfire, and show a number of other characteristic "life" reactions. One of these reactions is more highly developed in the virus than that of any other form: that of mutation. Tobacco plants have been bred to resist the mosaic virus; in six months a new virus strain has appeared, which will attack the hardiest plants indiscriminantly. This is a speed of mutation absolutely unmatched anywhere else in pathology - and provides the main evidence for assuming that the serum-indifferent common cold is a virus disease.

The virus, until last year, was invisible, and it was reasonable to assume that it was

* Intesusception in biology refers to a growth process in which molecules are added to the organism by the process of digestion. It is used in opposition to accretion, a process in which molecules are simply piled on in layers on the outside, as in crystals.

just an especially tiny form of known protoplasmic life. This Elysium has been shattered by the electron microscope, which has shown conclusively what chemists (not biologists) have suspected for some time: namely, that there is no such thing as a virus, unless a molecule is an organism. Virus is a protein substance, unorganized, non-individual - a thing that should be, in any decently-organized universe, **non-living**. It can be isolated in crystal form; and crystals grow by accretion, not by intesussception. It is the most definitely non-protoplasmic substance imaginable. It acts like an especially complicated series of organic poisons; each one has a different formula, unlike protoplasm which whatever its physical state is assumed to be chemically constant; but -

Yeeee! It's alive!

At the present writing, the study of virus has given rise to a most fascinating theory, which does accept the individual molecule as the organism. The school which propounds this idea describes virus as a degenerate parasite. Using the tapeworm and other animals which have lost most of their innards in the course of devolution, these biologists suggest that virus is the final product of the loss of structure and function common to the life-habits of parasitism. Through centuries of reduction the ambiguous thing - perhaps a simple bacterial form - which the virus was at the beginning has been cut down to a single complex molecule, wherein it summarizes its entire life-processes; so that in community it is nothing more than a solution or a crystal, behaving in accordance with the laws of in-

organic chemistry which govern crystals and solutions, yet as a molecule still retains many of the characteristics of a living thing.

There is an opposition school, as was inevitable in the present state of knowledge about virus. This group begins from the opposite extreme - it assumes that virus is not entirely alive - or, more accurately, not yet entirely alive. These boys are our present-day Mechanists, of whom the late Dr. A. L. Herrera of the University of Mexico was the most formidable theoretician and experimenter. They accept that all life originally arose in a chain of increasing chemical complexity leading toward protoplasm; a sort of preliminary inorganic evolution. Virus, in their eyes, is one step in this archeozoic chain, and as typical they point to laboratory experiments wherein forms with but one or two of the ten life-characteristics can be produced at will.

Unfortunately, neither line of thought shows any signs of bringing us much closer to a medically meaningful answer. At present virus experimentation in both camps ~~has been de~~ voting itself to determining exactly what the physical shape and construction of the virus molecules are, and how they behave in an inorganic fashion; a research being carried on by means of the electron microscope, polarized light, and other strictly physical methods. It will probably be ten years before any of this information begins to dovetail into the general pattern of biological knowledge; and until that time, the question of whether virus is half-dead or half-alive must be held in abeyance.

The HILLS *and the* HEIGHTS

Monday, August 5th, 1945: something exploded in Japan.. Hiroshima, to be precise. Seismographs all over the world recorded the disturbance, and scientists wondered mildly what it might be.

Monday, August 6th, and the whole world knew. Presidents and Prime Ministers proclaimed it; radios bellowed it; newspapers headlined it. Atomic energy had been utilized as a weapon of war.

People gasped at the page-high headlines, and expressed surprise, awe, or relief. To some it meant the beginning of a glorious new era, to others the end of the world, and to most.. the end of the war.

There were some, however, to whom the A-bomb did not come as a shock. There were scientists, and some statesmen, who had worked on the bomb, or who had read and studied enough to be aware of its imminent development. And there were the science-fiction enthusiasts, few of whom were accurately aware of the gigantic strides that had been made in nuclear fission, but almost all of whom had been awaiting the development with a blind confidence in its inevitability.

The scientists read the news, and prepared themselves for the struggle to turn the bomb into usable atomic power.

Stefans had talked for years familiarly of atomic space drives and power plants. Now, reacting to the bomb, John Campbell, good editor that he is, spoke for his readers in an article in PM. Most of them were more familiar with the idea of

nuclear energy than with the elements of electricity. They had read all the stories, and they knew just what was going to happen. They were scared.

I talked to some fans the night the news was known, and they said they were ready to run to the hills. They talked about world extermination and atomic explosion, monster mutations; tyranny, ruin, and destruction. Our cities were no longer safe; urban life was outdated; it was time to flee to the backwoods and hills. If they were right, then civilization itself is obsolete.

I don't believe it is.

If there is such a thing as a "characteristic of life," it is the will to go on living. Mankind is no more likely to commit mass suicide, than to toss aside the gains of thousands of years in a mass migration to the hills.

Nor do I believe that the magic words, "Atomic Age," can of themselves initiate the millennium of peace, freedom, security, and happiness for all. It is the great misfortune of the peoples of earth that their rulers today persist in regarding nuclear fission as either an incident of war, or an exceptionally promising patent.

That the era of the inauguration of atomic power will be rough and shocking, undemocratic, violent, and totalitarian, I do not doubt.

But it leads, not back to the hills, but up to the heights.. the stars.

... Judy Zissman



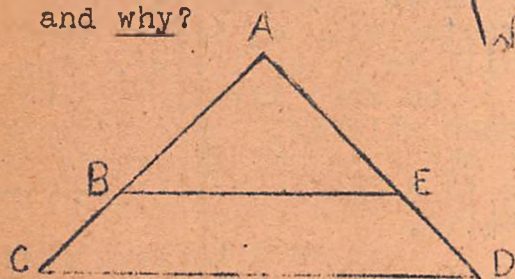
Games,

Puzzles,

Miscellany,

and such....

*
In
the
tri-
angle
ABCDE,
(below)
how ma-
ny more
points has
the line CD
along its
surface than
the line BE--
and why?



quiet please, puzzle-
hounds! It could be that
there's somebody in the
audience who has never seen
it before....

* A column of infantry was march-
ing down the highway to Berlin at
a constant rate of speed. A cour-
ier in a jeep started from the
rear of the column, took a message
to the head of the column, and im-
mediately returned to the rear.
His rate of speed, always con-
stant, was such that by the time
he returned to the rear, the col-
umn had advanced until the rear
was at the point where the head
was when the courier started out.
What distance did the courier cov-
er as compared to the distance
covered by the column?

* Seems (take our word for it) you
had twelve rolls of shiny new nic-
kels, and for some absurd reason
you opened them all and took a
couple out of each. But when you
went to the store, you found out
one roll was full of counterfeits.
The storekeeper was a wise charac-
ter who gave you a little portable
scale and told you if you could
find out in three weighings which
roll contained the phonies, he'd
take 'em all off your hands. How'd
you make out? (Naturally the slugs
weighed--let's see, was it more--
or less--than the good ones?)

* Descartes considered this a conclusive proof of the existence
of God:

"God is defined, according to the Christian religion, as
a perfect being, i.e., a being superior to any other. Let us
assume that God does not exist. Then we can conceive in our im-
aginations of a being who in all respects is like God, but who,
besides, exists. But obviously this imaginary being would be
superior to God, since he would have what God lacks, existence.
Since, however, nothing can be superior to a perfect being, our
assumption must be wrong, and God must exist."

Shame on Des-

cartes! Pick it apart, pals!

REVIEWS and SCIENCE NEWS

We had a thought. Why doesn't someone work out a theory from Ross Rocklynne's "A Matter of Length" in the current Astounding?

Let's say we had pulsating time here on earth; we'd never know it, would we? And just think how easily we could explain all of the less-easily-understood phenomena, by just assuming that extraterrestrial visitors had done it while we were pulsed way down, too low to know we had company.

Like it says right here in Amazing, you could throw out all the nonsensical rigamarole of the so-called scientific method and... anyhow, think of the competition it would give Lemuria!

Reading the Smyth Report on the A-bomb, we are, and running into all sorts of difficulties: If there's someone who knows, perhaps he'd explain what happens when a proton turns into a neutron and positron after entering the nucleus. Where does the extra mass come from? Is there a corresponding reduction of energy somewhere? If it's the velocity of the proton that accounts for it, then what happens to all the extra mass when a neutron turns into a proton and electron? We're confuzzed.

We cite the answer given by Columbia's atom-expert, Howard Shapley, to a student afflicted with an acute attack of hillitis.

He pointed out, with what we can only consider admirable objectivity, that if the entire earth were to go up in a puff of atomic fire, it would not so

much as ruffle the solar system, let alone the universe.

If it were Saturn now, or maybe Jupiter, we might expect all sorts of grave repercussions, but earth-- pah!

Sid Davis suggests:

Wireless lighting for your home may be a result of experimental work on high frequency electromagnetic radiations, the same stuff radarsmen used to identify enemy craft and guide airplanes safely to their bases.

A neon tube, or similar gas-filled bulb, in the presence of these very high frequencies, will pick up enough energy to induce voltages that will cause the necessary ionization of the gas. Power would be derived from a central unit of radiating antennae, in a manner analogous the present-day central heating system.


The biggest problem is to construct a radiating source that will supply enough for practical home use. A masking system of some sort will also have to be devised to prevent that practical joking neighbor from turning on the lights in your house at the precise moment when it should be most dark.

Flash stuff... A new amino-acid cure for ulcers is producing amazing results. Pain stops in four to eight hours, and complete cures have been effected in less than three weeks... New York stores are advertising an "Atomic Flyer." Yep, it's a sled.

SYMBOLS & SUCH




RESISTOR



CONDENSER



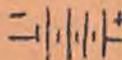
COIL



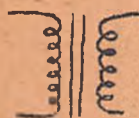
SWITCH





GENERATOR



BATTERY


TRANSFORMER
(IRON CORE)
$$1 \text{ AMP} = 6.28 \times 10^{18}$$

ELECTRONS/SEC


VARIABLE
RESISTOR

VARIABLE
CONDENSER




$$E = IR, I = \frac{E}{R}, E = \frac{1}{R}$$

$$.01433 \text{ W} = 1 \text{ KILOGRAM}$$

CALORY/MIN

$$.7378 \text{ W} = 1 \text{ FT. POUND/SEC}$$


MOTOR


VACUUM
TUBE
(PENTODE)

AIR-CORE
TRANSFORMER

ELECTRICAL
GROUND

ELECTRONICS

No. 1

By Dan Zissman

Circuit: The uninterrupted flow of electrons through a conductor from the negative pole, which is said to have an accumulation of electrons, to the positive pole, which is assumed to have a lack of electrons.

Resistance: A tendency on the part of the components of a circuit to resist current flow. Measured in ohms. (R)

Current: The number of electrons passing a given point in a given amount of time. Measured in amperes. (I)

Voltage: Electromotive force; the pressure with which electricity is forced through a circuit. Measured in volts. (E)

Ohm: The unit of resistance which permits one ampere of current to flow under a pressure of one volt.

Ohm's Law: A statement of the relations between current, voltage, and resistance; expressed as $E = IR$.

Power: The product of the voltage and the current ($P = EI$). Measured in watts. The watt is the electrical unit of "work," or

Polarity: The nature of the charges on the opposing poles constitutes polarity, and determines the direction of current flow.

Direct Current: DC has a constant polarity so that current flows in the same direction at all times.

Alternating Current: In AC, the poles continually reverse as the positive builds up a negative charge from accumulated electrons; frequency of alternation determines the cycle. (Ordinary house current, for instance, is 60-cycle.)

Technicians are wonderful people. Not only do they make things which are beyond understanding.. they also talk a language which defies translation.

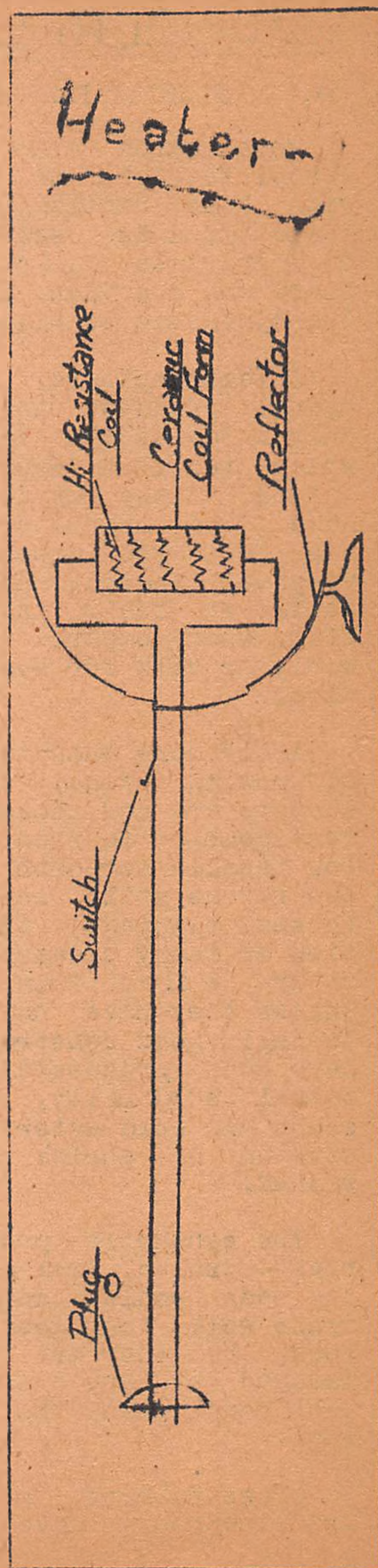
Readers follow Don Channing through a maze of electronic terminology, and finish the story still not quite sure of what happened.. why, or when. What seems indicated is a necessarily somewhat long, but possibly painless course in the language of electronics while examining the innards of some of the more familiar gadgets.

The simplest lash-up that can be used to illustrate the pure resistive circuit is the electric heater. The conductors leading to the element are of such diameter and material that the resistance inherent in these is considered to be nil. The only resistance in the circuit is considered to be in the heating element itself. This is made of special wire which ordinarily has a high resistance (or in other words, is a poor conductor), but is able to carry a great deal of current without rupturing.

Let us assume that the intrinsic resistance of the element wire is one ohm per foot. Using 25 feet of it in a tightly wound coil (coiling, by the way, in heaters, is used purely for space-saving; it has no mysterious virtues.) would permit, according to Ohm's Law, 4.8 amperes of current to flow if a normal house voltage of 120 volts is used. By a corollary of Ohm's Law, the power dissipated in watts is equal to the voltage times the current, or in this case, 576 watts.

Since .860 watt-hours equals one kilogram calorie, our heater will yield 495.36 kilogram calories per hour, or enough heat to raise 495.36 kilograms of water one degree centigrade... or in more easily understandable units, 10 lbs. of water 100 degrees centigrade (from freezing to boiling, that is.

Other electrical devices-- toasters, electric stoves and waffle irons, flat-irons, soldering irons, and therapeutic heating pads-- are all variations of the same circuit-- and their construction is dependent on the particular heating need.



WONDERFUL POST-WAR WORLD

NO. 1: PLASTIC PANTIES

By Branda Winn

When nylon caused Sunday School teachers to rendezvous with hose bootleggers, while their husbands used the stuff to parachute into Germany, there was a sudden interest in the synthetic textiles.

Chickenfeathers, glass, soybeans, peanuts, and milk are only a few of the sources from which textiles are being obtained. These new developments make good magazine copy, and they feed the patent lawyers very well indeed, but they are still in their thumb-sucking stage when compared to cotton, wool, or silk for everyday service.

After more than twenty years of growing pains, viscose and acetate are now adollescening into serviceable fabrics, but the low tensile strength of these two rayons still inclines them to seam slippage, the acquisition of fanny creases, and premature holes from abrasion. Unless they have had an exceptionally good construction, or have been processed for dimensional stability, even mild soaps and cold water flats will stretch or shrink them when washed.

The synthetic protein fabrics -- aralac, from milk ~~casein~~, soy bean wools, and others -- drape well, look good, and feel good, but they are frequently damaged by dry cleaning, and just can't stand the gaff like wool.

Glass fabrics, because they are fireproof, have been valu-

able as draperies, and for industrial uses, but clothing made from even the best glass fibers has caused more skin irritations than love in a haystack.

Even the pet nylon, while it Grableizes the gams, won't be Lamouring anybody in dress form until they find a way to make dyes stick to it. It is also subject to serious seam-slippage, and weakens when exposed to strong sunlight.

So far it sounds like the writer of this piece rides a horse because automobiles don't let go on the whiffle-tree, but cynicism hasn't set in quite that far.

In time all textiles will be man-made, because all of the natural fibers have shortcomings; even with centuries of breeding cotton plants, silk, and sheep do it too.

Textile technology will be coming out with a really elastic fabric -- no plackets or flies needed. There will be clothing goods that can withstand polar temperatures, and still weigh only a few ounces, fabrics that will require no sewing, on which seams will be fused with a hot iron. And that will be the last time they need an iron, too, because the crease-resistant fabrics won't ever need pressing.

But hang on to your jeans a while longer. This is now, so don't let the DuPont ads kid you on synthetics; they all need gobes of improvement.

THE WHODUNIT EDITORS

Judy Zissman is about as close as this publication comes to having an editor-in-chief. The mag was her idea, after all.

She claims to make her living as a "ghostwriter for a ghostwriter," but it's really just literary research. Has also published a couple of detective pulps, and will bet on her private collection of rejection slips against any struggling young etc. who wants to try. A member of Vanguard, on the EAPA waiting list.

Larry Shaw is probably our managing editor. Also chief mimeographer, likewise head stencil-cutter, and technical advisor on fanstuff.

Shaw has been working as junior editor on a trade journal, but is planning now to leave the editorial field temporarily, and try his hand at free-lance writing. Member of EAPA and Vanguard both.

Dan Zissman would be science editor, if we had enough science besides his to edit. Also functions as chief stylus operator and pseudo-art director.

Dan works in an electronics lab right now, but is planning to quit in the fall and let the GI Bill take care of him, while he catches up on what the Navy left out of the Radar Technician course. Vanguard member.

The Authors will get into this column next issue. This time we figured everybody knew more about most of them than about most of us.

BLUE PENCIL BLUES

Could be a few pages aren't just the way we intended them to be. Could be too, we never did get the reviews and science news we desired, or the very high-class photo-offset-combined-with-silk-screen cover we had in mind. Could be practically anything except that we should turn shrinking violet.

We like Science Fiction. Even the first issue. And the second one...

We've already lined up a few articles that should be of interest. Norm Stanley promises one on "cold light." If you don't know what that is, read S.F. and find out (adv.). The "Here's How!" will be on book-binding, and "FWWW" on papers and paper supplies.

We're hoping for more Bloch, and we'll heckle Blish again and see what turns up.

And the rest, pals, is up to you. Most of all we need reviews, items to make a genuine science news column, math puzzles, letters, and all that there.

About the reviews.. we'll publish any review on a magazine, book, movie, play, art exhibit or what-have-you that's well done and seems to us to have direct reference to science or stuff. Give please.

Articles and stories are of course always needed. We'll return any we can't use, promptly and in good condition.

Sorry this one had to be on yellow paper, but we couldn't get any white that was even this legible. We hope things will have eased up some in a couple of months.



KNEEL

By Arthur Lloyd Merlyn

My masters, it is a terrible thing you have done.

You have lived so long in the smooth-polished caverns of the Dron star that you have forgotten the fields and cities of your ancestors. You have forgotten, in your eternal artificial day, the mystery of night over Media, and the beauty of it. You have dwelt so long in the planet of the Council that you have forgotten your aeon-old home.

Strange facts, no doubt, to hear from the tongue of a compurion; an uncomfortable tone of voice from an android, born in the life-vats of Draconis II, and shipped to Media in a crystal vacuum-case. It is not my duty to think on such questions, but only to be a repository of certain facts not readily entrustable to writing or the machines.

But someone must think of them, and if I cannot claim the common inheritance of the men who ordered me made, neither have I so much to lose by the asking.

Perhaps you did not bother too much over the details of the affair. Smug in your far-off star you received the reports, and you acted upon them mechanically, seeing that such-and-such was possible and would serve the purpose. You were

prompt; and sentimentality did not weaken the will which was toward the good of the whole. Hac iklakic, you said, and this was the best face you put upon the matter.

Some of us know better. Doubtless, it is all but forgotten in the Dron star, except as an occasional subject for self-congratulation; running a star-cluster leaves little time for hindsight. Let me supply that hindsight, in my capacity as compurion.

It was the hideous irruption of the Black Mold which called up this action. The Black Mold was deadly, but not absolutely inescapable; the light, transparent, flexible airsuits which you issued your doctors made them immune, although their immunity and their work alike were of little account, for good reasons you doubtless recall. Automatically the cordon of ships went up around the ravaged planet, and through it came only such spacefliers as had been sterilized by your doctors, and only such Medians as were passed as safe - and desirable.

I am speaking as a compurion, am I not? I will pass over, then, the hatred with which those same sterilely-sheathed doctors walked when they walked upon Media, and the fists that were shaken at the

sky, and the cries of terror and pleading that went up toward that silent steel sphere of patrol ships. Each day a thousand selected men were carried off to other worlds, but what were thousands against the millions who still waited, and were struck down into black liquescence even while they stormed the docks?

But it was better that millions die, you said, than that a hundred worlds, a million cities be reduced to charnel darkness. Hac iklakic - if for the good of the whole. It was that same phrase - mother of tears now, but father of the wrath to come! - that decreed the destruction of Media; decreed it at a time when certain curious coincidences -

But I am stepping out of my role. Let us once more be impersonal. The logic of the plan was flawless. What was to happen after all were transported who could be transported, and the rest of Media's peoples were oozing corpses? Was Media to remain a festering, mortuary world, its cities crumbling, its aspect changing in the skies from a blue star to a black one, and then to disintegrative gray? Was it to remain a perpetual source of contagion?

No: Media must be fire-swept, until no single fleck of disease remained. The great powerplants went up in a belt about the planet at stated intervals, built by engineers in sterile sheathes, engineers who were not supposed to know for what purpose they built. The volume of the exodus was cut, and cut again, as more and more ships were transferred to their project.

There were geotrons in those stations that might have flung a mountain like a thistle. But Media was 600×10^{21} tons of mass - I apologize for the figures, but I mean only to show that no possible geotron or chain of geotrons could have affected its motion; no, the effect was to be, instead, a series of sledge-hammer blows, momentary intensifications of the Sun's gravity, striking and destroying each station as the planet revolved. These blows were timed to strike within 49 hours of each other, Media's vibration period.

And a gong or bell struck once each vibration-period -

I was on Draconis IV when those mighty power plants began to build up their gravitational web, but I am a compurion, and from the known facts I can deduce how it must have seemed to those hapless millions left on the doomed world. You have travelled on geotron-powered ships, and have seen how the stars seem to be twisted a little through the field; it was like that. The sleepless dying ones on the night side saw first only a small distortion; but then, with ever-increasing speed, the very sky began to flicker and waver as if it were not the sky at all, but only a gray, writhing, rippling chaos of dim light, limning the upturned faces of the Medians.

On the sunward side it was less spectacular, but none the less terrifying. The sun rose normally that morning, but before it had climbed halfway to the zenith it became obscurely flattened and elongated, as if splitting like some flaming amoeba; and then there were two apparent suns, connected by a

flaring spindle. Before noon the incredible fading effects began, so that shortly there was no sun at all, but only a faint glowing haze, which had already begun to ripple, like disturbed water -

Then the first blow struck.

Where was all your secrecy then, my masters? For I was on Draconis IV, but all about me knew what was happening thirty millions of miles away. The first stroke of that gravitational hammer sent waves of reaction through the very fabric of space, as you should have guessed it would, and we heard - I speak the truth - we heard the first stroke of that gong which was a world, in the streets of Ardith.

How can I describe that sound? The great bell of Fie-ia, which shatters windows and penetrates the heart - that bell would have been unheard amidst this sonorous thunder. But of what use to tell of it? You did not hear it; though they heard it on Draconis IX, it could not cross the interstellar gulf to you. It was the death-knell of a world, and an awful and noble sound.

On Media itself the sound had little beauty in it. There were too many screams from the doomed millions, tottering through streets which reeled and shuddered crazily beneath them; the roar of buildings cascading in rubbish to the ground; the far-off roar of continents grinding down into the raging ocean. Of what happened when the next blow struck, and the next, the heart of a compurion is too small to comprehend.

But it is over now. The Draconis system has a vast belt of fragments between its fourth and fifth planets, and of its civilization, of which Media was the heart, little remains but helpless exiles like myself, and a few who managed to break through the cordon during the last months of chaos. Those few, too, will die out, for they carried the contagion with them. Draconis IV has been abandoned by its colonists, most of whom were from other systems.

There remains now only this small group, the compurions, hidden upon Draconis III, where we have concealed the last surviving Medians. And this story is as much for the eyes of their descendants as it is for you; and I shall sign it, Oniseau, thus, with a flourish.

Yes, I am Oniseau, that same compurion who was dispatched to Media with the formula which would have stopped the Black Mold; that same compurion who stood in the streets of Ardith between two of your guards, who abandoned me with sardonic grins when the first gong-stroke told them my information was become useless.

I am that same compurion who knows that you sowed the Black Mold, and ripped out the living heart of the stars, in order that your rule be forever unquestioned. These men of Media will be told; and though in the coming centuries they will forget, it will not be forever.

When they learn again the secret of spaceflight, they will find you.

Hac iklakic.

THE SILK SCREEN PROCESS

by Larry Shaw

I have seen examples of silk screen printing in which as many as eight different colors were used, some of them opaque and some transparent so that various combinations produced an amazing variety of effects. The running off, say, five colors to produce eight in combination is fairly common.

It would be ridiculous to claim that a newcomer to the process could immediately, or comparatively soon, turn out works as fine as these. But silk screening is much simpler than most people are inclined to think, and the beauty of the results that can be had by a modicum of effort are out of all proportion when compared to any other method of duplication. In addition, it is possible to set up your own outfit almost anywhere at extremely low cost, and even if you buy the finest materials available, it is impossible to spend any outrageous amount of money.

The "machinery" used in the process consists of a wooden frame, which is hinged at one side to a flat work table or bench, and over which the stencil is stretched. The printing paint is forced through the stencil with a rubber squeegee, which is simply a rubber blade with a wooden handle, similar to the squeegees used in window washing.

There are two commonly used methods of preparing the stencil. The base in each is silk, or bolting cloth, of fine mesh,

Here's How!

which is stretched tightly over the frame. In the first (or "Tusche resistant") method, the master drawing is registered carefully in position under the silk, through which it is visible, to provide a guide in drawing and lettering. Then the pattern is drawn on the silk with Tusche (lithographic ink). Tusche comes in liquid form and is about the same consistency as India ink, so that it is easy to draw or letter with it. Crayon, dry-brush, spatter and other textures can be used.

When the design is completed, the entire top surface of the silk is given two coats of thinned-out glue. After this is entirely dry, the under side of the screen is washed with turpentine, benzine, naphtha or kerosene. This dissolves the Tusche drawing and destroys the foundation for the glue in the spots where the Tusche was applied. The glue breaks away in those spots, but not on the rest of the surface, and an open stencil of the drawing results.

In printing, commercially-prepared color, or oil color, is used with commercially-prepared mediums. The most commonly used are transparent base (which makes the color print more transparently), and reducing varnish (which makes the

color flow, but print opaquely). The mixed paint is laid across the edge of the screen inside the frame and the squeegee is run across the surface, forcing the paint through onto the paper underneath. A small stack of paper can be placed beneath the screen, the number of sheets, of course, depending on the paper's thickness. One sheet is fastened down with Scotch tape in the exact position required, to act as a guide in placing further supplies of paper. More paint can be applied to the stencil at any time it is needed.

The above explanation takes for granted that one color is to be used in the printing. However, additional colors can easily be used. The portion to be printed in each color is drawn on the stencil separately each time. When the required number of sheets in one color is printed, the entire screen is washed off, using benzine to remove the paint and cold water to remove the glue. The master drawing is then registered in place under the screen again, and the areas to be printed in the second color are drawn in the same way. The process is repeated for each color used.

The Film method of making stencils is a more recent development, and is undoubtedly easier, especially for one accustomed to cutting mimeograph stencils. The so-called "film" comes in rolls or sheets made of glassine paper on which lacquer (and sometimes shellac) has been sprayed. The film, which is transparent, is placed over the master drawing, lacquer side up, and is temporarily attached with Scotch tape. The stencil is cut by outlining

the drawing with a cutting knife, using just enough pressure to penetrate the lacquer, but not enough to cut the glassine paper. The lacquer is then stripped out of the areas to be printed, and the film is ready to be attached to the silk. Still taped to the drawing, the film is placed in register on the printing table, and the frame on which the silk is stretched placed over it. The film is then adhered to the silk by rubbing over it carefully a rag soaked in lacquer thinner. This is quickly followed by a good stiff rubbing with a dry rag. This makes the film an integral part of the screen, and the screen can be turned over and the glassine paper stripped off. Printing, of course, is accomplished in the same way described before.

All the materials necessary can be obtained from any art supply store. The films used in the second method are manufactured, as far as I know, only by the Nu-Film Products Co., 56 W. 22nd St., New York City 10, and they may be ordered direct if desired. The Nu-Film people have published a manual for silk screen preparation by the film method, which they will send on request, free of charge. I recommend it for anyone desiring to try the process, no matter which method is to be used. Besides many valuable illustrated tips on screen preparation, it (naturally!) lists the various types of films they make with their uses and prices. Its cover is a beautiful example of what can be done with the process.

Try silk screening. You'll find it not only practical, but a lot of fun as well.