



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Resignation

Fr. Schiller

1786

Auch ich war in Arkadien geboren,
Auch mir hat die Natur
An meiner Wiege Freude zugeschworen;
Auch ich war in Arkadien geboren,
Doch Tränen gab der kurze Lenz mir nur.

Des Lebens Mai blüht einmal und nicht wieder;
Mir hat er abgeblüht.
Der stille Gott - o weinet, meine Brüder -
Der stille Gott taucht meine Fackel nieder,
Und die Erscheinung flieht.

Da steh ich schon auf deiner finstern Brücke,
Furchtbare Ewigkeit!
Empfange meinen Vollmachtbrief zum Glücke!
Ich bring ihn unerbrochen dir zurücke,
Ich weiss nichts von Glückseligkeit.

Vor deinem Thron erhebe ich meine Klage,
Verhüllte Richterin.
Auf jenem Stern ging eine frohe Sage,
Du thronest hier mit des Gerichtes Waage
Und nennest dich Vergelterin.

Hier, spricht man, warten Schrecken auf den Bösen,
Und Freuden auf den Redlichen.
Des Herzens Krümmen werdest du entblößen,
Der Vorsicht Rätsel werdest du mir lösen
Und Rechnung halten mit dem Leidenden.

Hier öffne sich die Heimat dem Verbannten,
Hier endige des Dulders Dornenbahn.
Bin Götterkind, das sie mir W a h r h e i t nannten,
Die Meisten flohen, Wenige nur kannten,
Hielt meines Lebens raschen Zügel an.

"Ich zahle dir in einem andern Leben,
Gib deine Jugend mir!
Nichts kann ich dir als diese Weisung geben".
Ich nahm die Weisung auf das andre Leben,
Und meiner Jugend Freuden gab ich ihr.

"Gib mir das Weib, so teuer deinem Herzen,
Gib deine Laura mir!
Jenseits der Gräber wuchern deine Schmerzen."-
Ich riss sie blutend aus dem wunden Herzen,
Und weinte laut, und gab sie ihr.

"Die Schuldverschreibung lautet an die Toten",
Hohnlächelte die Welt;
"Die Lügnerin, gedungen von Despoten,
Hat für die Wahrheit Schatten dir geboten."
Du bist nicht mehr, wenn dieser Schein verfällt."

Frech witzelte das Schlangenheer der Spötter:
"Vor einem Wahn, den nur Verjährung weicht,
Erzitterst du? Was sollen deine Götter,
Des kranken Weltplans schlaue erdachte Retter,
Die Menschenwitz des Menschen Notdurft leiht?"

Was heisst die Zukunft, die uns Gräber decken?
Die Ewigkeit, mit der du eitel prangst?
Ehrwürdig nur, weil Hüllen sie verstecken,
Der Riesenschatten unsrer eignen Schrecken
Im hohlen Spiegel der Gewissensangst.

Ein Lügenbild lebendiger Gestalten,
Die Mumie der Zeit,
Vom Balsamgeist der Hoffnung in den kalten
Behausungen des Grabes hingehalten,
Das nennt dein Fieberwahn - Unsterblichkeit?

Für Hoffnungen - Verwesung straft sie Lügen -
Gabst du g e w i s s e Güter hin?
Sechstausen Jahre hat der Tod geschwiegen,
Kam je ein Leichnam aus der Gruft gestiegen,
Der Meldung tat von der Vergelterin?" -

Ich sah die Zeit nach deinen Ufern fliegen;
Die blühende Natur
Blieb hinter ihr, ein welker Leichnam, liegen,
Kein Toter kam aus seiner Gruft gestiegen,
Und fest vertraut ich auf den Götterschwur.

All meine Freuden hab ich dir geschlachtet;
Jetzt werf ich mich vor deinen Richtertron.
Der Menge Spott hab ich beherzt verachtet,
Nur d e i n e Güter hab ich groß geachtet,
Vergelterin, ich fordre meinen Lohn.

"Mit gleicher Liebe lieb ich meine Kinder!"
Rief unsichtbar ein Genius.
"Zwei Blumen", rief er, "hört es, Menschenkinder,
Zwei Blumen blühen für den weisen Finder,
Sie heissen H o f f n u n g und G e n u s s .

Wer dieser Blumen eine brach, begehre
Die andre Schwester nicht.
Geniesse, wer nicht glauben kann. Die Lehre
Ist ewig wie die Welt. Wer glauben kann, entbehre!
Die Weltgeschichte ist das Weltgericht.

Du hast gehofft, dein Lohn ist abgetragen,
Dein G l a u b e war dein zugewognes Glück.
Du konntest deine Weisen fragen,
Was man von der Minute ausgeschlagen,
Gibt keine Ewigkeit zurück."

I, too, was born in Arcadia;
I, too, had been promised joy
By Nature in my cradle;
I, too, was born in Arcadia,
But the short springtime gave me only tears.

Life's May month flowers once, but not again;
For me, it is past flowering.
The silent God - o weep, my brethren -
The silent God extinguishes my torch
And the appearance ceases to be.

Here I find myself already on your gloomy bridge,
Fearful Eternity!
Take back my mandate for joy!
I return it to you unopened -
I know nothing of happiness.

I put my complaints before your throne,
O veiled judge.
On yonder star there was a pious legend
That you were seated here with the scales of judgment
And called yourself the Remunerator.

Here, they said, fears await the bad
And joys the virtuous.
You would lay open the hidden ways of the heart,
You would solve the enigmas of providence
And would settle the account of the suffering.

Here there would be a home for the banished,
Here the thorny road of the enduring would end.
A child of the Gods, called t r u t h ,
From which most fled, which a few only knew,
Stopped my life's quick flow.

"I shall repay you in another life,
Give me your youth!
I can only give you this direction."
I accepted the direction for another life,
And I gave her the joys of my youth.

"Give me the woman, so dear to your heart!
Give me your Laura!
Beyond the grave your sorrow will bring you profits."
I tore her from my bleeding, sore heart
And wept loudly, and gave her.

"The promissory note was made to the dead",
The world smiled disdainfully;
"The liar, in the pay of despots,
Has offered you shadows for truth;
You are no longer there, when this check can be cashed."

x) i.e., religion.

Impudently the mass of snake-like scoffer~~s~~ mocked:
"You tremble before a delusion consecrated only by
superannuation?"

What good are ~~xxxx~~ your gods,
The cleverly invented rescuers of the sick world system,
Supplied by human wit to human ~~need~~ ~~need~~?

~~xxxx~~
What is the meaning of the future, covered by tombs?
Of eternity, about which you talk idly?
Venerable only, because they are concealed by wrappings,
The gigantic shadow of our own terrors
In the ~~concave~~ mirror of our conscience's anguish.

A fictitious image of live figures,
The mummy of time,
Kept by the balsamic spirit of hope in
The cold rooms of the grave -
This your feverish delusion calls - immortality?

For hopes - decay shows them to be false -
You gave ~~c e r t a i n~~ goods away?
Death has been silent for six thousand years;
Has there ever issued a corpse from the grave
To tell us tales of the Remunerator?" -

I saw time flee to your shores;
The luxurious ~~nature~~
Stayed behind, lying as a wilted corpse;
No dead body issued from his tomb,
But I firmly trusted the divine oath.

I have killed all my joys for you;
Now I prostrate myself before your judge's throne.
Courageously I have despised the masses' sneers,
Only your goods I have esteemed highly,
Repayer, I demand my reward.

"I love my children with equal love!"
An invisible genius exclaimed.
"Hear, humans", he cried, "two flowers
bloom for the wise who can find them.
Their names are ~~h o p e~~ and ~~j o y~~ ."

The one who picked one of these flowers,
Should not demand the other one.
Who cannot believe, should enjoy himself.
This theorem is ~~a s~~ old as the world.
The one who can believe, shall ~~forego~~.
The world's happenings are the world's judgment.

You have had your hopes, your reward has been paid.
Your faith was the happiness assigned to you.
You could have asked your wise men:
What you have declined at the minute
You shall not get back from eternity."

INAUGURATION DAY

MARCH 4, 1861



BY GENE KREVES

WITH THE DEATH OF BERTRAND RUSSELL I BELIEVE OUR AGE HAS LOST ITS GREATEST PERSON. HE SEEMED TO ME TO PERSONIFY ALL THAT THE MODERN LIBERAL INTELLECTUAL SHOULD SEEK TO ATTAIN. HIS DEATH HARDLY RECEIVED SPECIAL NOTICE IN THIS NATION, BUT HISTORY WILL RECOGNIZE HIS PRE-EMINENT POSITION. HIS CONTRIBUTIONS TO WESTERN CULTURE AND CIVILIZATION OUTWEIGH THOSE OF ANY OTHER PHILOSOPHER.

BERTRAND RUSSELL IN THE PROLOGUE TO HIS AUTOBIOGRAPHY SET FORTH HIS PREVAILING DESIRES. HE WROTE:

THREE PASSIONS, SIMPLE BUT OVERWHELMINGLY STRONG, HAVE GOVERNED MY LIFE! THE LONGING FOR LOVE, THE SEARCH FOR KNOWLEDGE, AND UNBEARABLE PITY FOR THE SUFFERING OF MANKIND. THESE PASSIONS, LIKE GREAT WINDS, HAVE BLOWN ME HITHER AND THITHER, IN A WAYWARD COURSE, OVER A DEEP OCEAN OF ANGUISH, REACHING TO THE VERY VERGE OF DESPAIR.

I HAVE SOUGHT LOVE, FIRST, BECAUSE IT BRINGS ECSTASY--ECSTASY SO GREAT THAT I OFTEN WOULD HAVE SACRIFICED ALL THE REST OF LIFE FOR A FEW HOURS OF THIS JOY. I HAVE SOUGHT IT, NEXT, BECAUSE IT RELIEVES LONELINESS--THAT TERRIBLE LONELINESS IN WHICH ONE SHIVERING CONSCIOUSNESS LOOKS OVER THE RIM OF THE WORLD INTO THE COLD UNFATHOMABLE LIFELESS ABYSS. I HAVE SOUGHT IT, FINALLY, BECAUSE IN THE UNION OF LOVE I HAVE SEEN, IN A MYSTIC MINIATURE, THE PREFIGURING VISION OF THE HEAVEN THAT SAINTS AND POETS HAVE IMAGINED. THIS IS WHAT I SOUGHT, AND THOUGHT IT MIGHT SEEM TOO GOOD FOR HUMAN LIFE, THIS IS WHAT--AT LAST--I HAVE FOUND.

WITH EQUAL PASSION I HAVE SOUGHT KNOWLEDGE. I HAVE WISHED TO UNDERSTAND THE HEARTS OF MEN. I HAVE WISHED TO KNOW WHY THE STARS SHINE. AND I HAVE TRIED TO APPREHEND THE PYTHAGOREAN POWER BY WHICH NUMBER HOLDS SWAY ABOVE THE FLUX. A LITTLE OF THIS, BUT NOT MUCH, I HAVE ACHIEVED.

LOVE AND KNOWLEDGE, SO FAR AS THEY WERE POSSIBLE, LED UPWARD TOWARD THE HEAVENS. BUT ALWAYS PITY BROUGHT ME BACK TO EARTH. ECHOES OF CRIES OF PAIN REVERBERATE IN MY HEART. CHILDREN IN FAMINE, VICTIMS TORTURED BY OPPRESSORS, HELPLESS OLD PEOPLE A HATED BURDEN TO THEIR SONS, AND THE WHOLE WORLD OF LONELINESS, POVERTY AND PAIN MAKE A MOCKERY OF WHAT HUMAN LIFE SHOULD BE. I LONG TO ALLEVIATE THE EVIL, BUT I CANNOT, AND I TOO SUFFER.

THIS HAS BEEN MY LIFE. I HAVE FOUND IT WORTH LIVING, AND WOULD GLADLY LIVE IT AGAIN IF THE CHANCE WERE OFFERED ME."

RUSSELL, OF COURSE, DID NOT EXPECT TO SURVIVE DEATH. HE SAID THAT HE BELIEVED THAT WHEN HE DIED, HE WOULD ROT AND NOTHING OF HIS EGO WOULD SURVIVE. THOUGH HE LOVED LIFE, HE SCORNE TO SHIVER IN TERROR AT THE THOUGHT OF ANNIHILATION. HAPPINESS WAS GENUINE, EVEN THOUGH TEMPORARY. EVEN THOUGH THOUGHT AND LOVE PERISHED, THEY STILL HAD VALUE.

WE WERE FORTUNATE TO HAVE HAD BERTRAND RUSSELL LIVING IN OUR TIME. HIS DEATH EARLY IN THIS YEAR, 1970, AT THE AGE OF 97 YEARS, TOOK FROM US A MIND AND HEART THAT WE SORELY NEEDED, A CONSCIENCE THAT STABBED US INTO SHARP AWARENESS. TO THE AVERAGE AMERICAN, NO DOUBT, BERTRAND RUSSELL WAS NOTHING MORE THAN A BRIGHT, ECCENTRIC, BRAIN-WASHED BRITISH INTELLECTUAL WITH DANGEROUS IDEAS AND ANTI-AMERICAN SENTIMENTS. RUSSELL'S ADVANCED VIEWS ON SEX AND MARRIAGE BROUGHT FORTH MUCH ANIMOSITY. RUSSELL DENOUNCED AMERICAN FOREIGN POLICY IN VIETNAM. HE POINTED OUT IN HIS WAR CRIMES TRIBUNAL THE GENOCIDAL POLICIES OF THE PENTAGON...POLICIES WHICH ARE SLOWLY COMING TO LIGHT. RECENT REVELATIONS TEND TO UNDERSCORE THE CHARGES HE LEVELLED.

(1)

IN HIS SEARCH FOR LOVE, BERTRAND RUSSELL RAN INTO MATTERS OF CONSCIENCE. PERHAPS INTUITIVELY OR IN SOME SUBTLE MANNER, CHILDREN RECOGNIZE CHRISTMAS AS A TIME FOR SYMBOLIZING LOVE BY GIFTS. BERTRAND RUSSELL AS A CHILD, INTELLECTUALLY COULD NOT ACCEPT THE MYTHOLOGY OF XMAS. HE DID NOT BELIEVE IN FATHER CHRISTMAS, THE BRITISH EQUIVALENT OF SANTA CLAUS, AND WHEN HIS GERMAN GOVERNESS TOLD HIM THAT NO ONE GOT CHRISTMAS PRESENTS UNLESS HE BELIEVED IN FATHER CHRISTMAS, LITTLE BERTRAND BURST INTO TEARS. ALTHOUGH HIS CHILDHOOD WAS GENERALLY HAPPY, HIS ADOLESCENT PERIOD WAS A TIME OF LONELINESS. HE WAS SHY, AWKWARD, WELL-BEHAVED AND GOOD NATURED. HE WAS BROUGHT UP AS A UNITARIAN, BUT HE SOON WAS AFFLICTED WITH RELIGIOUS DOUBT. BRITISH UNITARIANISM AT THAT TIME WAS HEAVILY ENGAGED IN AN ATTEMPT TO MAKE CHRISTIANITY RATIONAL. BRITISH UNITARIANISM TODAY IS HARDLY HUMANISTIC. BY THE TIME HE REACHED 18 YEARS OF AGE, BERTRAND RUSSELL HAD READ WIDELY AND HAD BECOME AN ATHEIST. HE SAID:

"THROUGHOUT THE LONG PERIOD OF RELIGIOUS DOUBT, I HAD BEEN RENDERED VERY UNHAPPY BY THE GRADUAL LOSS OF BELIEF, BUT WHEN THE PROCESS WAS COMPLETE, I FOUND TO MY SURPRISE THAT I WAS QUITE GLAD TO BE DONE WITH THE WHOLE SUBJECT."

It was evening of the first really warm Sunday last spring, and the arboretum had been thronged by people; they had come in pairs, in family groups, or just alone, and their garb had been as varied as these times admit. I was standing fascinated by the overwhelming bloom of a large tree, perhaps a crabapple, perhaps an ornamental pear, when I saw a young couple coming toward me; they were both in tight-fitting shorts, he chubby and tanned, she more lithe and winsome. Should I ignore them, or give them a welcoming smile? I had just left my office after several hours of lonesome work, so I chose the latter alternative. She caught my glance as if I had thrown her a ball, and called out, 'Do you know what kind of a tree that is?' 'Well', I said, 'I thought it was a crabapple, but its leaves and bark make me think it may be a pear tree--you know, apples and pears are closely related members of the same family, the roses'. We couldn't find a label on it, so they settled for my determination of it as a pear. We stood beneath it and looked up through the branches, arched all about us, to the deepening blue of the evening sky. It didn't make any difference whether it was a pear or an apple--the experience of being there was the same--a deep realization of the wonder of such marvelously beautiful bloom. However, a little later, after they had gone, and I had found a label marked Malus baccata, I hastened to send them a note to the effect that although Linnaeus had called it Pyrus baccata it has, since his time, often been thought of as an apple. A minor semantic difference, largely dependent on whether the styles in the flower are connate or free, and other similar criteria, however much fuss some kinds of people--horticulturists, nurserymen, taxonomists, and their ilk--may care to make over it.

I say, I sent them a note. But how did I know their name or their address? Well, as we stood there, I said, not without curiosity, 'But why are you two youngsters so interested in this tree, and in the arboretum in general?' 'Oh', he replied, 'it's right along my line--I'm studying urban design at PQ University, and Jerry here is my wife. We're Joe and Jerry Smith', and he stretched out his hand to seize mine in a warm grip. 'I was a student in industrial design for a while, but I just couldn't take the awful stuff being produced in that field these days. So I switched over to urban design, where there's at least a chance of saving some beauty in the landscape'. 'Then you must know my friend, Mrs. Beagle', I said, 'I think she's in urban

P R O F I L E S

A GOOD EYE

THE city of Verona, in the northern Italian province of Venezia (which also takes in Venice), has been a historic center for the craft of printing. Although Venice was the greatest printing center of the world at the beginning of the sixteenth century—lower-case type was introduced there—the first book to be printed in Verona appeared as early as 1472. Today, the enormous Mondadori printing plant—the largest in Italy—lies at the edge of Verona. It is the creation of a rags-to-riches industrialist named Arnoldo Mondadori, who was once an errand boy in a drugstore. It employs about thirty-five hundred workers and turns out everything from comic books to encyclopedias, including twenty-two magazines, which have a combined circulation of a hundred and fifty million; thirty-two million books, hardback and paperback; and the Italian edition of the *Reader's Digest*. At the opposite end of town, in a private house on a hill in a quiet suburb, is a printing plant of an entirely different sort. This is the Officina Bodoni, run by Dr. Giovanni Mardersteig, a naturalized Italian of German origin. Dr. Mardersteig is a thin, shy, birdlike man with a sharp aquiline nose, who looks as though he had been sculptured out of some fine hard wood by a master hand. He is, however, extraordinarily mobile for a man of his age, which is seventy-eight; in fact, his agility suggests an age nearer forty or fifty. He has brown eyes, his hair is gray, and he is about five feet eight inches tall. His education is profound. He is not particularly sociable, and though his manner toward strangers is always affable, he is communicative on only one subject—the craft of printing. The moment it is mentioned, his eyes light up and he talks with great animation. He pursues that craft with the degree of dedication found among virtuosos of all sorts, whether they are pianists or ballet dancers, and he is always slightly uneasy about wasting time away from his printing press.

His printing press is not a rotary press, such as is used almost universally in the industry. It is an old-fashioned hand press, and it occupies a room in his house. It differs only slightly from the one used by Gutenberg. It is what is known as a "flatbed" press, meaning that the type (hand set) lies



Giovanni Mardersteig

in a horizontal frame upon which a sheet of paper (handmade) is laid, the impression taking place when a handle is pulled to exert the proper pressure. In Mardersteig's operations, the paper is dampened before printing, so that the finest serif of the type will not be marred and the paper itself will not refuse the ink. Even the inking of the type is done by hand. This process, plus the subsequent binding, which is also done by hand—he has his own binder in his house—results in the most exquisitely made books to be found anywhere in the world today. Whereas Mondadori can print books at the rate of ten thousand an hour, Mardersteig prints perhaps five hundred a year. His fastidious workmanship is known to collectors of fine books all over the globe, and his books tend to rise in value exactly like the works of famous etchers and painters. Though he shrugs off the title, Giovanni Mardersteig is widely regarded as the world's greatest printer, and the legend "Editiones Officina Bodoni," which appears on the colophon page of each of his books, makes them sought after, regardless of their contents, by bibliophiles on at least three continents.

But the contents are always of great

a literary scholar and a man of impeccable taste. Sometimes he fills commissions for individuals, or for organizations like the Limited Editions Club, in New York, or the One Hundred Friends of Books, in Florence, but most of the time he himself decides what to print, and the mere news that a new Mardersteig edition is off the press brings bibliophiles to his door. His editions at the Officina Bodoni never run to more than three hundred copies. "I do not like these books to come into the hands of those who do not appreciate them," he remarked recently to a visitor. "I prefer them to belong to discriminating collectors or to the libraries of great universities." He prints in every major modern European language, and in Latin and Greek as well, and he speaks, reads, and writes fluent English, German, Italian, and French. (He is inclined to be modest about his Latin and Greek, but friends say that he is nearly as adept at them.) He has lived in Verona for over forty years, and during that time he has printed only about a hundred and thirty titles on his hand press. All are regarded as masterpieces of the bookmaker's art.

But even Giovanni Mardersteig has had to cope, for practical reasons, with a demand for larger editions than the Officina Bodoni can produce. (For one thing, there is not enough handset type at the Officina to print very long books.) So he has created a second printing establishment, in a garden-like environment a block or so from his house, which has five flatbed presses, run by machinery, and can handle bigger jobs. This establishment is known as the Stamperia Valdona—named for the Valdona Valley, in which both it and Mardersteig's house are situated. The Stamperia Valdona represents no compromise with commercial printing methods, however. Its type is set not in the almost universally used system of linotype, which produces a full line of type as a unit, but in monotype, in which each letter is cast separately, so that corrections can be made without resetting, and possibly disturbing, the other letters in the line. The Stamperia Valdona works very slowly for a printing plant of its sort. A more commercially inspired plant might turn out as many as four thousand printed sheets an hour. The Stamperia Valdona, in contrast, will print



BOTCH

FUN CITY was dealt a dastardly blow last week in the form of a revival of "Charley's Aunt" at the Brooks Atkinson. The old farce is a marvel of its kind; after seventy-eight years and uncountable thousands of performances all over the world, its sturdy machinery of disguise and mistaken identity works with but muted creakings of gears (and not unwelcome creakings, mind you, for when it comes to farce, the more familiar one is with the plot the more one relishes it). Indestructible as "Charley's Aunt" assuredly is, on this occasion a production of quite exceptional ineptitude brought the poor thing to its knees and caused me, out of respect for Brandon Thomas, its late author, again and again to shut my eyes and ears to the maiming taking place onstage. What were the producers thinking of when they cast the play? On the evidence, they were not thinking at all—they were playing Russian roulette with the Equity directory. The chief figure in "Charley's Aunt" is Lord Fancourt Babberley, an Oxford undergraduate. Here he is played by the well-known TV comedian Louis Nye, who is in his late forties and who, having suffered the indignity of being rouged, powdered, and bewigged by some dropout from the Frank Campbell School of Cosmetics, resembles nothing so much as a purplish effigy of that old Oxonian, Oscar Wilde; Hamlet's father's ghost would strike a merry, boyish note by contrast. The disparity between Mr. Nye's actual age and his stage age is heightened by the fact that Lord Fancourt Babberley's fellow-undergraduates, Jack Chesney and Charley Wykeham, are played by actors who really are young, as are the three girls that the undergraduates are in love with. To make matters worse, certain other characters in the play, whom one would assume to be in their forties or fifties, are played by actors in their sixties and seventies. A "Charley's Aunt" that becomes a study in geriatrics is no longer capable of being laughed at.

Under the grisly circumstances, Mr. Nye does the best he can, though I

porary patter, and a tiresome emphasis on the sexual implications of a young man's running about in women's clothing. Others in the cast include Michael Goodwin, Rex Thompson, Martyn Green, Eric Berry, Melville Cooper, and Maureen O'Sullivan. The inexpensive-looking sets are by Robert T. Williams, and the direction is by Harold Stone. What a way to end the season!

—BRENDAN GILL

OFF BROADWAY

Outward Bound in a Cloud of Steam

IT is easy to see why everyone connected with "Steam Bath" stuck with it through all those postponements and changes in casting. An outrageous comedy by Bruce Jay Friedman, it has to be done right, and so it is by the cast at the Truck and Warehouse, under Anthony Perkins' direction. It is also easy to see why everyone had so much trouble. Actually, the play does not work, but there is more fun in it, once it gets off the ground, than there is in any number of shows that do. The steam bath, where all the action takes place, is Purgatory—a metaphor that Mr. Friedman doesn't bother to pursue, which is just as well. His line of thought, while novel, is unimpressive, but it does give him room for jokes and routines that pay off. All the characters, except for the Puerto Rican attendant, who is God, and his assistant, are dead and on their way. The raffish crew includes an old-timer, who reports in one funny monologue after another all that he has seen and done in the course of a remarkably well-packed life; a couple of feathery chorus boys; a brash and tiresome Jew; a stockbroker; and, finally, a pretty blonde and a handsome young man (well played by Mr. Perkins himself). What plot there is concerns the young man's attempts to persuade, or needle, God into letting him return to life. All ends in a standoff. Only the two of them are left on the stage; the others have gone through the door that opens. God continues to plead, God, half noticing

him, continues to play solitaire as the curtain comes down. That actual curtain coming down, for the first time in years Off Broadway, turns out to be the most exciting, though not the most entertaining, effect in the show. The most entertaining is one in which God dictates to a machine his specific instructions for running the world: "Clean bath towels in every room at the Tel Aviv Hilton;" "Give that girl on the bus a run in her body stocking."

Mr. Friedman's notion of making God a Puerto Rican steam-bath attendant, full of ethnic pride and ethnic touchiness—sometimes offhand, sometimes tough, and sometimes a down-right showoff, as when he tries to affirm his identity by doing card tricks—is wild and original and entirely appropriate to the show. The part is played to comic, sensitive perfection by Hector Elizondo, an actor whom I hope to keep seeing for the rest of my life. As the old-timer, another rich role, Conrad Bain, who has saved many a fiasco from total ruin in his day, has never been better. Annie Rachel does well as the heroine, and everybody else is all right, too. David Mitchell's set is extremely effective, and, as usual, is Jules Fisher's lighting. As for "Steam Bath" as a whole, there are many slack or messy or dull lines along with the good ones. Mr. Friedman is a gifted comedy writer much of the time. What he could have used, I think, is a stretch on the staff of the late Fred Allen, a man who never made a mistake about humor and who could have told him to take that out or leave that alone or, most important, "That's enough." And I hope Mr. Allen would have advised him to cut all those swatches of feverish chatter sprinkled with the names of actors in old movies on television. They have grown so stale that even the audience doesn't laugh at them anymore.

—EDITH OLIVER

Quote-of-the-week honors must go to Neil Bishop, the man who surprised a lot of people by knocking off Abbott Greene for the Republican U. S. Senate nomination Monday. Asked what will hurt Ed Muskie most in the fall campaign between the two men, Bishop responded quickly, "Lack of votes."

With the sharp-witted, caustic-tongued Bishop in there pitching against Muskie, this has got to be a campaign you won't want to miss. As Bishop promised in the glow of his victory Tuesday, "Oh, this is gonna be more fun than a barrel of monkeys."—Bangor (Maine) News.

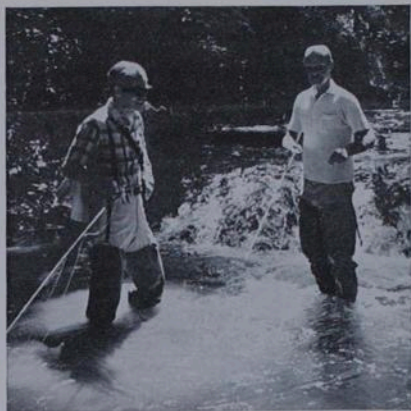
phrases in Maine.

he was generous," Mardersteig acknowledged recently. "I once found in his library a rare edition of Leonardo's prose works, and expressed my admiration for it. D'Annunzio immediately had it wrapped and placed in my car." Mardersteig still has it, complete with D'Annunzio's bookplate, which displays a naked boy lying languorously on a bench in a forest. D'Annunzio was much impressed by Mardersteig's taste as an editor. Once, Mardersteig complained that there were too many commas on a page and that the result was ugly; D'Annunzio started removing commas with such enthusiasm that he had to be stopped, for fear he would make the text incomprehensible. The edition of his complete works, when it finally appeared, consisted of two hundred sets on Japanese vellum, nine sets on real vellum (Mardersteig is one of the world's very few virtuosos in the art of printing on vellum, which is slightly greasy, has a right and a wrong side, and expands and contracts with the humidity of the air), and two thousand sets on handmade Fabriano paper.

Benedetto Croce, whose "Aesthetica in Nuce" Mardersteig was later to print, was a very different sort of man, and became a lifelong friend. Like D'Annunzio, Croce was a small man, but the resemblance ended there. Croce gave an impression of great energy. "He distributed his time in a beautiful way," Mardersteig recalled recently. "He was furious when people were not punctual. He didn't talk much. But when he spoke it was always to the point. He went to a certain café in Naples every day, and people would gather there to talk to him. He was practically the intellectual center of Naples. His taste was wonderful." When Mardersteig undertook his vast edition of the Italian classics, he devoted the first volume to Croce, who himself selected the contents.

In 1932, with the D'Annunzio job finally completed, Mardersteig felt restless, so when the editors of the Collins Cleartype Press invited him to Glasgow he went. He spent a year there. He became dissatisfied with the clarity of the Collins type and designed an entirely new typeface for the press—the face that came to be known as Fontana. Always interested in local printing traditions, Mardersteig created it in the general style of an eighteenth-century Scottish printer and type designer named Alexander Wilson. Ultimately, the Collins editors released him to begin his own work, but they still use it; many of their detective stories are printed in it. Marder-

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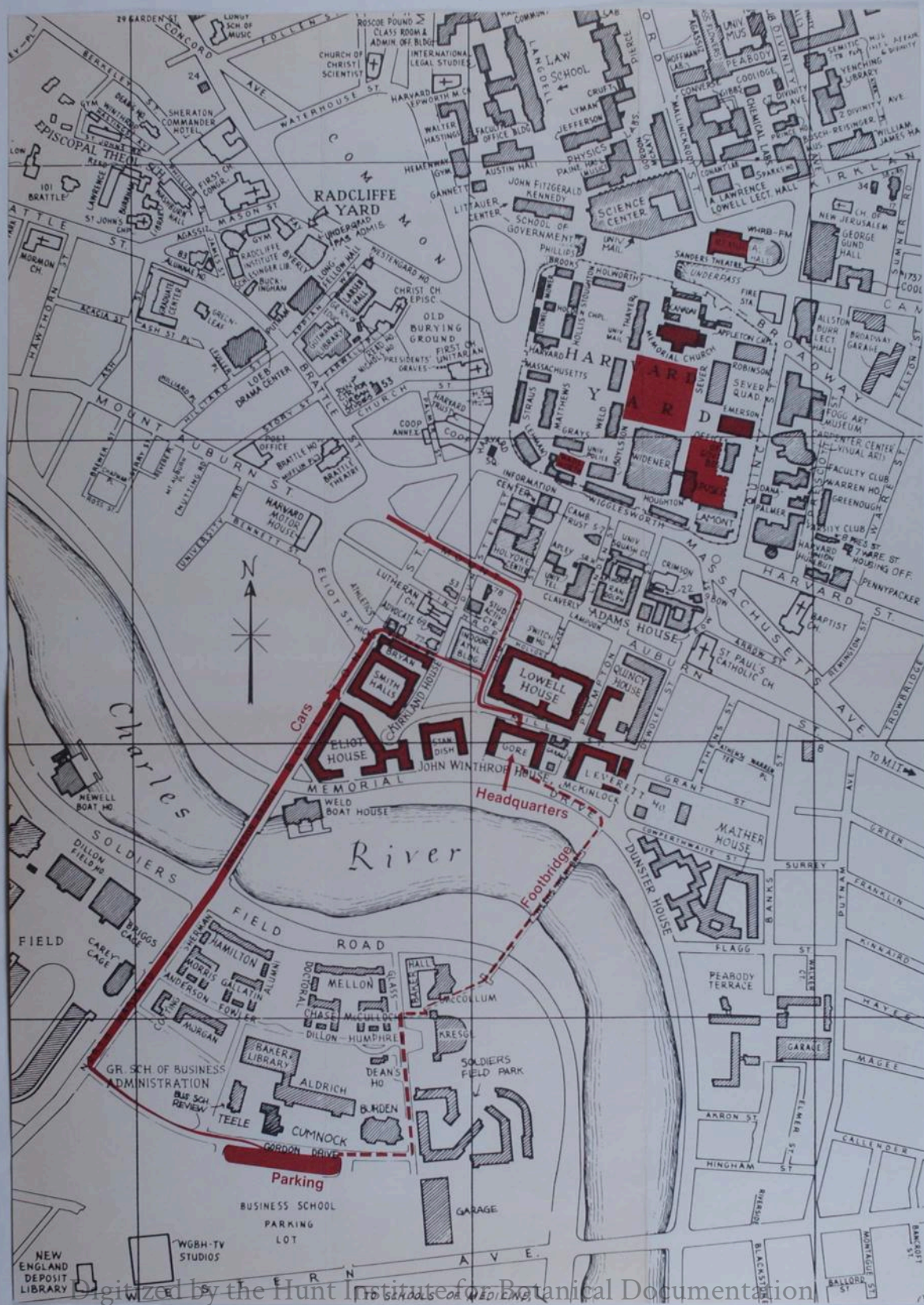
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page one, summer 1978, vol 4, no. 3

Chamber music series changes format

The Chamber Music Series' format will change in the 1978-79 season to accommodate the increasing demand for subscription seats, according to E.A. Cykler, chairman of the Chamber Music Committee.

Two series of five performances each will replace the traditional seven-concert series, making available an additional 1500 seats.

Every seat for the 1977-78 seven-concert series was purchased by patron and subscribers' renewals, preventing single admissions and additional subscribers from seeing the concerts.

"We hope that the double series will enable more people to subscribe. We have tried to make the two series equally interesting, while giving

String Quartet and Divertimento Wind Octet, in addition to the Clarion Consort, Sequoia String Quartet and Borodin String Quartet.

Although any subscriber can buy tickets to either one or both series, persons contributing \$25. as Chamber Music patrons will have first priority. An additional \$10. will give patrons preference in the purchase of two additional season tickets.

"We hope that the lovers of chamber music will be generous in becoming patrons for the series," Cykler says. He adds that only through a complete single admission and subscription sellout and patrons contributions will the ticket prices remain low.

Regular season subscrip-



The Tokyo String Quartet will offer a different program in each Chamber series.

page one

MR G VAN SCHAAK

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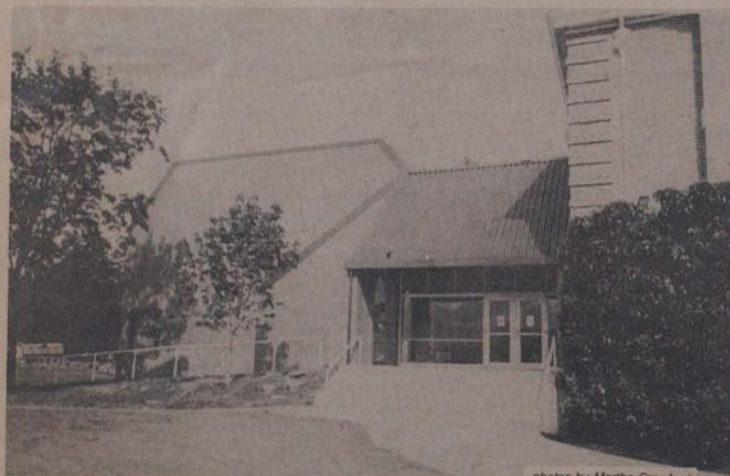
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page one, dedication issue
fall 1978 vol. 6 no. 1



photos by Martha Crawford

The new North wing and East wing (pictured page 3) will be officially dedicated October 28, 1978.

Construction Complete

The recently completed remodeling of and additions to the School of Music has made the school one of the most modern and complete music plants on the West Coast, according to Dean Morrette Rider.

Two new wings housing choral and orchestra rehearsal rooms, studios, a percussion complex, practice rooms and class rooms, are designed, for comfort, potential growth and professional quality instruction and performance.

The new North wing contains large rehearsal halls for the choral groups and orchestras and for music history classes. Thus, with the retention of the present band room, the school now has three major rehearsal facilities in addition to Beall Hall.

An attractive history-

The former breezeway between the Middle and South buildings has been expanded and made into a student lounge area, which includes food service and access to a small outdoor patio.

Extending from the lounge into the new East wing are 11 faculty studios and 28 practice rooms. Both new wings contain extensive locker space for instruments.

The old choral rehearsal room on the second floor of the South wing has been remodeled into four separate rooms housing the composition faculty, their classroom, additional instructional space and the electronic laboratory. The original administrative area on the first floor of the South wing has become, with the creation of two new seminar rooms, a music education complex.

All invited to official dedication

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"Catesby's Natural History is the most famous colour-plate book of American plant and animal life: though not so famous for its birds as the work of Audubon a century later." - The Hunt Botanical Catalogue.

"It does great honour to him and his native country, and is perhaps the most curious and elegant performance of its kind that has anywhere appeared in Europe" - Peter Collinson.

"Mark Catesby, born 24 March 1682, after studying natural science in London, made two sojourns in America, 1712-19 and 1722-26. He arrived first on 23 April 1712, as he says in his preface. He resided in Virginia and travelled; sent back seeds; and carried back specimens that impressed Sir Hans Sloane and Dr. William Sherrard. The second time, he arrived in Charleston in May 1722; travelled in Carolina, Georgia, Florida, and the Bahamas, seeking materials for his projected Natural History; sent back specimens." - Hunt Botanical Catalogue.

Not a library book
Dawson - July 29, 1973
Review

Savannah's Busy Beehive

By NASH K. BURGER

After his years at Middlesex School in Massachusetts, at Harvard, in the Navy and in an Atlanta bank, Mills B. Lane IV knew what he wanted to do: settle down in his native Georgia and publish handsome, useful and interesting books about his state and region. Now from a restored brick, antebellum mansion on Savannah's Pulaski Square, the 30-year-old founder, sole owner, editor and only full-time employee of the Beehive Press is doing just that. And doing it very well.

The Beehive Press will have 12 books in print by mid-September and plans to add six new volumes a year. Some are reprints of rare and classic volumes (William B. Stevens "History of Georgia"); some are new editions of more recent, definitive works (C. Mildred Thompson "Reconstruction in Georgia" and C. Vann Woodward "Tom Watson, Agrarian Rebel"). Some are translations in whole or in part (Louis Milford "My Sojourn in the Creek Nation," a Frenchman's narrative of Indian and frontier life). Some are new collections of scattered material ("The Most Delightful Country of the Universe," documents of colonial Georgia edited by Trevor Reese; "The Rambler in Georgia," early travel narratives, and a volume of Henry Grady's essays, "The New South," both edited by Mr. Lane). Some include material never before available in print ("Slavery Time When I Was Chillun Down on Marster's Plantation," interviews with former slaves edited by Ronald Killian and Charles Waller).

The most ambitious publication, scheduled for January, is a new edition of Mark Catesby's "The Natural History of Carolina, Florida and the Bahamas." A century before Audubon, Catesby, an English artist and scientist, spent 20 years collecting and drawing the plants and wildlife of colonial America and preparing a descriptive text and account of life in the wilderness. The Beehive Press edition, first since the 18th century, includes all 220 of Catesby's illustrations (50 in full color in separate folders), Catesby's narrative and a new introduction by George F. Frick of the University of Delaware.

Most Beehive Press books are moderately priced, extremely so considering

The Last Word

the unusual quality of the paper, printing, binding and illustrations. The Catesby volume, however, is not for every pocketbook. It sells for \$500 (a Virginia collector has ordered six copies), but a prospectus volume describing the edition and containing a sample color plate suitable for framing is available for \$5.

Although most of the volumes thus far published have a Georgia orientation, they have a more than regional interest. ("The Beehive Press," says Lane, "combines traditional affection for the South with a very liberal national spirit," and he plans to broaden the focus still more in books to come.) Any of the Beehive books might have been on the list of a larger, more commercial New York house (and some of them are)—in which case they would cost more or be less handsomely produced. An example is the \$15 Beehive edition of William Bartram's "Travels to North and South Carolina, Georgia, East and West Florida," a splendid facsimile of the 1792 London edition, with the original illustrations, plus previously unpublished Bartram drawings and an introduction by Gordon DeWolf of Harvard.

"Of course," as Mr. Lane recently noted, "we are going about publishing backwards by most business yardsticks: instead of producing cheap books about popular subjects, we are producing handsome books about serious, rather challenging subjects. We are not picking titles to sell quickly and forget; we plan to keep our books in print indefinitely, and we want to be proud of them 20 years after publication."

The Beehive Press is not only good for books and publishing in Georgia and the South, it is good for publishing in New York. It encourages the buying and reading of books (a laudable if addictive habit) in both North and South, and it can (hopefully) expand the horizons of

the New York-based publishing lemmings (publishers, editors, reviewers), who too often seem preoccupied with imitations of last year's best sellers, the excessive multiplication of books on "in" topics and the pursuit of name-authors or any author who once produced a best seller and may some day produce another.

While authors live all over, and publishers, editors and reviewers (to a lesser extent) come from all over, yet New York is the center. The received "truths," opinions and shibboleths of megalopolis are seldom questioned, and they inevitably influence and restrict what is published in this major publishing center. A little fresh air from Georgia, Maine, Oregon, California or wherever is welcome and salubrious.

When Robert Manson Myers received a National Book Award earlier this year for his "Children of Pride," about a Georgia family, he recalled that the New York publisher to whom he submitted his manuscript turned it down as "too long and too much a collection of letters to be a good undertaking for a commercial publisher." The fact that it was also a magnificent re-creation of an important chapter in the American past was overlooked. The Yale University Press, which did print the book, may also have had doubts about the commercial prospects, but they saw the unique qualities of the manuscript. (Now with 35,000 copies in print at \$19.95 each, Yale can have no complaints — proving once again that commercial publishers are not always the best judges of commercial possibilities.)

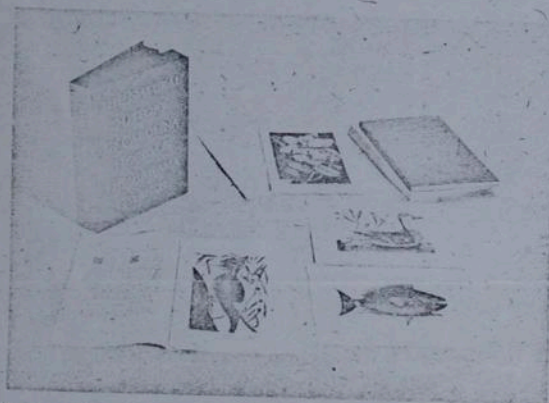
Certainly excessive concentration on popular fashions, faddishness and the commercial side of publishing can be as harmful to profits as to prestige. As publishing becomes more and more impersonal, a computerized division of corporate business, existing to produce a projected percentage of corporate income or else—the view of books as literature rather than commodities becomes irrelevant, indeed an impediment.

That is why we need such a venture as the Beehive Press (and could use a few more such presses scattered around the country), and why we need such a dedicated publisher of quality books as Mills Lane. Books and the printing of books are too important to be left to the conglomerates. ■

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The New York Times Book Review/October 6, 1974

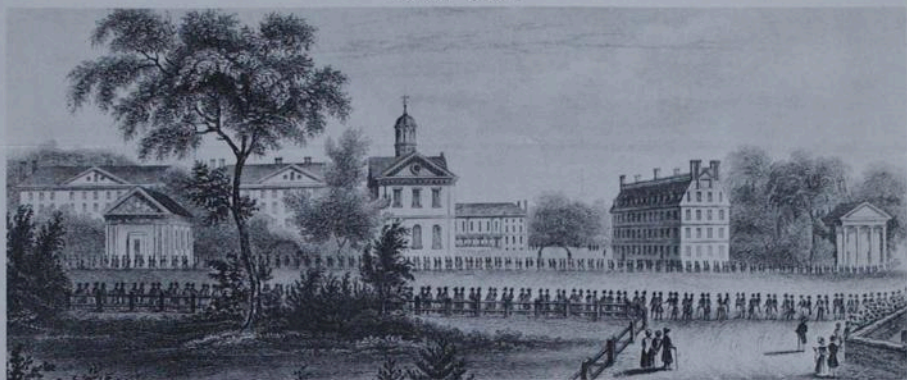


HARVARD GRADUATE SOCIETY

for Advanced Study and Research

NEWSLETTER

October 5, 1972



Alumni Procession on Occasion of Bicentennial, September 8, 1836

"FACING THE WINDS OF CHANGE"

WALTER LEONARD ADDRESSES ALUMNI AT ANNUAL LUNCHEON JUNE 14, 1972

Walter Leonard, Special Assistant to President Bok, addressed the Graduate Society annual luncheon in Harkness Quadrangle last June. The following are some excerpts from his remarks which he entitled "Facing the Winds of Change":

"The primary goal of any university is to discover, develop, interpret, and apply the knowledge and persuasion of the world's accumulated and hidden wisdom; to make keen the minds of men and women in order to prepare them for events which may, as of now, stand unknown.

"Harvard performs this task in a community of 15,000 students, nearly 12,000 employees and a large physical plant. Consequently, in microcosm, the University represents the broader society to the extent that in the process of moving toward the goal of its mission, it must help people and groups of people adjust and accommodate their particular, and sometimes, competing interests.

"The attempt to create a community where living and learning have co- and equal existence is complicated enough. Then when one adds the intensity of

academia, a diversity of backgrounds and races in the context of our socio-economic and political posture, the whole matter becomes baffling and mysterious.



Walter Leonard Addresses Alumni, June 14, 1972

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Will the World Come to a Horrible End?

Doomsday predictions have been popular since biblical times, but the sources of doom are changing. Famine, war, and pestilence have always been the old-time favorites—so much so that people have almost learned to live with them. The possibility of destruction of life on Earth by the impact of a large asteroid, or by the radiation effects of a close-by supernova or a solar superflare, has not evoked much public concern—which is perhaps surprising because the probability of such natural catastrophe, though small, is finite.

Instead, the current fashion seems to be to predict ecological disasters. For a while there was great concern that we would run out of oxygen because of the burning of fossil fuels. This particular concern was laid to rest recently and conclusively (1). Another concern for global oxygen came from the possible effect of DDT on marine phytoplankton (2). This particular problem was first raised by L. V. Berkner and L. C. Marshall, but is judged to be a problem no more (3). After many years of speculation and discussion, the effects of fossil-fuel burning on climate seem to be reasonably clear. While there has been an actual increase in the CO₂ content, the "greenhouse effect" of climate warming has been small, and even negative, because of the overwhelming effects of atmospheric dust which tends to cool the atmosphere (4). Even the long-range effects of CO₂ are likely to be reduced, partly because of the buffering action of the ocean, partly because of the increased photosynthetic absorption and storage by forests, while a limit to CO₂ production is also set by the prospective exhaustion of fossil fuels (5).

New technologies do not always produce major clear-cut global effects. For example, operation of a fleet of SST's might decrease stratospheric temperature somewhat because of the emission of water vapor; on the other hand, it might also increase stratospheric temperature because of the production of particles (6). But there is no evidence for sea-level changes or for adverse effects on life due to increased ultraviolet transmission.

Does this mean that we can now forget about ecological disasters? On the contrary; it is absolutely necessary to investigate each and every one of the side effects of our modern technology to its final conclusion and examine their possible influence on the global climate and on the ocean. There is probably nothing more important to man's future on this planet than an understanding of the long-range effects of his activities. The history of Earth gives abundant evidence of cataclysmic happenings. The stability of climate, for example, is not known, nor is it known how close we are to the limit where another ice age could be triggered. The possibility that we might inadvertently set off an irreversible reaction must constantly be kept in mind.

At the same time, we should be careful not to cry "wolf" needlessly or too often. The public and the media give special weight to statements from anyone who is a scientist, provided they make news. Scientific credibility can easily be lost by exaggerated claims and extravagant statements. We need to provide a voice of reason, not just of alarm. As scientists, we have the responsibility to speak up, but we also must know when to stop talking.—S. FRED SINGER, Chairman, Committee on Environmental Quality, American Geophysical Union, Washington, D.C.

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THE DYNAMICS OF INFORMATION

by Frederick B. Thompson

Each of us feels somewhat informed about his individual corner of the world. At the same time, we are aware that our understanding is incomplete. Each of us in his own way seeks to make sense out of his experience. Some spend their entire lives in increasing our understanding; they are scientists and scholars, not because of what they know but because of their persistence in seeking to know more. And indeed this innate curiosity is a ubiquitous part of all of us. Since these informational activities of others are themselves part of our experience, we seek as well to understand each other. And thus, the dynamics of information.

But the results of these separate acts of knowing are not converging. Our time seems marked by a growing sense of being out of touch, of a too rapid growth in what there is to know. Creativity itself seems suspect when so much that is created is beyond our ken. Our day is fraught with informational problems. To deal effectively with these problems, we need to understand these dynamics of information.

The process of becoming informed can be factored into two parts. The first of these is experiencing. It is by interacting directly with the reality that is around us that we gain the raw materials of information. But raw experience is not enough. We must organize experience into a conceptual structure before it is meaningful to us. Nor does this structure come from the experience itself. Rather, we must impose structure on our experience. The knower must actively participate in the act of knowing. The matter was put vividly by the American philosopher-scientist William James:

The world's contents are given to each of us in an order so foreign to our subjective interests that we can hardly by an effort of the imagination picture to ourselves what it is really like. . . . Is not the sum of your actual experience taken at this moment and impartially added together an utter chaos? The strains of my voice, the lights and shades inside the room and out, the murmur of the wind, the ticking of the clock, the various organic feelings you may happen individually to possess, do these make a whole at all? . . . We break it; we break it into histories, and we break it into arts, and we break it into sciences; and then we begin to feel at home. . . . We discover among its various parts relations that were never given to sense at all; and out of an infinite number of these we call certain ones essential and law giving, and ignore the rest.

It is our subjective habit to organize the individual elements of our experience, to cross-correlate these elements to others distant in space and time. It is only after this process of imposing organization that we feel informed.

Notice the essential role of abstraction and projection beyond what we have confirmed. Each moment of our experience is peculiar unto itself. It is only by ignoring differentiating aspects of past experience that we can see its application to current concerns. And these patterns that we exploit are not proffered by experience, which does not choose between the infinity that are there. They arise only when we back off and let the shadows of our own subjective structure cast perspective on our cluttered view. I am not questioning the objectivity of these patterns, once perceived. I am emphasizing the essential role of the subjective selection and imposition of

organization that determines to as great an extent as experience itself the information that it yields.

Language is the embodiment of conceptual structure. We share our information with others. But to do so we must settle collectively on a structure into which our several experiences can be codified. It is this tacit, common structure that we exploit in communication. The essential characteristic of language is structure, as found in its word forms, its grammar, and its intrinsic logic. The study of language reveals the common conceptual structures of a community.

I should like to use the notion of language in this more precise form as synonymous with conceptual structure. In particular I am not restricting it to verbal language. Think of the language that a person is using at any instant as the embodiment of the organization that he has imposed upon his experience and as the means for framing his current information. I should like to introduce the notion of an informational community as a group of people who share a common language, whose conceptual views are based upon a common structure. An individual can be considered as a special case of such a community. When looking at the dynamics of information, it is the community and its language which is the central focus.

Now let us imagine a situation where we have a certain fixed body of observations or experience. Let us compare what would happen if we were to organize and conceptualize this experience in terms of one language or another. Each language would reveal certain information from its peculiar point of view. The concepts and means of expression in one language might be just so as to be quite inadequate for the experience at hand, while another language may be ideally suited to elicit revealing insight.

One can construct for a formal language a measure of information. Thus given a language and a body of observations, we can define the amount of information that can be elicited from the given observations in terms of the conceptual structures provided by the language. Different languages yield different amounts of information about the same observations.

Languages can be compared in the amount of information they provide. When we say that one language (L_1) is at least as powerful as another (L_2), we mean that whatever distinctions between possible states of the universe can be made in L_2 , they can be made in L_1 . On the other hand one can show that for any formal language (L) there is a much more powerful language (L') which can express things not possible in L . As a consequence there is no most powerful language.

Let's examine the situation wherein we have a family of more and more powerful languages. Again we will assume that we are considering a family E consisting of a number of observations. Thus for each language L_i we can determine the amount of information $I(L_i, E)$ that can be obtained from E in terms of language L_i . Let L_0 be the least powerful language in which all aspects of the observations E can be fully expressed. In L_0 , the experiences E can be completely described. The question is: What happens to the amount of information as we move to either more powerful or less powerful languages than L_0 ? What can be shown quite convincingly is somewhat surprising.

Consider a more powerful language, L_1 . The observation E can be completely described in L_1 , and more. Indeed, L_1 opens many issues which cannot be decided on the basis of E ; it gives rise to ambiguities and uncertainties that cannot be resolved. It is not only the case that it distinguishes between two states that were indistinguishable in L_0 , but it permits states that violated the logic of L_0 , that could not exist as far as L_0 is concerned. A language is essentially a means of correlation of otherwise disparate experiences; thus it per-

Professor Thompson, of the California Institute of Technology, gave this talk as a 1971-1972 ΦBK Visiting Scholar. It is reprinted from *Engineering and Science*, October 1972, published by the California Institute of Technology.

THEATER

Roger Porter

An Animated Community

Under *Milk Wood*, Dylan Thomas' "play for voices," has often been called a Welsh version of *Our Town*. This is a mindless and shoddy comparison. Thomas' lyrical drama far surpasses Wilder's trivia in its uncompromising assertion of the strain of living in a beautifully battered, often zany world.

Watching the marvelous production at the Storefront Theater one felt as if all of Beckett's characters were thrust into a single scenario, each holding to his own dreams and lost visions, barely touching others in a precarious attempt to affirm a community which finally has much less to do with a single town than with the common fact of mortality.

Thomas' play also reminds us of the *Ulysses* in *Nighttown* section from Joyce's novel, for Thomas, like Joyce in that Circean episode, writes a drama of lyrical fragments. Characters move in and out of the landscape, claiming what they wish to, hoping for something more than they have, disappearing before issues are settled. This is a play not of conclusions, but of the poignant and broken assertions that the characters make to shore themselves up against the ruin of their humanity.

The play takes place in a small Welsh village, and depicts events of a single day, from pre-dawn sleep to nightfall. There is no real plot, only a series of moments from the daily lives of the inhabitants. The play continually enforces the sense that the day's cycle connects with the larger cycles of the seasons and the lives of a generation.

As much as *The Glass Menagerie*,

this is a memory play. We have numerous flashbacks as well as several attempts to see into the ghostly future. In one passage a long-dead woman says to the aged, blind sea captain who reflects on her: "Remember me./ I have forgotten you./ I am going into the darkness of the darkness for ever./ I have forgotten that I was ever born."

Characters drift in and out, but Thomas has not written a drama of randomness; there are numerous echoing effects, calculated variations on themes of love and hate, and complex relations among the characters. Thomas captures the villagers' lives not through realistic speech, but through resonances of desire, whose rhythms move like antiphonal refrains through the whole piece. We grow familiar with even the most fragmentary characters, and are gradually pulled into the life of the drama and the town.

Partly this is done by the device of having two narrators or speakers, who do not stand outside the action (like Wilder's Stage Manager), but meld into it and draw us with them. The Storefront Theater's production enormously aided our sense of involvement, and the theater's physical space and philosophy are equally essential, in developing this process. There is no fixed seating arrangement—only a collection of dissimilar chairs, benches, and couches, so the audience is draped in a fairly chaotic way around what is essentially one large room. Some of the playing area is behind the audience, creating both a stereophonic effect and a sense of our being neighbors to the players. Actors emerged from the audience, and merged back within it. Several scenes involving children drew them from our midst, and one had the sense of individuals moving out of and then back into the collective mass of humanity.

It is an unusual theater for Portland, because it is created by a close-knit community whose lives are very much bound up with it. The Storefront people have not so much come together with the aim of creating a theater, but have used the theater as a means to create their community.

As a result one cannot expect the severe discipline and collaborative, unified precision of anything approaching Grotowski's community of actors. But we do get a very special kind of energy, and the sense that the actors are working for one another and for a very special audience of their peers. If this is true it is possible, of course, to feel just a bit like an outsider. But the joy and vitality are catching.

There are moments when we wish things might have gone differently—some of the pacing was off, some of the wonderful connections between groups of characters were missing. But the spirit was there and was utterly in keeping with the play itself. *Under Milk Wood* creates its energy by deeply moving contrasts, anthems to rising life, hymns to death. The cast was almost always ready for those changes in mood and feeling. While it is not the most polished group, it has a very special instinct for theater as communal art, for drama as a life-giving act.

Storefront usually chooses plays which have affinities with romance and fairytale. (The cartoon-like set for *Milk Wood* suggested the folk quality of the work.) They can do melodrama, but it is hard to imagine tragedy being done well, or done there at all. Their range, generically speaking, is probably narrow. But within their material they show a great driving force. If one goes not so much for polished and perfected performance as for robust and sensuous theater, it may be the most exciting in town.

I have not mentioned names of individuals. There is, to begin with, no program, and while it would be simple enough to identify the performances, perhaps it is appropriate to hold the focus on the notion of ensemble. There were, for example, at least half a dozen directors.

This procedure has its obvious pitfalls, but the play did not splinter. Instead the impression was one of a town held together by the harmony of its very diversity, by its sense of inclusiveness, and by its celebration of ordinary life. □

Surface and Symbol

The Emerald's weekly arts and entertainment supplement

Thursday, April 22, 1976

Rich in words, not profit

Browsing in Eugene's bookstores

By Cheryl Rudert

It seems to go hand in hand — a love for books and a recurring, secret dream to open a bookstore.

For many it remains exactly that — an impulsive fancy in the back of their minds. For others it becomes a reality.

In Eugene, the number of pragmatic dreamers is increasing rapidly. Ten years ago one could count the number of bookstores on a single hand; today there are 24, many of which have opened in the past two years.

In spite of the "easy life" that running a bookstore may appear to be, there are many barriers to its success. Not only is competition keen, but the owner must cope with rising publisher costs and inefficiency, increasing freight rates and a business tax that diverts the sales tax burden from consumers to the small shop owner.

Eugene is far from the ideal place to run any small business, let alone another book-

mingling of the rare Oregon sun and book-browsing.

This same idea is being employed by Paul Barnhart, owner of Merlin's (825 E. 13th). Behind the store and beyond the din of 13th Avenue traffic is a meditative reading garden just opened.

Barnhart feels that the garden, which is a cozy retreat furnished with stone benches and flourishing plants, fits in with the goal of the store — "to encourage people to read."

Merlin's opened in December after an expansive remodeling that transformed a laundry storage space into an artistic melange of wooden cross-beamed ceilings and brick floors based on the design of Michelangelo's Florentine library.

Open from 9 a.m. to 6 p.m. Monday through Friday and 10 a.m. - 6 p.m. Saturday, the store offers mostly well-illustrated hard-back books in four basic areas — cooking, gardening and plants, art and artists, and woodworking. A fifth specialty, architecture, is soon to be added.

faculty and students ever since.

When Robbins decided to move his store from his former 13th Ave. location (where Sugar Pine Ridge is presently), a group of 100 University students persuaded the City Council to permit the Id to be located at 1340 Alder Street. University architecture students also designed the store.

Robbins, a former University student himself, says proudly, "Our store has kept in business this long only through the students and professors we serve."

The Id was the first store to offer students a direct cash discount of 10 per cent on textbooks. Many other stores, including the University Bookstore, have followed suit.

Open 9:30 a.m. - 5:30 p.m. Monday through Friday and 11 a.m. - 5 p.m. Saturday the Id is a store packed with quality paperbacks on every subject imaginable. Combined with a room full of posters, art prints and imported bedspreads plus a large selection of records, the Id exists as a kind of intellectual's supermarket.

The Son of Koobdooga bookstore also has an involved history. Started by a political activist during the late Sixties, the store stocked books and subjects listed in the Whole Earth Catalogue, with the intent of making the community more aware of political happenings.

Due to financial problems the store closed and switched ownership, re-opening in 1972 through Fred Austin.

Austin, and later partner Max Baker, were both interns in the University's education department before they decided to accept the challenge of running a retail business.

A wide range of books is offered, all basically women-oriented, as well as a new line of records by women artists, local crafts sold on consignment, art prints, women's magazines and local poetry anthologies.

When Mother Kali's (Kali, by the way, is an Indian goddess representing the totality of the universe, embracing at once creation, preservation, and destruction) is not a bookstore, it serves as a place for poetry readings, group meetings, and art shows.

"The store," says Barbara, "provides valuable spaces for people who don't have valuable spaces."

Open 10 a.m. to 9 p.m. Monday through Saturday, the store is an essential part of the women's community. Also featured is a playroom for children and large bulletin board to encourage the unity of the women's community.

The Book Fair at 1409 Oak, opened 10 years ago, making it the oldest used bookstore in Eugene.

Owned by Jerry Leedy, a former librarian from California, the store offers a challenge to book browsers. Organization is there, all right, if one is willing to look for it.

Leedy stocks 90 per cent used books in all areas and buys the rest new, because they are current books that are hard to get second hand.

Texts are bought, preferably at the end of the term, as well as regular trade books. The store's hours are 9:30 a.m. - 5:30 p.m. Monday through Thursday, 9 a.m. - 5 p.m. Friday and Saturday with an evening stint of 6:30 - 9 p.m. on Saturdays.

Leedy discourages more bookstores



The Joy Of Books

INFINITE RICHES

The Adventures of a Rare Book Dealer

By David Magee

286 pages, Paul S. Eriksson, Inc. \$8.95

The fun of book collecting, the joys of reading, and the excitement of writing itself are combined pleasantly in these reminiscences of David Magee, a native Englishman who has been an antiquarian bookseller in San Francisco for nearly 50 years.

In many ways, the book is conventional. Readers who like stories about lucky finds in the rare book trade and anecdotes about authors and other book-business personalities will not be disappointed. However, the recital also interweaves advice on selling, collecting and writing, and is spiced by a bright and erudite style that makes you wish that Magee had chosen to spend less time amid the books of others and had written more of them himself.

The publisher, Paul Eriksson, deserves credit for bringing to light this relatively obscure bookman and his adventures in pursuing "a highly agreeable way of making very little money." Magee is no A. S. W. Rosenbach, with fabulous sales to his credit, nor a gregarious bookman-traveler, like A. Edward Newton or California librarian Lawrence Clark Powell (who wrote the introduction to Magee's book). But neither is he a cloistered bibliographer, despite the fact that most of his writing to date has been in the form of book catalogues and bibliographies. The author seems more like a book dealer that the average man could encounter (if he's lucky) in his own searches for riches in a book bin.

This particular book dealer is obviously a book lover. "I am a compulsive reader," Magee says. "If I should be so unfortunate as to find myself in a public conveyance without anything to read, I read the advertisements, and when I have finished, I read them backwards." He is also obviously exhilarated by his work, and talks about "that anticipatory tingle that always assails me when I sniff a good library in the offing."

But the author is a practical man. "I would much rather buy books than sell them," he admits, "but unfortunately, one has to sell occasionally in order to continue to buy."

In another part of the book he says, "I do not believe book-sellers should be book collectors. The temptation to take home saleable rarities rather than offer them to a customer is too great. And if you once begin squirreling books from the shop to the house, it becomes a habit, a bad habit. Your customers will be likely to say to their friends: It's no use your going to see So-and-So; all his good books are at home."

It's clear that Magee considers the "Infinite Riches" of the book business to be the contents of the books themselves. He does not ignore the monetary aspects of the trade, but in the book he faithfully adheres to an early promise to "keep the ring of money to the barest tinkle."

His book reflects the empathy with the reader that is the hallmark of a professional writer. Thus, although he savors his triumphs, he is also aware that his failures, drawn with a light touch, make entertaining reading.

He is also sensitive to the trials of authorship. "The tragedy of the humorist," he says for example, "is that no one takes him seriously. The common attitude toward a writer who aims to amuse is one of mild condescension, which stems from an ancient and firmly held belief that any old hack can make a man laugh, while it takes a special talent to make him weep."

He is an accurate observer of writing in the book trade. He once wrote a satire mimicking what he calls "the evasions, hyperboles, pomposities, and general absurdities of catalogue descriptions."

"One of the problems of cataloguing," he asserts, "is to give an accurate picture of the condition of a book. One tends to qualify one's remarks with 'buts' and 'howevers' lest the item sound too much like a complete wreck."

Magee starts his book by saying, "I have a friend whose distaste for childhood reminiscences is such that he always starts reading a biography or autobiography a third of the way in. By that time, he figures the protagonist must be past any gambols with the nursery or schoolroom set." Fortunately, however, Magee includes two entertaining chapters about his own youth in England, as the son of a vicar and a one-time schoolmate of Evelyn Waugh.

At one point he quotes Ambrose Bierce, who once reviewed a book in one line: "The covers of this book are too far apart." The reader of "Infinite Riches" will have an opposite opinion; Its covers are too close together. We can only hope that Magee has another book in process, because we know that he hasn't told us all that he knows and feels about the excitement of books.

—Don Bush

RARE BOOKS AND ROYAL COLLECTORS:

Memoirs of an Antiquarian Bookseller,

by MAURICE L. ETTINGHAUSEN

New York, Simon & Schuster, 1966. 220 pp. £3

William Targ writes in the *Saturday Review of Literature*, N.Y. October 22, 1966: "Dr. Ettinghausen, one of the leading scholar-bookmen of our time, . . . discloses much of the drama and romance of the rare-book world. He presents anecdotes and vignettes of notable European and American collectors, including J. P. Morgan, Prince Victor Napoleon, Henry E. Huntington, T. J. Wise, King Manuel of Portugal, and many others . . . Another highlight is the author's account of his visit to Russia in 1931 which led to the purchase of the great Codex Sinaiticus . . . This autobiography . . . conveys much of the lore and allure of the rare-book world and the breadth of vision and virtuosity of its author. 'Rare Books and Royal Collectors' is unreservedly recommended to all devotees and hunters of old and rare books."

"During one of his trips to America, Dr. Ettinghausen got to know 'one of the most intelligent and ardent book collectors in the United States, Alfred Ernest Hamill, a man of impeccable taste'. His death in 1953, the author notes, was a great loss to all who knew him and above all to the Newberry Library of Chicago, with which he had been associated for twenty-three years. 'He was the most truly civilized man I have ever met'."

"One of the 'most learned bibliophiles' known to him, Dr. Ettinghausen notes . . . was the late Fritz Kreisler, 'prince of violinists' who invariably came to visit him when he was in London. He collected books, 'not for the pleasure of being able to boast that he possessed such and such an edition of a great author, or the product of a famous Press, but because he was stirred to the depths by being able to read in their first editions the Latin and Greek classics in which he was steeped'."

"A delightful book for bibliophiles, quiet and scholarly and consistently friendly."

"Dr. Ettinghausen's *Memoirs* are more than the story of an exciting and very long life, they are part detective story, part adventure, and all true. For his career and his passion have been rare books and manuscripts, and in his memoirs he tells of the extraordinary finds he has made, the great auctions and purchases, the rivalries and triumphs of great collectors and the pleasures of knowing and loving books. His search for rare books has taken him all over the world and his *dramatis personae* include such extraordinary characters as Thomas James Wise (the great forger of rare books and MSS.), J. P. Morgan (who failed to buy, when it was offered to him, the original MS. of Mozart's Concerto in C), Prince Victor Napoleon (who said that he had tasted every pleasure and much preferred the pleasure of books), King Manuel of Portugal, Sacha Guitry and the Duke of Windsor.

This is a remarkable and fascinating document, the work of a man who knows how to describe the enduring fascination of the rare and priceless and to relate the many strange stories of men's passion for collecting."

In a long review in the *Times Literary Supplement* the reviewer writes "Dr. Ettinghausen's *Memoirs* (are) distinguished by the breeding and good manners of his generation and . . . will find their permanent niche in the annals of the rare-book trade during three of the most exciting decades of its history."

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Specimen

Days

Continued from Page 7

impact of the war and illness and failure and approaching death. It is a shame that this final self-image has been tagged, with our characteristic national tendency to patronize the old, "the good gray poet." That he was no bland, cheery, Santa Claus becomes evident in those powerful, Rembrandt-like studies made by Eakins. These photographic portraits disclose a spare integrity and composure in Whitman's last, serene coming-to-terms that invites comparison with what we know about the other gifted American writers who came to the end with a sense of defeat. To appreciate Whitman's achievement we might recall the last chapters in the lives of, say, Poe, Hawthorne, Melville, Mark Twain, or Hemingway, and then note the tone of "Specimen Days"—the modesty and generosity of spirit, the absence of self-pity or desperation or bitterness.

Whitman's quiet triumph is most apparent, most affecting, in the writing he did after his stroke, when he spent his days walking alone in the woods and fields. These notes are largely descriptive, and done on the

here by the creek . . ."; "A clear, crisp day, dry and breezy air, full of oxygen . . ." and almost completely free of what he called in disparagement of a weakness in his early style, "stock poetical touches." As Alfred Kazin observes in his introduction to the Godine edition, Whitman's rare ability to convey his quick, particularized response to objects in nature probably has been matched only by D. H. Lawrence and possibly Thoreau. Nowhere in all the abundant literature of natural observation is there a more convincing expression of the restorative power of the primary environment. Much more is involved than the recuperation of physical health. Although he seldom refers directly to anything but objects of sense, his solitary excursions have the effect of religious meditations.

Whitman explains it this way: "After you have exhausted what there is in business, politics, conviviality, love, and so on—have found none of these finally satisfy, or permanently wear—what remains? Nature remains: to bring out from the torpid recesses the affinities of a man or woman with the open air, the trees, fields, the changes of seasons—the sun by day and the stars of heaven by night."

There ought to be a special prize for publishers who en-

LIBRARIES IN MINIATURE: A NEW ERA BEGINS

by JOHN TEBBEL

On several different fronts in the technology of the book, we are approaching a new era that will certainly revolutionize libraries, probably reading habits, and possibly even publishing itself. People have been talking about this revolution for a long time. Microfilm has been the herald of its realization. But technology has advanced so rapidly that the new era, with problems both solved and unsolved, is suddenly upon us.

Like other technological advances in the communications field, the great change in book information storage and retrieval has come about through miniaturization. What the transistor is to radio and television, high reduction photography is to the printed page. By photographing materials at very great reductions onto a small, transparent film card called a microfiche, this process at first was able to transfer a whole book onto a single card. With advanced technology, however, it is now possible to print six books on a single 3" x 5" card. Where the ordinary microfiche contains sixty to a hundred page-images per card, the new process of supermicrofiche can pack a thousand page-images into this space, arranged in fifty columns and twenty rows.

One of the most striking results of this development is what Encyclopaedia Britannica, Inc., calls a "Microbook Library" and which it is now ready to market. The advantages are obvious. It will cost libraries only a fraction of the normal price to buy a large collection of books, which can then be stored in a far smaller space; more than 250 Microbook cards fit into the space occupied by a regular volume. Drastic cost reduction and major space-saving: These have been the dreams of librarians for a long time.

Britannica's first offering is to be the Library of American Civilization, 20,000 volumes numbering about six million pages, which will sell for \$21,000, as opposed to the \$450,000 required to buy it in book form. These volumes would normally require 2,000 feet of shelf space; in supermicrofiche format they will require only thirty-two small card trays, 16 inches long. Britannica plans future Microbook Libraries in medieval civilization, English litera-

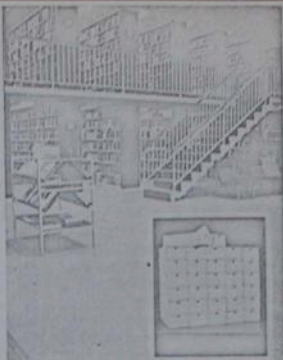
ture, African studies, international affairs, the history of science and technology, and the history of philosophy and religion.

To view the cards, Britannica is supplying two new readers. One, a desk model manufactured by the DuKane Corporation, has an 8½" x 12" screen, on which it will be possible to enlarge most material to greater than its original size. More intriguing in its potential is a lap reader, which the Technicolor Corporation is making. It weighs only four-and-a-half pounds and sells for less than \$150. Its screen size is 7" x 10", and a single knob controls the fiche, automatically centering each page on the screen.

Of even greater significance is another development scheduled to appear soon, a reader-printer that will make hard-copy printouts of any Microbook page. These units will be ready within six months to a year after the first American Civilization Libraries are delivered this spring—hardly time enough to begin sorting out the enormous copyright problems involved. Apparently, the technology is going to come first in this field, and authors and publishers will have to fight for their rights later.

Britannica's Microbooks will make their initial impact on libraries, but home uses are easily foreseen. It is a development that cannot come too quickly for the nation's hard-pressed libraries, struggling against space limitations and inadequate budgets. More help, however, is forthcoming from other sources. Last June, for example, the American Library Association's annual convention was told of a new book selection and acquisition system, developed by Bro-Dart Industries and called "direct input ordering." A single roll of microfilm, capable of being updated on a regular basis, will provide librarians with the details of more than 350,000 books. On microfilm viewers, the librarians will be able to easily and rapidly look up titles, recording and transmitting their orders by means of a self-checking order code that will save both time and clerical expense. It will mean substantial savings in the ordering process.

Another new development, which will compete with Britannica's for the libraries' expanded dollars, is the National Cash Register Company's pro-



Supermicrofiche magic—20,000 volumes fit into thirty-two small card trays.

cess it calls Ultramicrofiche, or, more conveniently, UMF. One of these cards is capable of carrying 3,200 pages. The UMF of NCR will also have libraries, initially American civilization, government publications, humanities and literature, science, technology, and the social sciences, all to be sold under the general title of the PCMI Library Information System.

One PCMI ultramicrofiche will carry the equivalent of seven to ten books. An accompanying reader-printer features a screen about the size of a portable television set onto which is projected an image larger than the original. Touching a button produces on the printer a page reproduction of excellent quality in ten seconds. PCMI's collections will cost the libraries about \$1.50 per volume. A library subscribing to PCMI will pay \$6,000 for full service, which includes one machine, 3,500 books on cards, and a set of catalogue cards. NCR already has put 6,000 books on ultramicrofiche; it expects to have 50,000 volumes stocked in five years. Among those now available are such small collections—not easy for the ordinary researcher to put together—as all sixteen volumes of Harriet Beecher Stowe's writings and seventy volumes of Voltaire's works, in a splendid edition published by the Société Littéraire Typographique in Paris between 1785 and 1789.

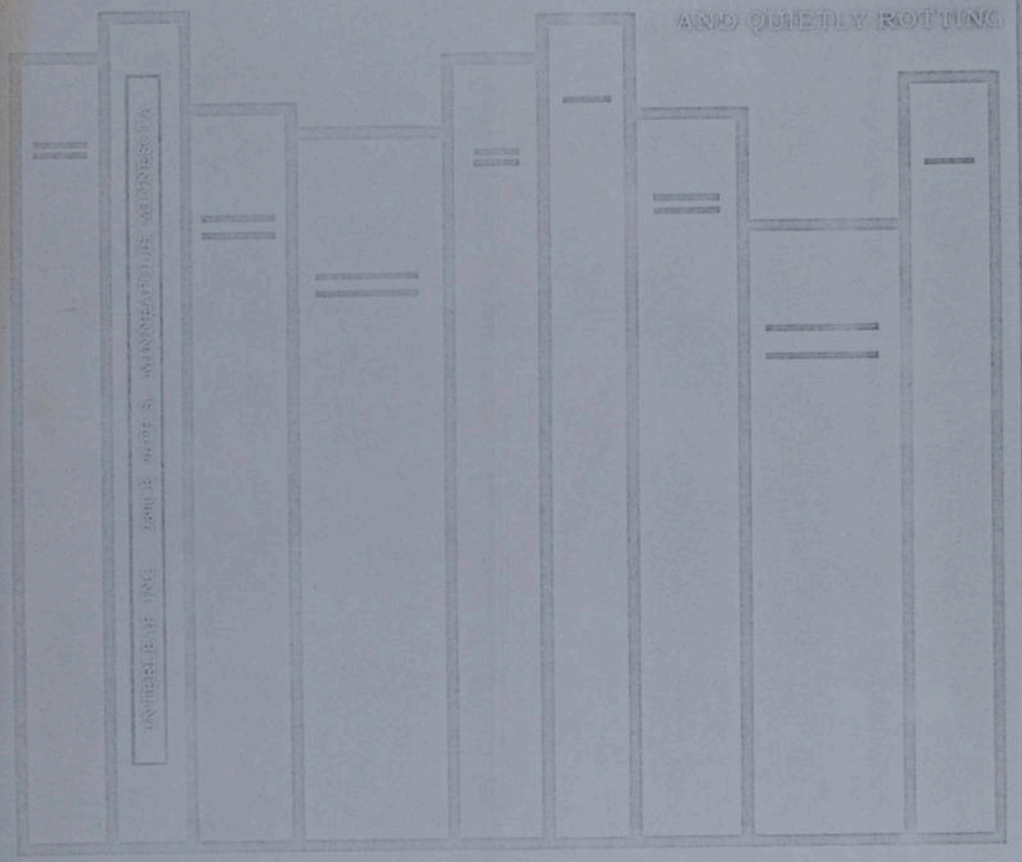
Still another development of more than ordinary significance is the creation of *The New York Times*'s Information Bank, which the newspaper hopes to have in operation by mid-1971. The *Times* calls it "the first fully automated system for the retrieval of general information." With this computerized system, the *Times* will make available to the general public the tremendous collection of information contained in its files, replacing its existing information facilities begun in 1966 and obviously inadequate from the start.

Involved in the system is a complex of IBM computers, a high-speed print-

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Reports

Search for Artificial Stellar Sources of Infrared Radiation

Abstract. If extraterrestrial intelligent beings exist and have reached a high level of technical development, one by-product of their energy metabolism is likely to be the large-scale conversion of starlight into far-infrared radiation. It is proposed that a search for sources of infrared radiation should accompany the recently initiated search for interstellar radio communications.

Cocconi and Morrison (7) have called attention to the importance and feasibility of listening for radio signals transmitted by extraterrestrial intelligent beings. They propose that listening aeris be directed toward nearby stars which might be accompanied by planets carrying such beings. Their proposal is now being implemented (2).

The purpose of this report is to point out other possibilities which ought to be considered in planning any serious search for evidence of extraterrestrial intelligent beings. We start from the notion that the time scale for industrial and technical development of these beings is likely to be very short in comparison with the time scale of stellar evolution. It is therefore overwhelmingly probable that any such beings observed by us will have been in existence for millions of years, and will have already reached a technological level surpassing ours by many orders of magnitude. It is then a reasonable working hypothesis that their habitat will have been expanded to the limits set by Malthusian principles.

We have no direct knowledge of the material conditions which these beings would encounter in their search for lebensraum. We therefore consider what would be the likely course of

events if these beings had originated in a solar system identical with ours. Taking our own solar system as the model, we shall reach at least a possible picture of what may be expected to happen elsewhere. I do not argue that this is what will happen in our system; I only say that this is what may have happened in other systems.

The material factors which ultimately limit the expansion of a technically advanced species are the supply of matter and the supply of energy. At present the material resources being exploited by the human species are roughly limited to the biosphere of the earth, a mass of the order of 5×10^{24} grams. Our present energy supply may be generously estimated at 10^{16} ergs per second. The quantities of matter and energy which might conceivably become accessible to us within the solar system are 2×10^{27} grams (the mass of Jupiter) and 4×10^{33} ergs per second (the total energy output of the sun).

The reader may well ask in what sense can anyone speak of the mass of Jupiter or the total radiation from the sun as being accessible to exploitation. The following argument is intended to show that an exploitation of this magnitude is not absurd. First of all, the time required for an expansion of population and industry by a factor of 10^3 is quite short, say 3000 years if an average growth rate of 1 percent per year is maintained. Second, the energy required to disassemble and rearrange a planet of the size of Jupiter is about 10^{26} ergs, equal to the energy radiated by the sun in 800 years. Third, the mass of Jupiter, if distributed in a spherical shell revolving around the sun at twice the Earth's distance from it, would have a thickness such that the mass is 200 grams per square centimeter of surface area (2 to 3 meters, depending on the density). A shell of this thickness could be made comfortably habitable, and could contain all the machinery required for exploiting the solar radiation falling onto it from the inside.

It is remarkable that the time scale of industrial expansion, the mass of Jupiter, the energy output of the sun, and the thickness of a habitable biosphere all have consistent orders of magnitude. It seems, then, a reasonable expectation that, barring accidents, Malthusian pressures will ultimately

drive an intelligent species to adopt some such efficient exploitation of its available resources. One should expect that, within a few thousand years of its entering the stage of industrial development, any intelligent species should be found occupying an artificial biosphere which completely surrounds its parent star.

If the foregoing argument is accepted, then the search for extraterrestrial intelligent beings should not be confined to the neighborhood of visible stars. The most likely habitat for such beings would be a dark object, having a size comparable with the Earth's orbit, and a surface temperature of 200° to 300° K. Such a dark object would be radiating as copiously as the star which is hidden inside it, but the radiation would be in the far infrared, around 10 microns wavelength.

It happens that the earth's atmosphere is transparent to radiation with wavelength in the range from 8 to 12 microns. It is therefore feasible to search for "infrared stars" in this range of wavelengths, using existing telescopes on the earth's surface. Radiation in this range from Mars and Venus has not only been detected but has been spectroscopically analyzed in some detail (3).

I propose, then, that a search for point sources of infrared radiation be attempted, either independently or in conjunction with the search for artificial radio emissions. A scan of the entire sky for objects down to the 5th or 6th magnitude would be desirable, but is probably beyond the capability of existing techniques of detection. If an undirected scan is impossible, it would be worthwhile as a preliminary measure to look for anomalously intense radiation in the 10-micron range associated with visible stars. Such radiation might be seen in the neighborhood of a visible star under either of two conditions. A race of intelligent beings might be unable to exploit fully the energy radiated by their star because of an insufficiency of accessible matter, or they might live in an artificial biosphere surrounding one star of a multiple system, in which one or more component stars are unsuitable for exploitation and would still be visible to us. It is impossible to guess the probability that either of these circumstances would arise for a particular race of extraterrestrial intelligent beings. But it is reasonable to begin the search for infrared radiation of artificial origin by looking in the direction of nearby visible stars, and especially in the direction of stars which are known to be binaries with invisible companions.

FREEMAN J. DYSON
Institute for Advanced Study,
Princeton, New Jersey

Instructions for preparing reports. Begin the report with an abstract of from 45 to 55 words. The abstract should not repeat phrases employed in the title. It should work with the title to give the reader a summary of the results presented in the report proper.

Type manuscripts double-spaced and submit one ribbon copy and one carbon copy.

Limit the report proper to the equivalent of 1200 words. This space includes that occupied by illustrative material as well as by the references and notes.

Limit illustrative material to one 2-column figure (that is, a figure whose width equals two columns of text) or to one 2-column table or to two 1-column illustrations, which may consist of two figures or two tables or one of each.

For further details see "Suggestions to Contributors" (Science 125, 16 (1957)).

*"Electronic communication
is every bit as artificial or vicarious
as the printed word"*

dents (and teachers) with the same sorts of problems that challenge and motivate the scientist and scholar in their pursuit of knowledge. The materials are diverse and include original readings centering around problems such as the causes of the Civil War or controversial decisions handed down by the Supreme Court; films which present a social issue or scientific principle without interpretation; games which require thoughtful responses based upon contingencies such as those encountered by kings and counselors in a struggle for national power; and assignments in libraries, labs, museums, or on historical or archaeological sites. This trend, which is sometimes called "inductive" or "discovery" learning, is promising because it sees all human learning as an interaction between the individual and some part of his environment.

Both the technologists and cognitivists seem to agree that education has long been dominated by the printed word and by the syntactical logic which conditions one's perceptions of his world. This contention brings us back to the distinction raised earlier in this paper between first-hand and second-hand experiences, and the information that is available only through the senses and not through language alone. As suggested, the criticism of verbally prejudiced perception is justified, but the overemphasis on words may also be symptomatic of the isolation of the individual from direct experience by the agencies of his cul-

ture. If there is some truth to this latter proposition then the claims for the liberating effects of electronic communication are highly ironic, particularly as McLuhan and others have singled out the printed word and "POB's" (Print Oriented Bastards) as the chief villains which are now being turned off by the turned-on generation.

Electronic communication is, after all, every bit as artificial or vicarious as the printed word. Rather than liberate, it may yet further serve to restrict and banalize experience, something for which the printed word has never had a special genius. The machine represents a formative source of influence on society and its members, for, however benign the intended ends, the machine succeeds in determining its own ends by forcing people to adapt to its peculiar requirements. In Lewis Mumford's words, "The only values recognized by automation are those necessary for the operation and continued expansion of the system itself."¹ This is inherent in that phrase: "The medium is the message"—a message of contrasting circles which define experience in terms of what the system can transmit. Mumford again drives home another, related point: "Automation has a colossal qualitative defect that springs directly from it quantitative virtues: it increases probability and decreases possibility."²

The British psychologist, Patrick Meredith, views with favor the recent "emancipation from the limitations of purely verbal media," but he raises a cautionary note about

the current tendency to embrace yet another form of servitude:

More seriously, perhaps, the development of so many powerful devices for transmitting sound and light is tending to restrict our curricular concepts to those two channels only and to lead to a dangerous neglect of the fundamental educational importance of the sensations of touch, pressure, temperature, motion, tension, pain, taste, and smell.³

Providing first-hand, exploratory experiences for the individual, not just in the classroom but in the larger world as well, is the only way, in the end, of reaching society itself.

NOTES

¹ *The Senses Considered As Perceptual Systems*, (Boston, 1966), p. 28.

² The Adaptation of the Bushmen to the harsh environment of Southwest Africa is vividly depicted in "The Hunters," a film produced by the Film Study Center, Peabody Museum, Harvard.

³ "The Computer, The Eye, The Soul," *Saturday Review*, XXXIX (September 3, 1966), p. 54.

⁴ "The Automation of Knowledge," *Audio Visual Communication Review*, VII (Fall, 1964), p. 268.

⁵ *Ibid.*, p. 265.

⁶ "Toward A Taxonomy of Educational Media," *Audio Visual Communication Review*, XV (Fall, 1967), p. 377.

Water and Solutes in Plant Nutrition:

With Special Reference to

van Helmont and Nicholas of Cusa

A. D. Krikorian and F. C. Steward

Plant physiologists generally credit van Helmont (1577-1644) with one of the first recorded experiments in plant science. Indeed, historians of natural science frequently refer to his work as a very early example of a deliberate experiment to test a hypothesis. The experiment in question was performed with a willow twig; and its purpose, it has been suggested, was to test the Aristotelian doctrine that the nourishment of plants was derived from the soil. This idea emanated from the ancient notion that all matter was composed of the principles earth, air, fire, and water; and also from the widely held concept of "mother earth," where the soil acted for plants somewhat like the stomach in animals where materials were "predigested" and supplied to the organism. Strangely enough, this idea persisted, apparently unchallenged, from the time of Aristotle (384-322 B.C.) until the early 17th century. In that period, van Helmont, already widely known for his work in alchemy, medicine, and on gases, performed the experiment in question. From this experiment he concluded that the soil could not furnish the stuff of which plants are made but that they are derived from water alone.

The present study will establish the context in which the van Helmont experiment was performed and published and will test the possibility that he was anticipated by others. Although some casual references have suggested that van Helmont was preceded in the essentials of this experiment by Nicholas of Cusa by approximately 150 years,

this claim is not as widely known in the history of science as it deserves to be. For example, Sir John Russell quoted the van Helmont experiment at some length in his classical account of *Soil Conditions and Plant Growth* (Russell, 1912, p. 2) but made no reference whatsoever to Nicholas of Cusa. Later, Nash (1952) quoted the same passage from van Helmont but also stated that "in the conception though probably not in the execution of this experiment van Helmont had been anticipated by about a century and a half by Nicholas of Cusa (1401-1464), cardinal scholar and an important figure in the history of science" (p. 329). This reference was a sufficient challenge to seek out those facts of the case which are here presented.

van Helmont's Experiments

The actual date when van Helmont performed his celebrated experiment is unknown. The definitive account of the experiment was first published in 1648, posthumously, by his son (Franciscus Mercurius van Helmont) in a work entitled *Ortus Medicinae* (1648). This entire work was translated into English by John Chandler (1662); the account of the experiment in question is to be found in Chapter XVIII entitled "The Fiction of Elementary Complexions and Mixtures," p. 109, paragraph 30. The passages immediately preceding the description of the experiment show, in the rather involved terminology of the day, that van Helmont following Thales, an early Greek philosopher, had come to the belief that all matter (including plant material) could be transmuted into water. As an alchemist, van Helmont believed that gases (a term which he claimed to have invented from the Greek *chaos* for a formless void) were

convertible by fire into water.

But now I take upon me to demonstrate, that Bodies which are believed to be mixt are materially the fruits of water only; . . . Bodies, whether they are dark, or clear, sound, or fluids, bodies of one and the same kinde, or those that are unlike; Suppose them to be Stones, Sulphurs, Mettals, Hony, wax, Oils, a Bone, the Brain, a Grisle, Wood, Barke, Leaves: lastly, that all things, and all particular things, are wholly reduced into a water, altogether without savour, and so that they do consist, and are contained in simple water only: For indeed, most of those things are destroyed by fire, and do straightway of their own accord, give their part to the water. . . . (Helmont, 1662, p. 105, paragraph 3).

Thus the converse transmutation of water into the substance of plants would seem entirely logical to van Helmont, and his experiment was obviously designed to this end, as the following translation of the original Latin passage (Helmont, 1648, pp. 108-09, paragraph 30) shows:

But I have learned by this handicraft-operation, that all Vegetables do immediately, and materially proceed out of the Element of water only. For I took an Earthen Vessel, in which I put 200 pounds of Earth that had been dried in a Furnace, which I moistened with Rainwater, and I implanted therein the Trunk or Stem of a Willow Tree, weighing five pounds; and at length, five years being finished, the Tree sprung from thence, did weigh 169 pounds, and about three ounces: But I moistened the Earthen Vessel with Rain-water, or distilled water (always when there was need) and it was large, and implanted into the Earth, and least the dust that flew about should be co-mingled with the Earth, I covered the lip or mouth of the Vessel with an Iron-Plate

Dr. Krikorian is currently a member of the Department of Biological Sciences, State University of New York at Stony Brook. Dr. Steward is Director of the Laboratory for Cell Physiology, Growth, and Development, Cornell University, Ithaca, N.Y.

The Search for Extraterrestrial Technology

FREEMAN J. DYSON

Institute for Advanced Study

I owe to Hans Bethe both of the two most memorable experiences of my scientific life. The first was in 1947, when I came to Cornell University as a student and found Hans having just finished his pioneering calculation of the Lamb shift. He put me onto the job of making an improved calculation including relativistic effects, and this led directly to my taking part in the grand cleanup of quantum electrodynamics in the following year.

My second memorable experience was in 1958, when I went to work for a year on Ted Taylor's "Project Orion" at General Atomic in San Diego. This project to design a space-ship propelled by nuclear explosions⁽¹⁾ is now officially dead⁽²⁾ but not declassified, and so there is not much glory attached to it. Still it was a splendid idea, and during the first year of the project's life we skimmed the cream off a multitude of technical problems in the most diverse branches of physics and engineering. It was Hans's willingness to vouch for our sanity that did most to persuade the authorities in Washington to spend money on a project which seemed at first glance so outrageous. In view of Hans's dedication to the Test Ban Treaty, nobody could accuse him of being bomb-happy.

Hans thus knows well both sides of my character, the eclectic physicist and the frustrated engineer. Since the rest of this book is mostly written by physicists, I have assigned my chapter to the frustrated engineer. I will write about ideas which arose, in the context of the work on Orion, when we tried to envisage the ultimate consequences of the things we were proposing to do.

There is a very fine book which I have in my study, called "Engineers' Dreams"⁽³⁾. It is about grandiose engineering projects which have been from time to time invented by engineers, studied by

Marshall, R.E. ed. Perspectives in modern physics. 1966.

*"Machines assume roles
that once were shared by members
of the community"*

in obtaining the evidence that he needs in making an attribution. A drawing held up to the light reveals a vastly larger array of sensory data than a photographic reproduction.

The curator's special knowledge is predicated upon his first-hand experiences in perceiving. This perceptual skill represents a sort of non-verbal logic which perhaps has little or nothing to do with what the curator knows from books. Insofar as his discernment becomes more refined and his conclusions more reliable as they are applied to the objects in his care, the curator might be likened to an athlete whose training improves coordination, strength, and technique in the performance of a specialized task. From this standpoint the curator is less like a repository of conventional information than a sentient machine whose capacity to process all sorts of information, verbal as well as non-verbal, constitutes a type of knowledge quite apart from the information itself.

Language is not a substitute for experience; it is, however, capable of acting as a mediator between the perceiver-performer and the non-verbal materials which he is asked to manipulate. The judgments of a bookish art historian would surely be more reliable in a situation calling for the first-hand analysis of a work of art than would be the opinions of a person who knew little about art. Likewise the historian of surgical procedures would be better prepared to offer a prognosis and even wield a scalpel than someone who had no medical knowledge at all. The degree to

which this readiness to perceive and perform may be attributed to the power of words and to previous experience is a matter that cannot be sorted out here. However, the psychologist, James J. Gibson, assigns priority of experience over what he refers to as the "second-hand" perceptions of language (and art): "This second-hand perception no doubt works backward on direct perception, but knowledge about the world rests on acquaintance with the world, in the last analysis . . ." (His emphasis.) The art historian has looked at objects, even though many or most are depicted in photographs, and the unfortunate historian-turned-surgeon, aside from his exposure to medical diagrams, has applied a knife to countless cuts of meat. Perhaps we may hypothesize that all knowledge, even that which is conceptual, is ultimately rooted in direct or first-hand experience. The hypothesis raises questions about the quality of those experiences which are available to modern man, a matter to which we will return shortly.

Thus far we have talked about objects largely as they are exemplified by objects of art. But what of simpler, less symbolically charged objects and the perceptual modes which allow the observer to extract information from them? The art object frequently is the bearer of a number of adherent meanings, none of which inheres in the object itself; one expression of adherent mean-

ing is the artist's intentions, and throughout its lifetime the object gradually acquires other meanings, variously ascribed by former owners, dealers, the popular imagination, and curators and art historians. Art objects are the most difficult of man-made things to perceive objectively because their possible meanings are seldom represented in the perceptible qualities of the object itself.

Nature has no meanings and yet man has adapted by learning to "read" his environment and transmitting his discoveries along to his neighbors and offspring. Those human groups that obtain their support directly from nature are among the most notable instances of successful human response to the non-verbal world. The primitive hunter is "primitive" only by relative standards, for he survives under conditions where we would soon perish. A broken branch, dung, and other tracks or evidence may inform the hunter of the type of game, its weight or approximate size, physical condition, how much earlier it passed this place, and the direction and pace of its movement. He can even take an inductive leap ahead by predicting the most probable of several courses that his quarry will follow under the given set of circumstances. If the animal is sick or wounded the hunter may decide that the prey will head for the shelter of trees rather than strike out across open country as it would do normally.² Perceptual behavior under conditions which involve the life or death of the individual or his social group must

Is Sex Necessary?

IF SPACE SHIPS ever touch down, or at least let down, on some far and as yet unseen planet, will sex be as rampant there as here? Certainly without it the living landscape falls a little flat. That may be because we as humans are somewhat sex-obsessed, though the same could be said for almost any form of Earthly life. Sex is by no means the whole story, but it undoubtedly rules the roost. Yet before we get in too deep we should perhaps ask the leading question—is sex necessary? If it really is necessary here, then we can reasonably expect to find it in other places. If it is not really necessary, then the fuss, the furore it has created is little more than a chronic distraction to occupy our time. Actually life would be stuck without it, unable to change from the first mold into which it had been poured. Sex has become intimately associated with reproduction, yet the two are not the same. Reproduction is readily accomplished in Nature without sex entering the picture at all, though in most cases the two can no longer be disentangled. It is sex that makes the whole business both comic and desperately serious.

First, to clear the ground a little. Perhaps the most amazing quality of the living organism, apart from the sheer miracle of just being, is the capacity of a small part to grow into a new whole. Most plants and many animals, particularly the simpler, soft-bodied kinds, readily reproduce in a purely vegetative manner. Body fragments or buds can give rise to large numbers of individuals exactly like the original. Plant production from cuttings is commonplace and in nature much the same sort of thing is happening all the time. Many worms and some less familiar creatures bud off long chains of new individuals from their hinder end; some jellyfish grow new ones from around their margin and elsewhere. Given the chance to grow and multiply, almost any living cell that has not become too involved in special business may develop into the whole organism. It is a basic property of life, though it is one that is readily lost. In fact in most animals only the reproductive cells of the ovaries retain the power.

Vegetative reproduction alone, although it can produce large local populations, is a monotonous business. All individuals are alike and are spitting images of their parents. It is reproduction pure and simple, with none of the variety that is the spice of life—fine for filling up the world but no good for making change. This is where sex comes in.

If two reproductive cells from somewhat unlike parents come together and fuse, the product of development will not be exactly the same as either parent. Reproductive cells, in a sense, kill two birds with one stone. They still serve as reproductive cells whose main business is to produce new individuals essentially like the parent organism, as in vegetative reproduction; and they also introduce a little variation into the product. Rigid standardization can be a liability, for only when there is some variability can any sort of selection be made. This year's cars are

must happen. The two languages could not exist happily side by side. Only a highly trained linguist could speak them both without confusion. When they come into competition, the economy of mass-production will manifestly favour Basic.

Then are we doomed to offer up our mother-tongue as a sacrifice to the higher interests of mankind? I venture to think that Mr. Ogden and his school are too modest and too pessimistic, when they assume that classical English will never be adopted as a universal language. Their conception of a *lingua franca* is needlessly philistine. How many of us, when we take the trouble to learn a language, are content to use it only for the ends of trade? We want to converse in it; we want to familiarise ourselves with its literature and enjoy the music of it in the theatre. Is two months really all the time we care to give, that we may acquire a tool so subtle as a language? There is no need to simplify our grammar; nor does the vocabulary of English, with its kinship both to Latin and Teutonic languages, present any unusual difficulty to the foreign student. Its one exasperating difficulty is its chaotic spelling. We are amused when we are invited to justify such an anomaly as the use of one clumsy sign for five distinct sounds, as in "rough," "plough," "through," "thorough" and "dough"; but do we realise the needless and depressing trouble that such oddities cause to foreigners—not to mention English children? These peculiarities of spelling have, to be sure, their historical interest; they indicate a word's parentage. Our queer form "plough" reminds us, as "plow" does not, of the cognate German "Pflug." But on the balance, if English is to realise its manifest destiny as a universal language, the case for a drastic reform of our archaic spelling is conclusive. During several centuries civilised men used Greek as their *lingua franca*; thereafter Latin took its place, and finally French. English, if we will but reform its spelling, is a much easier language than any of these. We shall gain nothing by mutilating it or simplifying it. It can take the place history has made for it, as it is, as our ancestors shaped it, a natural language in which men pray and write verses and make love. I would add only this stipulation: that if others learn our mother tongue, we and the Americans should, in our turn, make it a point of honour to learn one foreign language thoroughly.

H. N. BRAILSFORD

BASIC ENGLISH

[In this article Mr. Brailsford presents the case against Basic English. We expect to publish a reply.]

MR. CHURCHILL'S patronage of Basic English compels us to make our choice. Is it to be the universal language of to-morrow? History had already settled the main question. The world's *lingua franca* will be English, but what sort of English? For reasons conclusive to everyone who understands the nature of human speech, none of the artificial languages has or deserves a chance. No language can live or preserve its standards, unless its usages and idioms are fixed by the traditions and literature of a people whose mother-tongue it is. A collection of words is not a language.

It is only in the life-time of our generation that the decision swung in favour of English. French was the cosmopolitan language of educated Europeans throughout the eighteenth and nineteenth centuries. In my own experience as a wandering journalist, it was still in the early years of this century generally spoken all the way from Spain to Persia. It was everyone's second language in Turkey and the Balkans, while in Tsarist Russia the upper and official classes usually spoke it well. The decisive fact that made English the world's choice was that China stepped out of her isolation speaking our language. It is indeed the tongue with which all Asiatics make contact with each other and the West; it links Indians with their Chinese neighbours and also with Americans. Simultaneously the Revolution deposed French from its place of honour in Russia: it vanished with the aristocrats. In the world of to-morrow four Great Powers will be predominant. Two of them have English as their mother-tongue: in the third it is universally studied in all higher schools and is often the language of instruction. The beautiful but difficult language of Russia will be increasingly studied: but it cannot compete with English as the common language of mankind.

But will it be in the basic dialect or in standard English that we shall converse across the continents? Mr. Ogden's language has swung into such high favour since Mr. Churchill became its champion, that it may already be too late to question its claim. It has its utilitarian merits. A foreigner should be able to learn its vocabulary of 850 words with ease: its grammar is ultra-simple. It should be of use to the business man and the scientist. It may even be true, as its advocates claim, that anything men need say can be said in it. It becomes, however, an excessively verbose language the moment it leaves the level of everyday life, and it puts a heavy strain on the translator's ingenuity. Take, for example, the first clause of the Atlantic Charter: "Their countries seek no aggrandisement, territorial or other," becomes "Their countries will do nothing to make themselves stronger by taking more land or increasing their power in any other way." The case is worse when Basic is used for narrative. Without verbs it is impossible to convey action swiftly and simply.

How much will a foreigner have gained when he has mastered this peculiar form of English? He will be understood, wherever he goes, which is saying much. He will be able to write a satisfactory business letter. But will his very limited vocabulary enable him to understand the drift of an ordinary conversation, in which the rest of us talk normal English? He could not read a novel or a newspaper. There are, it has been reckoned, over 25,000 distinct words in an average issue of the *Times*. With his equipment of 850 he could not even guess his way through the leader page. A "talkie" or a B.B.C. news-bulletin would bewilder him; a play would exasperate him. Basic, in short, will be of little use to the foreigner until we Englishmen take to using it for most of the purposes of life. That, indeed is, the conclusion which the exiled governments in London are said to have reached.

How does the account stand the other way

round? An Englishman can of course understand Basic without more ado. But a foreigner will learn to write it and speak it very much more easily than we can hope to do. What we have to do is to banish and repress most of the words we habitually use in daily life. If we use more than the prescribed 850 we are not playing the game. With a great deal of trouble it can be done in writing, if we keep Mr. Ogden's page of permissible words constantly in front of us and consult his dictionary perpetually. But to learn to speak Basic would be a terrific job. To start with, we would have to learn by heart that vocabulary of 850 words, so that we could be perfectly sure which of the words that come crowding to our lips may be used and which of them—the overwhelming majority—must be rejected. It would want not months but years of practice before one could talk Mr. Ogden's language instinctively. Most of us, if we know French or German fairly well, think in these languages after spending a few days in France or Germany. Once that habit starts it is easy to talk, even though one still makes mistakes or hesitates for words. But could a "true-born" Englishman ever learn to think in correct Basic? There is firstly that tiresome matter of the verbs. If we should be tempted in a sudden rush of spontaneous emotion to say "I love you" we must check ourselves, and translate it, instead, into the tedious "I have love for you." The lady in her turn must not answer "I knew you loved me." She must reply "I had knowledge that you had love for me." Nor is this all, or even the worst. I set myself the other day the experimental task of translating one of Mr. Churchill's purple passages into Basic. The result was pitiful: I could get no rhythm into it; all the *bravura* was gone. I turned, therefore, to something that should have been easier, and tackled the first nursery rhyme that came into my head: Three Blind Mice. This was a great deal worse. None of these words occur in the basic vocabulary—blind, mouse, wife, carve, life. How many of us, in a rapid conversation, could improvise a phrase of moderate length, using only the permitted words, which would mean "mouse" and no other animal? I could, I suppose, force myself with much labour to write this very unattractive language, but could I—could you—learn to think it and talk it spontaneously?

It could be done on one condition, that we hear it and read it continually from our childhood up. That is also the answer to the foreigner's difficulty. If for all his proficiency in Basic he cannot follow a film, a play, or a B.B.C. talk, or read a newspaper in standard English, then plainly these things must be produced in the new dialect. Hollywood is already making the first film in Mr. Ogden's language, and an American publisher announces that he will soon issue a detective story in it. There are, or soon will be, great commercial possibilities here. A broadcast can be addressed directly to all mankind on a single wave-length without translation. With a popular novel to sell, why should a publisher print it in classical English? If Basic is widely adopted, he may multiply the circulation ten times over by using the *lingua franca*. For a generation or two English would fight a losing battle. High-brow weeklies, poetry, some critical essays and a few old-fashioned novels would still appear in English. But for how long could the *Times*, distributed all over the world by airplane within a few hours of publication, stick to the old forms of speech? The advertisers would insist on the change, if no one else did. Sooner or later the change-over would have to be made in elementary schools and classical English would be studied only by the leisured few, as an alternative to Greek. Fortunately the greater stylists of the old language will still be available in translations. There is, I am told, a good version in German of some of Mr. Churchill's works.

This will not happen in my lifetime. But in the long run, if we take up Basic in earnest, it

AGAINST BASIC ENGLISH

by ROSE MACAULAY

1

BASIC English has become, since Mr. Churchill accoladed it at Harvard, a solid and imposing, if questionable, upstart, now famous enough, and still eccentric enough, to be a popular butt and cockshy; when it is mentioned in Parliament, members make their feeblest jokes; all the good ones have perhaps been made already by journalists, who have, as a rule, more wit. We have most of us contributed to these quips; it is inevitable, for Basic English is comic, like mothers-in-law.

The notion of foreigners being deliberately taught to speak English wrong must move all but the gravest Britons to mirth. More comic still is the notion of the English having to learn it too, in order to understand and reply to these poor foreigners. For Mr. Churchill says its use is to enable non-English-speakers "to participate more easily in our society," and they would have little enough ease if they could not make head or tail of what we said to them. "I have tried to explain," added Mr. Churchill, justifiably annoyed by the weak and irrelevant jests of his colleagues, "that people are quite purblind who discuss the matter as if Basic English were a substitute for the English language." Nevertheless, if it is to be of any use at all between Britons and foreigners, it must on occasion be just this, and we must suppose that we are to be encouraged to learn to talk it.

It is obvious that we are in danger of being found on the wrong side in this matter, the side of the retrograde, the obscurantists, the purblind. The Basic forces are formidable. The tendency to conceive them, like other reformists, as Folk, jaegerish, sandaled, bearded, weaving, spinning, and folk-dancing, adorned with button badges like their hated rivals the Esperantists, is a mistake. In the

Basic van march an army of eminent progressives, supported by some, though by no means all, experienced teachers of English abroad, and missionaries to the heathen, who believe (and I am told find) that here is a laborsaving short cut for their innocent charges. Behind amble the less enlightened ranks of those amiable and inexperienced souls who trustfully think that anything promised us by the Prime Minister (even such unappetizing objects as blood, toil, and sweat) must be rather nice to have. And in the rear, quiet and unobtrusive, gazing nonchalantly at the landscape, stroll the Patriots, who see in the spread of any variant of their native tongue a step towards turning the world into a kind of Anglo-Saxon Commonwealth of Nations. This is a view of the matter seen even more clearly by foreigners; I have heard it trenchantly expressed by Frenchmen.

With this heavyweight army against them, I feel that the anti-Basics must stick to their guns. I do not think their charges have been adequately met. There is a tendency to elude, to cover up awkward questions. I have been reading with care Dr. I. A. Richards's book, *Basic English and Its Uses*, which deserves careful perusal, both for what it says and what it omits. It must be granted that he makes out a strong case for the language's being easy to acquire. The case for the advantages of a common tongue does not need arguing; it would obviously be an enormous convenience. It would not necessarily lessen wars, or even "aid immensely in ironing out boundary tensions": it might even increase the latter, for what is said by those suffering from boundary tension is, as a rule, better not understood by those on the other side of the boundary. As Dr. Richards himself points out, radio, talking to each nation in its own tongue, encourages, on the whole, loyalty to the group, disloyalty to the planet.

Still, without claiming too much for mutual comprehension, we most of us admit it a good aim. And the use of a common tongue by foreigners

Novelist, satirist, and keen-witted critic, ROSE MACAULAY first attracted American readers with her novel, *Potterism*. If there are those who wish to counter her attack on Basic English, let them speak.

IDLE FEARS ABOUT BASIC ENGLISH

by I. A. RICHARDS

1

TO LIKEN so spare a frame as Basic English to Falstaff may seem odd. But they have points in common. "Men of all sorts," he says, "take a pride to gird at me. . . . I am not only witty in myself, but the cause that wit is in other men." (2 Henry IV, I, 2, 11) Men (and women) of all sorts also take a pride to gird at Basic. The pride is often conspicuous.

Basic is a great excitant of humor. Hardly a week passes but the *New Yorker* or *Punch* or now Miss Macaulay, in the April *Atlantic*, finds Basic irresistible. And I imagine that Mr. Ogden — himself a man of resource in jokes — gains deep satisfaction from this. To have provided, in this distressed world, a new and seemingly inexhaustible recipe for humor is in itself no slight achievement. But there are other sides to Basic. This distressed world needs jokes; but it needs greater helps still more. And Basic offers them. It would be a pity if the humorists, through misapprehensions or malice, were to hinder the understanding and use of these helps just when they are most urgently needed.

Let us see what these helps are. Miss Macaulay rightly takes up "the use of a common tongue by foreigners among themselves" first. There are some 220 million people who have a good knowledge of English; and these form an invaluable stabilizing and teaching reserve which artificial languages lack; but there are over 1900 million of the others. And they talk some 1700 tongues. No man knows how many of these people are soon going to be flung suddenly into new international contacts. We are far more likely to understate than to overestimate what the Air Age is about to do for us, and English of some sort or other will certainly have to be the operating language of the airways — with all that

that implies. Is it to be Broken English or Basic English? That is really the question. A form of English which is a barrier, or a smooth and solid runway? Those who have heard Cantonese and North Chinese, for example, using English as their bridge will not think "international understanding between foreigners" through Basic so remote an ideal. It is true that Basic is short in terms of abuse, in irritants and insults. But is that a disadvantage?

Now as to talk between English-speakers and the rest. Miss Macaulay claims to "have no wish to make elementary jests on this subject." If so, she must be somewhat at the mercy of her unconscious, for she does little else. Of course if the foreign learner knew English perfectly, things would be easier for him and for us. If he knew *really well* the current English Miss Macaulay would put in a phrase book for him, we would escape a little trouble, but at what cost to him? Learning to keep sufficiently within Basic is really a very light task for an English-speaker. Learning to talk full contemporary idiom — whether American or British — is an appallingly heavy undertaking for almost any foreigner.

Miss Macaulay has unfortunately not concerned herself with this key question and a key fact. She has been too busy passing judgment on what is or is not good English — usually a thought-free process — and shuddering at the possibilities of change. "The mind is ever ingenious in making its own distress," as Goldsmith noted. And she seems to regard "a laborsaving short cut" as a minor matter here. If she were to consider this key question and the key fact, she would find that Basic, far from being a danger, is a much needed protection to English.

The key question is, "Which is easier for the foreigner: to attain some general competence in English with Basic, or with the miscellaneous assortments of common phrases that have passed for elementary English?" And the key fact is that the foreigner gets much further in his command of

No one has been more closely associated with C. K. Ogden in the application of Basic English than I. A. RICHARDS. Critic, teacher, and mountain climber of distinction, Mr. Richards has recently been appointed one of Harvard's four University Professors.

HOW ARE OUR libraries, traditionally humanistic, adapting themselves to the "information explosion" and to the computerized scientific and other information systems now coming into operation?

Scholars of the humanities seek their primary data in human records: for such scholars their libraries are also their laboratories. The librarian selects and acquires appropriate literature on as large a scale as his always limited funds allow, organizes it for the use of scholars and conserves it for posterity. The scholar of the humanities must know his library sources at first hand and regards the searching as an essential part of his work.

While "science" was still "natural philosophy" and while the tempo of change in scientific thought was not markedly different from that in other disciplines, the library in its traditional form could accommodate the needs of its scientific users by applying the same techniques to the literature of science as to the literature of the humanities. But scholars of the natural sciences seek their primary data by observing nature in their laboratories or elsewhere: their libraries are essentially sources of only secondary data and repositories of their records. For the scientist, the searching of literature is increasingly regarded as a tedious chore to be delegated to others if possible.

When scientists began, in the late eighteenth century, to form their specialist societies and specialist journals—for botany, geology, astronomy, and so on—a process which has accelerated ever since, the new societies also created their own special libraries. The collections in these libraries were limited to literature of special interest to their members but, otherwise, their special libraries were acquisitive repositories of the traditional humanist form. However, changes are beginning.

Since the First World War the element of natural philosophy in science has been increasingly dominated by the rapid growth of scientific technology or applied science; for example, of the 8,000 periodicals known to be contributing to chemistry and chemical engineering, only about 300 are wholly devoted to pure chemistry.

Knowledge versus Information

BY B. C. BROOKES

B. C. Brookes is Reader in Information Studies at University College London

abstracts periodicals—at least until they succeed in establishing their own.

The speed at which scientific papers are written, refereed, amended, accepted, printed and published has changed very little over recent years. The increasing rate of obsolescence is therefore due to other factors. The first is the growing speed and ease with which scientists can travel about the world to attend conferences or to visit laboratories of interest. There is a greater oral exchange and clarification of new ideas before they are published. The most advanced scientists therefore write, literally, "for the record", for the benefit of those who have not yet reached the upper echelons of their science and for those who might exploit the new ideas in practical ways. Academic scientists, especially if they are young, still feel it necessary to publish the results of their work—they must "publish or perish" as scientists. But every industrial establishment with a research department and every government laboratory also has a private collection of its own confidential internal research papers. The second factor speeding the rate of obsolescence is the ever more urgent search of the published literature for ideas which might be technologically and commercially exploitable.

During the past ten years the analytical power of the computer has been harnessed to speed the sorting and dissemination of information

printed. The results of all these operations are recorded in coded form on magnetic tape. When complete, this tape is run into a specially adapted film-setting machine which decodes the tape to produce visual images on a screen of the pages precisely as they are to be printed. The sequence of images is filmed, and from the film a set of lithographic plates is made from which the periodical is printed by an offset process in the usual way. By this technique *Science Abstracts* is printed in Times Roman with italic, bold and Greek alphabets as required and with all the many special symbols, often sub- or super-scripted, that modern science has inherited.

Computerized services are economically viable only if the greatest possible use is made of the "once-for-all" intellectual effort required to establish the information input to the computer system. It would be extravagantly costly to use the techniques developed by INSPEC to produce only *Science Abstracts*. But once the intellectual work on each entry has been done, and as the computerized "data-base" accumulates, an increasing variety of spin-off information services can be offered for little further effort and at little extra cost. At present, INSPEC offers only selective dissemination of information (SDI) services, but other services, information retrieval among them, will soon follow.

If the regular scanning of the abstracts periodicals for relatively

tem, but only at the cost of getting perhaps ten times as many titles which he finds (when he acquires the full texts) are not relevant. The scientist who insists on getting only papers which are strictly relevant can also have what he asks for, but at the cost of getting perhaps only a tenth of the relevant papers available in the system. Such "noise", first experimentally demonstrated by Cyril Cleverdon at Cranfield College of Aeronautics, is inherent in all information systems which have to use verbal descriptors rather than hard data. The noise can be reduced step by step by various ingenious iterative techniques, but the effort, and therefore the cost, increases rapidly as each small step is taken. So every information system operates at some compromise between cost and effectiveness. The inescapable law of all information systems is this: However ingenious the programming, however sophisticated the hardware may be, what can be got out of the system can never be better than what is put in.

All the operating systems using computers are still relatively young. The first large-scale system—the American MEDLARS (Medical Literature Analysis and Retrieval System)—has been running only since 1963. So, unlike traditional libraries, these systems are not yet seriously cluttered (from a scientific point of view) by a high proportion of literature of negligible interest to most of their users. But

it is possible to buy a guaranteed packaged system off the shelf. But it will be increasingly difficult to buy a system as one might buy a vacuum cleaner and then simply plug it in to provide the service required. Mechanization involves a searching questioning of the main objectives of the system, the adoption of a different set of routines, changes of attitude and staff training. The difference between traditional and mechanical systems widens as the mechanical systems become more sophisticated, and as the switch becomes more difficult and more expensive, so indefinite postponement is assured.

Three further technical steps are now in sight: the linking of computers to form networks, the widespread distribution of terminals which give access to the network and immediate on-line interaction with information systems in the network from these terminals. For example, when the National Lending Library of Science and Technology is linked to the network, a scientific research establishment could reduce its holdings of scientific periodicals to the very few of most immediate use, rely on selected SDI services to keep it informed of developments and call on the N.L.L.S.T.'s comprehensive bank of scientific documents to provide photocopies by return of post or to transmit visual images immediately of any paper not held locally.

What do these developments imply for the future—especially for the future of the traditional library? Scientists will increasingly depend on the network and less on libraries. Other professionals who frequently need "information" about current publications, or who need frequently to search a well-defined literature, are already beginning to follow the scientific lead. For example, Members of Parliament and senior civil servants have recently been testing the value of a weekly SDI service in current affairs. The material selected by the House of Commons Library from newspapers, periodicals and books was first indexed and then sent for computer processing to the Culham Laboratory of the Atomic Energy Authority, where experience has already been acquired of providing SDI services in physics. And the Statute Law Society has recently suggested that it would be helpful to lawyers if the body of Statute Law were indexed for information

Words and Machines

The Denial of Experience



CRAIG GILBORN

Craig Gilborn is currently an Associate, Education Division, at The Winterthur Museum, Winterthur, Delaware. He holds degrees from Michigan State U. and The Winterthur Museum. His study "Filmstrips and Slides" appeared in the October, 1967 issue of MUSEUM NEWS. Continuing his exploration of communications in the museum, Mr. Gilborn plans a sequel in which ideas from the current article are applied to concrete perceptual situations.

No one would choose to have his tonsils removed by an historian of surgical procedures. This statement is self-explanatory since we acknowledge that there is a profound difference between the experiences of the surgeon and the ideas that the historian has about those experiences. The difference between the historian's knowledge and that of the surgeon is the difference between conception and perception, between verbal and non-verbal responses in a given situation. Performance is itself a form of knowledge quite apart from a verbal relation, symbolic representation, or an observation of whatever is being performed.

Yet words are such a versatile means of conveying information, directing behavior, and arousing emotions that it is easy for those who deal with words and ideas to adopt the subconscious belief that language is a substitute for experience. Words are not a substitute for experience because words are not equivalent to those sensations that make up our encounters with the world. This may seem obvious in our example of the surgeon and historian, but in other instances the distinctions are less apparent. For example, the art historian is not qualified to be a curator of art simply because of his knowledge of the history of art. The art curator is concerned with things while the art historian, by definition, is interested in words about things. The historical and curatorial functions do, of course, frequently meet in the same person, but these functions are enacted in quite different ways.

Expressed in another way, the objects that comprise our world—the sources for most of our sensations—possess properties for which there are no exact verbal equivalents. These properties cannot be apprehended in any other than their own terms. The inherent limitations of language as a means of describing the world was frankly admitted by Samuel Johnson in the Preface to his *Dictionary of the English Language* (1755): "I am not yet so lost in lexicography as to forget that words are the daughters of earth, and that things are the sons of heaven." (His emphasis.) The daughters of earth are beguiling and corruptible whereas the sons of heaven remain unaltered by what we choose to say or believe about them.

The curator of art is, in the last analysis, the servant of Dr. Johnson's heavenly sons, and he is something else again when he goes courting the fickle daughters of earth. In examining a sketch it is not enough for the curator of drawings to know the stylistic effects that associate the sketch with a style period. Finer discrimination is needed if he is to determine its authenticity, provenance or school, and its maker. He may reach a point where he is looking for small but tell-tale evidence such as a line of a certain contour and weight which he has perceived in drawings that are known to have been from the hand of a certain artist. He may consult photographs of drawings in other collections, but reproductions, he knows, distort and degrade the originals and do not allow him to use his combined senses of sight and touch



Edited by Martin Levin

AUTOGRAPH PARTY

The salesgirl piles the books in neat alignment

Upon the table one last time, and sighs, "So there!"

How reassuring that they're on consignment.

The buyer thinks, and curls a lock of hair.

The author comes, shakes hands, and with a flourish

Signs all the copies (five) the clerks have bought.

On one of them, his pen becoming furrish,

He leaves, with name and best regards, a blot.

Two hours drag past, and although there are plenty

Who come to chat, few buy. (For one he signed

A card.) Then he, enriched three dollars twenty,

Departs—and leaves his fountain pen behind.

—RICHARD ARMOUR.

THE ESKIMO

THE average Eskimo is actually below average. He is descended from Mongols. What happened is, a few thousand years ago a large group of Mongols traveled up the east coast of Asia on their way north to avoid somebody . . . maybe the Chinese. They crossed the Bering Strait into this continent, turned south and went on to become Aztecs and Incas. But a few of them got off at the North Pole and became Eskimos. The Eskimos more or less stuck together and kept the language going for awhile but it didn't hold up. For one thing they no longer needed the word "Chinese," and even "Mongol" went out of style. Then they had to make up a lot of new ones such as *kayak*, *igloo*, *husky*, etc.

The Eskimos let all the "weather" words go by the board except for "worse" and "frightful."

After a few thousand years there wasn't much language left because where they lived there's not much to talk about. Eskimo has no word for

fruit-cup, or Pennsylvania, or motor-cycle. The Incas and the Aztecs went to a nice warm climate where they had plenty to eat and the living was easy and they haven't been heard of in five hundred years.

Eskimos aren't terribly bright but walrus don't learn either. There are also the seal, the sea lion, whale, and common cold, but the Eskimo never catches the common cold.

When the New York Yankees win the Series and announce they are the champions of the world, this does not necessarily include the Eskimos.

An Eskimo will lend you his wife. Even in their limited language it gives them something to talk about.

No Eskimo has ever eaten a banana.

—HENRY MORGAN.

• • •

WE'VE GOT PLENTY OF NOTHING

LATELY I've noticed that positive thinking is passé as a system of personal happiness. The pendulum has swung in the opposite direction. The new trend is negative in outlook—a kind of non-living. These days it's what you *don't* do that makes you happy. It's what you don't have that gives you a thrill and a sense of freedom.

This is how non-living works. Say you're taking a vacation trip. You book a non-stop flight to Rome (no dull landings in Paris or London where the hydraulic fluid might give out). You travel with no time limit, no jet surcharge, no passport, no visa. You

take with you a camera that needs no focusing, no winding, no adjusting for light. Your travel wardrobe requires no ironing. In case you have trouble sleeping in a Roman bed, you pack a bottle of sleeping pills that will cause no drug habit and no drug hangover. For waking up you take with you a no cord, no wind electronic transistor clock. When you sit back at the end of your trip and contemplate all the things you didn't do and didn't have, you know you must have enjoyed yourself.

The other day I was in the kitchen counting my blessings. I felt 100 per cent more optimistic after looking at my no drip lip bleach bottle, my no stick frying pan, my no hands, self-lowering toaster, my shelves lined with "No Bugs Milady" paper, and my frost-free refrigerator filled with non-fat milk, no cholesterol, non-hydrogenated margarine, and no-cal beverages in no deposit, no return bottles. True, we've sunk a pretty penny in all these no's, but then even non-living costs money.

Knowing this, American manufacturers are pushing the crusade for happiness by elimination full stop ahead. They have given the women non-smear lipstick, no snag, no run stockings, reducing systems requiring no diets, no drugs, and no exercises, the no neutralizer home permanent, and now their ultimate triumph, the no seam bra.

For the men they have come up with no stitch wallets, no stay shirt collars, no nicotine, no tar cigarettes, no taste, no smell vodka (if it produces a headache, take an aspirin which does not upset the stomach), non-pleated pants with no cuffs, and no lube cars with tubeless tires. Who could ask for anything less?

Even tiny babies have not been overlooked. For them there is the pinless diaper—no pins, no buttons, no hooks, no snaps. (Its fastener is gummed plastic, in case you're curious. But who cares what it is? It's what it *isn't* that counts.)

The passion for nothingness is also raging in the arts. Authors are producing non-books which are being eagerly devoured by non-readers from coast to coast. Every poet of stature is giving us poetry with no meter and no rhyme. Painting is non-objective. Music is atonal. In the theatre plays are being produced which have no plots and practically no characters. A recent success featured only one actor and a non-magnetic tape recorder.

The trend is well on its way. I don't know where it will end, but I suspect that, with the full cooperation of the Russians and their *nyet*, the ultimate in non-living may be just around the corner.

—MARGARET BENNETT.



Misc Corresp

Chase - Van Schoonbe 1945-1962.

(1 folder)

and 2 letters betw ASH + Geo T. Moore.

(Folder 1)

Notes concerning life of Agnes Chase intended for m. Stricker (1 folder)

Notes about "the Book" - (notes evidently towards preparation of a talk.)

(Folder 2)

Notes concerning Book binding (evidently for a class or lecture on such.)

(Folder 2)

Discarded - ① Clip from New Yorker (1 July 1978) - Profiles on Giovanni Mardensteig. | Also ② two issues of N.Y. Schol of Music newspaper, Page 1 (vol 6 (1), fall 1978; vol 4 (3) Summer 1978.)

Discards

③ Natl Park publ. on Big Bend Natl Park - Texas. (one folder)
(Sketches for Book/illustrations/ Stereo advertising stuff)

Art of Bob Sillust - Life Exhibition Book tied for Bryn Mawr Coll. Apr - Sept 1972

Essay by Van Schoonbe "Semantic Encounters in an Arboretum"

+ Essay from NY Eve Post - said to be for Joe [Ewan?].

clip from same source on Acting Dept. Math. Bureau.

Jottings towards a w. 11

(Folder 2)

Postcard from Joe Ewan -

1 folder

Sketches + a Monogram Designed by V. Schoonbe

(Folder 3)

1 folder

"Misc Notes" = Essay by MAUS on road for suff. winter
Part. at MO re jottings about a french bot. 1 folder
+ problem of finding suff. jottings in France — Folder 3

3 letters (1971) Van Schand — Wm. Matheson 1 folder
(150 Congress)
conc. includes in Wm. Hartman "Journal" — at Morton Arboretum
(copy 3) 1971 Folder 3

2 photocopies of articles on Nature painting + 1 p. of notes on same — 1 folder

2 postcards — ~~2 of~~ (folder marked "High Eve" — Folder 3.
(1 folder)

Folder marked Stephan Zweig — in 1969
incl. Translation by Van Schand (typed version) Folder 3.
+ orig script of the legend —
(Mem copy enclosed): "Die Legende des dritten Taubel."

3 Xmas Cards (2 w. letters) + 1 letter's flyer — in folder marked for
"Primitive Illustrations" — (folder 4 items)
Folder 3

Letter — 1970 — Van Schand to D.V. Cuddehe — (conc. Harvard Today
commencement issue (1970)) — 4pp Xerox of article in question
attached.

Discarded — 13 Sept 1936 name of Harvard (3 cents of Harvard)
2 Maps of Harvard
Harvard Today — Spg 1969,
Press Report of Harvard Today March 1973.

Folder 4 -

Corresp. sent to Van Schoeland - Bogor
Letters betw. Egbert Walker & Doc Kostermans,
(1968-1969) in Bogor, Indonesia

Letter (1969) from Mea & Hein to Jos. Ewan - re Touloucaris
Notes + clippings re Touloucaris.

Book Review of Heinz Goerke's Carl von Linné (German)
for Charles Scribner's Sons for possible translation of it into English
2 letters re it 1968 - Letter Van Schoeland to P.H. Appelgren re

Discard

① The Monotype Recorder (Comm. exhibit archival
held at monotype House of Science
Lettering and type designs by Eric Gill
Vol 41. No 3. 1958.

② Inauguration Day - March 4, 1861 -

Booklet - Publ. by Detroit: Friends of the Detroit
Public Library, Inc. 1960.

③ The Monotype Recorder vol 43 No. 3.
(Stanley Morrison 1889-1967) Autumn 1968.

④ Wm Henry Harvey [Hermathena no 103 (1966)
and the Tradition of Systematic Botany - by P. A. Webb. 32-45]

+ trans. to H&S files
⑤ Notes + clippings re Touloucaris re worked Morton Robinson
Sent to Jan MacPhail to see what he thinks Library

⑥ N.Y. Times Sci. Book Review 29 July 1973
(on Catesby) Savannah's Busy Beeline by Nash & Burger.
Flies on Catesby's Natural history of Carolina, Fla and Bahama
Islands.
Flies on reprint of above (intro by Jos Ewan).

Folder 4 - (cont'd)

From Bob Packwood - to Van Schaik. Corresp (1973)

Congressman Jim Weaver - JVS. (1976) 2 letters

Leafy materials - evidently shipped (insurance label from Post Office
sold to Wm Hest (Scottsdale, Arizona) discarded)

- Notes - on Improved Dates and letter to James about faculty, citation
folder on "Improved Dates"

Folder 5. - Letters to Book Dealers + Publishers.

① Marboro Books Inc 1975.
moonachie, New Jersey

② Francis Edwards Ltd. 1975.
London

③ Misc. Book Dealers -
1974-1978
undated + 9

1	Zettlin / George & of Bristol Engl.
2	Friday - by John Humell 5/45 - San Fran.
3	Jeremy Norman & Co.
4	San Francisco
5	Dover Books - (ny)
6	John Humellbr (undated)

Folder 6 ① Notes - fold-up examples -
marked "Imposition"

Should
van be kept?

② Letters 1968-69 - conc. an illustrated (ornamented)
letter with a Palma device. - various copies of
examples. One typewritten by Weston Imposition on flyleaves

Discard

- (7) The Key Reporter 38(2) winter '72-73.
PP2-4 (The Dynamics of Information)
- (8) - In folder with ~~letters~~ ^{Gen. Moly} Hatfield - D Van Schoultz
letters 1973-1974 —
- Newspaper from Oregon Daily Emerald & other unnamed papers.
- (9) @ 10 Catalogues and Books from Wm R Hecht -
Scottsdale, Arizona,
- (10) New Books Newsletters 2-3-4.
New Books Catalogues 1-(2?)-3.
- (11) Examples of title pages from old books - in
dealer catalogues (Kerokes).
- (12) Printing 1970-1970 by Michael Twyman (flyer)

Questionable - on Keeping

- 1 folder - Lists of Bot + Biological Bibliography
compiled by E.D. Rudolph at OSU -
for Herb of Biology Course / another by
J. Ewan (Talane) for same.

Box 1.

Folder #6 = Handwritten {
Typographic design in rel. to photograph
Campathus - San Francisco Book Club
Calif., 1957." }
- S. Morrison,

Folder 7 - Materials, letters (1966+1967) betw US -
Hugh Iltis, Peter Fark, Stecher-Hafner Publ Co, McGraw
Hill Publ Co, Frans A Stafler, Wm C. Steere, Ed. J. Voss,
Arthur Cronquist; US's ~~own~~ ms (edited version with
context of a review of H. W. Rickett's Wild Flowers of the
United States, vol. 1, 1966.

Folder 8 -
1 folder - 6 pages - "Alphabet of Whit"
1 folder "Bael" - order form - presumably sent -
for various quantities of Bael from Dumal Hartono
Society
1 folder - "Best Books" - end US's own list of
25 wordSmith books since 1885 -
(see Literary Digest 15 March 1964)
1 fold. ^{sets of} Notes on Cataloging Books - 7pp and 3pp.
1 folder - "Copy Ed." - 3 sets of letters - (1967)
US - Chuo S. Sci, Univ of Cal Press, Stanford U.)

Folder 9 - [Interacts as behind with Misc. Corresp 1964-1969]

Folder 10

- ① notes on article from Commentary (Sept 1973) - on "New epilitianism and the old" by Chas Frankel, p54-67. - 1 1/2 pp of handwritten notes.
- ② Form letter (1973) by VS - re attached letters (both 1973) by D Peter Raven & Hugh E. H. H. H., re demise of Flora No. Amer.
- ③ [(1968) VS to F. C. Steward; Steward to VS.] Re Bioscience article by Steward and A. D. Tritoniam (vol 18(2): 286-292 (1968). -
- ④ Articles → Letter by Hugh E. H. H., Barrie B. Greenhill, Re article in Science (179: 446-455, 2 Feb 1973.) What's wrong with plant trees by Martin H. Krieger. (article pitched)
- ⑤ "Reprints & Biblog" - folder - misc handwritten notes - incl note from J. Ewan (1965) and letter appended betw C. H. Gardiner + Ewan J. H. Lawrence + Ewan, Lawrence + V. Sternberg (So. Ill. Univ. Press)

~~Discarded~~

- ⑥ N. J. Berrill "Worlds without end" 1964. Ch 11 - "Is sex necessary?"
- ⑦ Incunabula - Bryn Mawr College
- ⑧ 1 folder marked "Similarity" - (with drawings) (1/2 sheet notes) (5 sheets paper)
- ⑨ Letters (1965) betw VS - Edwin T. Coman, U of Calif library, Riverside. (Re job as cataloger there.)
- ⑩ Letter + 2 lists re Biology Dept of U of Oregon "Future of the University of Oregon Herbarium" (1975).

⑪ Letters betw VS - Eugene Peterson (1974)

attn: Dean
Library
H. B. K.

Discards

Box 1

- ① Examples - VS collected (probably for a class project) to determine by what method typeset for:
 - ② Vegetation Survey of Western Australia
 - ③ How halftones were used on an Audubon mag. cover
- ② Xerox copies of materials on deacidification
- ③ Rochester Review - Summer 1979.
University of Rochester (mar 1975.)
Alumni News
- ④ 2 folders with various examples of typography ~ nothing annotated.
- ⑤ - Bicycle repair handbook (Eugene, Ore)
- ⑥ Newspaper Eugene Ore Newspaper Register-Guard 1 Dec 1975 - pp 1c and 3C. - article on Councilman Ray Bradley.
- ⑦ ALA Bulletin (June 1965) - all articles on "Censorship"
- ⑧ The Progressive (Sept 1973) - "CIA"
- ⑨ "The Evolution of the Computer" An Exhibit of John Hopkins University Applied Physics Laboratory (undated)
- ⑩ "Curiosa" -
- ⑪ "The Search for Extra Terrestrial Technology" - by Freeman J. Dyson pp 41-65, ex Perspective in modern physics, ed. by R. E. Marshak (1966) and Dyson's article on same subject Science (1967) 3 June 1960.

Discards

- (12) Article on "Equality" from Commentary (Sep 1973)
[notes on same kept]
- (13) Article Our Handwriting by Paul Standard (Woman's Day
Dec 1947 - reprint)
- (14) Bioscience (Reprints) 18(4), 1968, pp 286-292.
article by A.D. Krikorian and F.C. Stearns "Water and Solutes
in Plant Nutrition ---" Ellen attached
- (15) "Woods and Machines": The Denial of Experience (Museum News, Sep 8
1968) - "Knowledge vs. Information" by B.C. Brooks [no source]
(file "info Retr")
- (16) The Atlantic Monthly (Sept 1971) Vol 228 (3): 43-64.
Richard Herrnstein: "I. Q."
- (17) 1972 - Noel Parkes Centennial - Reprints from Natl Parks & Conservation
Magazine March 1972 - "Celebration" by Anthony Wayne Smith
- (18) See 6+7 under folder 10.
- (19) Booklet on Washington University Library - Philip Mills
Arnold Semiology Collection (St Louis, 1973.)
- (20) Ads for "New towns" - Park Forest South, Poinciana,
Fountain Hills (Ariz) (See) (Fla)
- (21) 3 articles on "Basic English" Atlantic Mo (2) and
The New Statesman and Nation (1)
1 Apr 1944

Wards

- (22) Various reprints of botanical papers
by F.R. Forberg and others - Pacific
islands flora - mostly
- (23) articles on Emory's 1841 Report ^{(Bill} 1000 Bot Club) 1875
- (24) Reprints on Alaska Oil / Sierra Club stuff

Nicholas Guppy:

Wai-Wai
London 1958

made final adjustments, and tightened and knotted all these threads.

When several arrows had been brought to this stage Yuhmé opened a box woven of palm-leaf strips containing feathers, and a few inches in from the head and tail of each bound a pair of small fluffy red or yellow toutan breast-feathers to the shaft by way of decoration. Next, to the rearward of these he attached the flights, made from the wing primaries of a harpy eagle or macaw, and bound them tight with carefully-patterned stringwork. Finally, when these were fixed to his satisfaction, he wetted his finger and thumb in his mouth and gave the rear end of each flight-feather a little twist, so that the arrow would spin in flight like a rifle bullet, and go true to its mark.

Each arrow must have taken twenty minutes to assemble, perhaps half a day in all to make if one included the carving of the parts and the collection of the material. Each was different, exhibiting some little ingenuity or variation in design—some even being made largely for fun, to buzz in flight, or with a loose pebble inside the shaft which rattled when the arrow was shaken. Far more trouble had been taken over them than was strictly necessary, especially when one considered their frailty and shortness of life, for most would not survive a single shooting. Yet Yuhmé would not have made them in any other way. To him they were a means of expression, for like everything else made by the Mawayáns and Wai-Wais they were works of art as well as useful.

Practically everything these Indians made was decorated. Little tufts of feathers, bunches of beads and seeds were hung wherever they could be attached: on bows and arrows, baskets, combs, hammocks, cassava-sifters, and other strictly utilitarian articles, as well as on their own noses, ears, wrists, ankles, and on pet monkeys and dogs—a light-hearted frippery, like the covering of a cigarette-lighter with rhinestones, absurd perhaps, but no more so than the crests and combs of birds, from which they might have been derived by imitation.

More serious in intent were the painted patterns, in red or black, which covered every flat wooden surface. Frequently these were semi-naturalistic, showing jaguars, sloths, monkeys,

squirrels, lizards, frogs, scorpions, in lively silhouette from the most easily recognized viewpoint; but sometimes they were almost geometrical, so abstract that it was impossible to tell on one's own what they meant. Yet nearly all, even the most hieroglyphic and fragmentary, had their meaning: numerous small crosses meant savannah grass; a pair of spirals stood for a fly—its eyes; a triangle was a fish's tail, while a zigzag might mean running water, or a snake if it had a thicker head, a lizard if hooked at both ends, or even the folded young leaves of a palm, if imbricated with other zigzags. And sometimes one could find whole series all representing the same thing, lizards or sloths, for instance, ranging from semi-naturalism to extreme abstraction. Farabee explained the origin of many of these more abstract designs in Wai-Wai art (with most of which, at least today, the Mawayán designs are identical) by showing from their shape and cross-hatching that they were derived from woven basket-work designs, and these in turn from a naturalistic painted art—probably more naturalistic than anything at present found among the Mawayáns and Wai-Wais and more like that of some of the related Arawak and Carib tribes¹—from which they had been initially modified towards abstraction by the fact that in basketwork curves are obtainable only by weaving the strips in a step pattern, which at once imposes some degree of formalization.

No action was expressed in these designs, there was no attempt at the representation of space or of three-dimensional solidity, at the maintenance of correct proportions between the sizes of the different objects grouped together, or at objective structural analysis of limbs, joints, etc. One might therefore have been tempted to compare this art, especially in its clumsier manifestations, with that of 9-11-year-old European children. But such considerations were quite irrelevant if naturalism was not its aim; and in its clarity of conception and design, its highly complex, stylized, decorative patterns, the aptness with which the various media were used—even in the absence of representations of human beings, the first things usually depicted by

¹ The Mawayáns are an offshoot of the Arawaks, who centuries ago spread northwards from somewhere in central Brazil; while the Wai-Wais are part of their rival nation and frequent conquerors, the Caribs.

SHADOWS FROM THE BIG WOODS

The wilderness needs no defense. It only needs more defenders.

In childhood the wilds seemed infinite. Along Crooked Creek in the Alleghany Mountains of western Pennsylvania there was a tract of forest we called The Big Woods. The hemlock, beech, poplar, white oak, maple and shagbark hickory grew on slopes so steep they had never been logged. Vines of the wild grape trailed from the limbs of ancient druidical oaks - dank glens of mystery and shamanism. My brothers and I, simple-minded farmboys, knew nothing of such mythologies, but we were aware, all the same, of the magic residing among and within those trees. We knew that the Indians had once been here, Seneca and Shawnee, following as we did the same dim deerpaths that wound through fern, moss, yarrow and mayapple among the massive trunks in the greengold light of autumn, from spring to stream and marsh. Those passionate warriors had disappeared two centuries before we were even born but their spirits lingered, their shades still informed the spirit of the place. We knew they were there. The vanished Indians were reincarnated, for a few transcendent summers, in our bones, within our pale Caucasian skins, in our idolatrous mimicry. We knew all about moccasins and feathers, arrows and bows, the forbidden thrill of sneaking naked through the underbrush, taking care to tread on not a single dry twig. Our lore came from boys' books, of course, but it was the forest which made it all real.

My brother Howard could talk to trees. Johnny knew how to start a fire without matches, skin a squirrel, and spot the eye of a sitting rabbit. I was an expert on listening to mourning doves, though not on interpretation, and could feel pleasure in the clapperclaw of crows. The wolf was long gone from those woods, and also the puma, but there were still plenty of deer, as well as smaller mammals such as bobcat and raccoon and gray fox, and sometimes a black bear, or at least the rumor of one, passed through the county. That was good country then, the country of childhood, and the woods, the forest, that sultry sullen dark massed deepness of transpiring green, formed the theater which made possible our play. We invented our boyhood as we grew along; but the forest - in which it was possible to get authentically lost - sustained our sense of awe and terror in ways that fantasy cannot.

Now I would not care to revisit those faraway scenes. That forest which seemed so vast to us was only a small thing after all, as the bulldozers, earthmovers and dragline shovels have proven. The woods which we thought eternal have been logged by methods formerly considered too destructive, and the very mountainside on which the forest grew has been butchered by the strip-miners into a shape of crude symmetry, spoilbanks and terraces and right-angled escarpments where even the running blackberry has a hard time finding a place for a roothold. Stagnant water fills the raw gulches and the creek below runs sulfur-yellow all year long.

Something like a shadow has fallen between present and past, an abyss wide as war which cannot be bridged by any tangible connection, so that memory is undermined and the image of our beginnings is betrayed, dissolved, rendered not mythical but illusory. We have connived in the murder of our own origins. Little wonder that those who travel nowhere

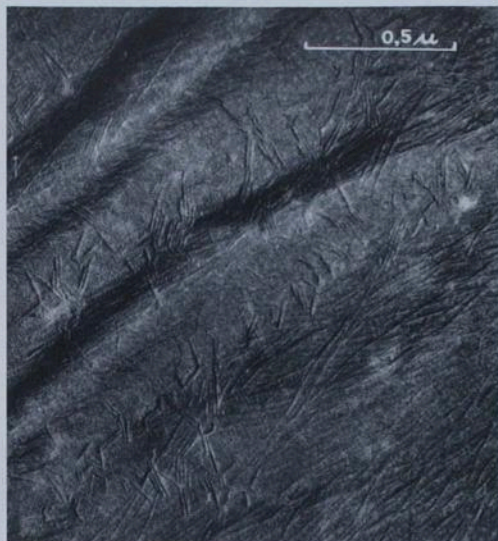


Fig. P11. Inner surface of parenchyma cell of mature beet root, cleaned with water at 20° C but not otherwise. It is not known whether the short threads are young cellulose microfibrils. Note that the microfibrils in the wall are embedded in amorphous non-cellulose material (from VAN DER POEL et al. 1958).

Roelofsen, The Plant Cell Wall

GEBRÜDER BORNTAEGER
BERLIN-NIKOLASSEE
Printed in Germany

Can the World Be Saved?

LaMont C. Cole

My title here is not my first choice, but a year or so ago a physicist discussing some of the same subjects (Berkner, 1966) beat me to the use of the title I would have preferred: "Is There Intelligent Life on Earth?" However, the present title may have merit if it attracts just a few persons who are looking for something about either religion or warfare—because such persons constitute an audience I would like to reach.

In recent years we have heard much discussion of distinct and nearly independent cultures within our society that fail to communicate with each other. This strikes me forcibly, for example, almost every time I hear natural scientists attempting to communicate with social scientists, and we surely have many more than two cultures with such difficulties of communication.

The dichotomy I am concerned with here is that between ecologists and their fellow thinkers on the one hand and, on the other, persons who consider continuous growth desirable—growth of population, of government, industry, trade, and even agriculture. This is also, in part, a dichotomy between the thinkers and the doers—those who insist that man should try to know the consequences of his actions before he takes them versus those who want to get on with the building of dams and canals, with the straightening of river channels, with the firing of nuclear explosives, and with the industrialization of backward countries simply because they know how to do these things.

Paper presented at the 134th meeting of the American Association for the Advancement of Science, December 27, 1967.

The author is a professor in the Section of Ecology and Systematics, Division of Biological Sciences, Cornell University, Ithaca, N.Y.

Several investigators have concluded that the atmosphere is very slowly losing its oxygen to these processes despite photosynthesis.

The Background

To develop my theme, I shall have to start far back in time. When the world was young, it did not have an atmosphere of the gases that are now present. The water that now fills the oceans and furnishes our precipitation and the nitrogen that makes up most of the present atmosphere originated from rocks in the earth's interior by a degassing process (Rubey, 1955).

The amount of oxygen in the atmosphere was negligible before the origin of living organisms that could carry on photosynthesis of the type characterizing green plants (Urey, 1959; Berkner and Marshall, 1965), and oxygen would disappear from the atmosphere now through natural geological processes if all the green plants should be killed (Clarke, 1920).¹ In the early days of photosynthesis, oxygen was used as rapidly as it was produced so there was virtually no accumulation of a reservoir in the atmosphere. But, very gradually, some of the compounds produced by organisms began to pass out of circulation by being deposited in sedimentary rocks in such forms as crude oil. With these compounds protected from oxidation, a small percentage of oxygen became a regular constituent of the atmosphere. Eventually, perhaps not until Carboniferous times only three or four hundred million years ago, the deposition of unoxidized organic matter, partly in the form of what we call the fossil fuels, coal, petroleum, and natural gas brought the oxygen content of the atmosphere to approximately its present level of slightly over 20%.

The combination of green plants and oxidizing organisms, including animals, apparently became very efficient at taking oxygen from the atmosphere and

returning it at equal rates so that the amount present has remained virtually constant. Photosynthesis stops, of course, during the hours of darkness, and on land areas in high latitudes it practically stops during the winter. It continues, however, in low latitudes (although often greatly reduced by seasonal drought) and in the oceans and, fortunately, atmospheric circulation patterns are such that we have not yet had to be concerned that man would run out of oxygen to breathe at night or in winter.

The atmosphere and the bodies of organisms are the earth's only important reservoirs of the nitrogen which all organisms require for building proteins, and in this case also the totality of life was able to balance the rates of use and return so that the percentage of nitrogen in the atmosphere remains constant. This, however, is a much more complex process than the maintenance of oxygen.

Certain bacteria and primitive algae absorb nitrogen and convert it to ammonia. Others convert the ammonia to nitrate. Green plants use both ammonia and nitrate to build their proteins, and animals and microorganisms build all of their proteins from the constituents of plant proteins. Then a variety of decay organisms degrade the nitrogen compounds of dead plants and animals to simpler compounds, and additional kinds of microorganisms regenerate the molecular nitrogen in the atmosphere. If any one of the numerous steps in this nitrogen cycle were to be disrupted, disaster would ensue for life on earth. Depending upon which step broke down, the nitrogen in the atmosphere might disappear, it might be replaced by poisonous ammonia, or it might remain in the atmosphere with

WHAT DOES A PRAIRIE MEAN TO YOU?

In Norman C. Fassett's files in the Herbarium of the Botany Department at the University of Wisconsin, two documents recently came to light that have much meaning to the naturalists and conservationists in the 1960's, in fact, to all people concerned about the disappearance and destruction of Wisconsin vegetation, who would like to see at least some remnants of virgin land preserved. The poetry and eloquence, the sentiment and philosophy in both of these writings deserve our close attention.

The first is an appeal to save 40 acres of prairie, written by Aldo Leopold, the second a personal appreciation of Leopold, written after Leopold's death in 1948 by his friend and colleague, Norman C. Fassett.

EXIT ORCHIS

Aldo Leopold

Wisconsin conservation will suffer a defeat when, at the end of this week, 75 cattle will be turned to pasture on the Faville Grove prairie, long known to botanists as one of the largest and best remnants of unplowed, ungrazed prairie sod left in the state. In it grow the white ladyslipper, the white fringed orchis, and some twenty other prairie wildflowers which originally carpeted half of southern Wisconsin, but most of which are now rare due to their inability to withstand cow or plow.

Thirty miles away a C.C.C. camp on the University of Wisconsin Arboretum has been busy for four years artificially replanting a prairie in order that botany classes and the public generally may know what a prairie looked like, and what the word "prairie" signifies in Wisconsin history. This synthetic prairie is costing the taxpayer twenty times as much as what it would have cost to buy the natural remnant at Faville Grove, it will be only a quarter as large, the ultimate survival of its transplanted wildflowers and grasses is uncertain, and it will always be synthetic. Yet no one has heard the appeals of the University Arboretum Committee for funds to buy the Faville Grove prairie, together with other remnants of rare native flora, and set them aside as historical and educational reservations. Our educational system is such that white fringed orchis means as little to the modern citizen of Wisconsin as it means to a cow. Indeed it means less, for the cow at least sees something to eat, whereas the citizen sees only three meaningless words.

In preparation for the hoped-for floral reservation at Faville Grove, the Botany Department and the Department of Wildlife Management of the University have, during the last three years, mapped the location of each surviving colony of rare flowers, and each spring have counted the blooms. It was hoped to measure against these data the response of the flowers to complete future protection. The data will now serve to measure the rate at which destruction by grazing takes place. It is already known that with the possible exception of ladies tresses, all the rarer species succumb to pasturing. That is why they are rare. Few of them succumb to mowing, hence the past use of the Faville Grove prairie as haymeadow has not greatly injured its flora.

In my opinion no individual blame attaches to the owner of the Faville Grove prairie for converting it to pasture. The public taxes him on the land. It is not his obligation to provide the public with free botanical reservations, especially when all public institutions, from the public school to the federal land bank, urge him to squeeze every possible penny out of every possible acre. No public institution ever told him, or any other farmer, that natural resources not convertible into cash have any value to it or to him. The white-fringed orchis is as irrelevant to the cultural and economic system into which he was born as the Taj Mahal or the Mona Lisa.

John Muir, who grew up amid the prairie flowers in Columbia County, foresaw their impending disappearance from the Wisconsin landscape. In about

WHAT DOGS TELL US ABOUT MAN'S FUTURE

*An Exclusive SR Preview of Results of a Twenty-Year Study: "Genetics and the Social Behavior of the Dog"**

By JOHN PAUL SCOTT and JOHN L. FULLER

WHEN dogs were first domesticated, some 8,000 to 10,000 years ago, they became a part of human society, and they have since undergone most of the cultural and environmental changes that have affected their masters. Dogs, however, have shorter lives than men, and they go through new generations at the approximate rate of one in every two years instead of man's one in twenty. We can roughly estimate that dogs have gone through some 4,000 generations since their domestication while man has gone through only 400. These facts suggest a hypothesis: The genetic consequences of civilized living should be intensified in the dog, and therefore the dog should give us some idea of the genetic future of mankind, always assuming that there are no radical new changes in the conditions of human living. In short, the dog may be a genetic pilot experiment for the human race.

Wolves and men had much in common even before domestication took place. Just as the lion in the Southern Hemisphere occupied the ecological position of the dominant carnivore preying on the herd mammals, so did the wolf, *Canis lupus*, in the Northern one. Once early men had invented the spear and the bow and arrow, they, too, could successfully attack and prey upon the large ungulates such as deer, mountain sheep, and bison. Stone Age hunting tribes soon found themselves in direct competition with wolves for similar prey.

Furthermore, both wolves and men are social species, showing a great deal of cooperation and mutually helpful behavior within their own groups. Finally, as an ecologically dominant animal, with no other competitors except man, the wolf shows some polymorphism, as humans do, in addition to the usual division of social animals into males, females, and young. Wild wolves show such con-

siderable variation in form, color, and behavior that A. Murie could easily recognize each member of a wild wolf pack.

When an animal species moves unopposed into a new environment, there is an opportunity for very rapid genetic change, because each small group populates a large area with its own descendants, which in turn reflect the individual genetic peculiarities of their parents. At the same time, there is a rapid selection for those animals best adapted to the new areas. The whole process is called adaptive radiation and is the sort of thing which once happened to the whole class of mammals after the reptiles had been eliminated as possible rivals.

Adaptive radiation on a smaller scale seems to have taken place soon after the dog became domesticated. Within the various human societies, dogs found a whole new habitat. The dog, as one of the first domestic animals, was a remarkable social invention, both for protection and as an aid to hunting, and every tribe must have wanted to get hold of one. In this way dogs spread rapidly over the world, differentiating as they moved, and so produced the southern short-haired varieties like the dingo and, at the opposite extreme of their range, the northern Eskimo dogs, which are almost like wolves. A further multiplication of habitats was provided when the herd animals were domesticated. Now dogs were needed to protect these herds against their own close relatives, the wolves, which found the domestic beasts easy prey.

THE domestication of animals and plants produced still another major environmental change. Hunting was no longer a primary occupation but a sport and frequently a luxury of the rich. Under these circumstances dogs became specialized for the hunting of many different animals. Still another expansion of habitats occurred after the Industrial Revolution, with the use of dogs as pets and social companions for city dwellers.

However, none of these later developments had the importance of the first major expansion into the new environment provided by human societies.

As S. Wright and other geneticists have pointed out, an ideal situation for rapid genetic change is one in which a population is divided into small subpopulations with contacts permitting occasional gene exchanges between them. When dogs were first domesticated, this was still the situation in the majority of human societies, which were divided into small semi-isolated tribes, still reflecting the conditions which had led to the very rapid biological evolution of modern man in the previous 50,000 years.

Divided among tribes, dogs were maintained in even smaller social groups than their masters, with only occasional opportunities for mixing with animals from adjacent tribes. Under these conditions we would expect rapid differentiation between subpopulations, and this was probably the foundation of the major breed differences. Historical records of American Indian tribes show that each one had its own particular breed of dog, perhaps not very different from that of the neighboring tribe but greatly different from those at long geographical distances. Under similar conditions in ancient Eurasia there originated the large war dogs of one tribe, the long-legged greyhounds used for hunting gazelles on the deserts, and the shepherd dogs used to guard domestic flocks.

The period of local isolation was succeeded by one in which new methods of transportation brought explorers and immigrants together from all over the world. Wherever the European explorers went, whether for trade, discovery, or war, they brought their own breeds of dogs, which readily interbred with the native varieties. Sometimes the native breeds disappeared, as they did in America and South Africa. Sometimes the Europeans brought new breeds back to their shores, as the crusaders brought the greyhounds back from the Middle East.

The idea of intensifying and preserving desirable characteristics in dogs

* Scheduled for publication as a University of Chicago Press book, \$12.50.

JB Stauffer

Science, Logic and Human Intercourse

By L. J. HENDERSON



REPRINTED FROM
HARVARD BUSINESS REVIEW
APRIL, 1934

AMERICA'S WORLD PURPOSE

In seeking a foreign policy we are being dangerously misled by discord among our prophets. To find a positive policy, we must recover confidence in America's special character and mission

by WILLIAM ERNEST HOCKING

There was a time when the minting of Four Freedoms or the promulgation of an Atlantic Charter or the announcement of a set of general principles like those recently put together by Secretary of State Hull would have satisfied the American people that they and their leaders have a foreign policy. This is no longer the case.

It is not merely that the ideals which are supposed to guide policy are not the policy itself. When, as Mr. Churchill's speeches slowly disclose, it appears that these ideals are not supposed to apply to Asia, nor to enemy countries, nor to any imperialists there may happen to be among the United Nations, the question arises whether the real policy may not be on different lines. Our question is in part an echo of a rising doubt whether such "idealism" is satisfactory or workable as a basis for foreign policy today.

We are reliably told that it is not. And we are asked to subscribe to something more "realistic," more cognizant of the portentous facts of power, clash of interest, and opportunity in the world of states. The McCormick-Patterson trend with its eye on opportunity would have us serve "America first" with this realism. Walter Lippmann with his eye on power would have us tie to "security first" with the same realism.

In my judgment we are here being dangerously misled by false issues. There is no idealism worth its salt which is not fully awake to all the facts, hard and soft, that exist. And there is no realism deserving its name which overlooks the hardest of hard facts, those ideals for which alone a civilized people can be got to fight a war.

The only kind of policy Americans can use is one in which ideals and facts are fused into a working unity and freed from the excesses of these opposing trends. Taken alone, "America first" promises endless future friction, rivalry, and war, as Mr. Lippmann clearly sees. But also, taken alone, "security first" means a policy which ties our hands, and still more, through alliance, our national conscience.

The policy of "security first" deserves a good look on its own merits, apart from Mr. Lippmann's sagacious argument, just to see where it would take us. That we must have security is an axiom. So must an individual; but it is an empty and fear-ridden life whose primary object is to avoid getting killed. The security of living things is the incidental security of skill in managing the risks of action. The words "security," "defense," "alliance" are the great words for a moat-and-castle age, not for an age in which no moats can be dug and every all-round alliance so compromises policy as to cancel all that is distinctive of national character.

In a word, "security first" given full sweep would produce a policy passive, negative and flabby in principle. The time requires of us a positive and outgoing policy built on radically different lines.

In simplest terms, to have a positive policy is to make history instead of letting history happen to us or trying to fend it off.

All human history is the merging of two streams,

the stream of outer events and the stream of human purpose. In this mingling human purpose never gets all its own way. But it leaves its mark on events, and by the accumulation of such marks the world is slowly humanized. A positive foreign policy is nothing more than continuing in action this indomitable human belief in purpose. To have a positive policy is to have an idea of what kind of world we prefer and to work for that kind of world.

It follows as a matter of course that if you have no ideas you can have no positive policy. And that if you have no faith in purpose nor in yourself you can have no positive policy. It may be that these two lacks are what is the matter with us just now.

If we have come to a slump in the hope of "getting an improvement out of this war," this is a new low in American self-confidence. And it is peculiarly untimely, for of all moments in history it is at this present moment that this nation has most to contribute to the world of tomorrow.

Insistent preoccupation with winning the war, plus a desperate resolve to avoid Wilson's mistakes, is made an excuse by men in high office for not doing positive steering now. But it is precisely because of the war that this steering must be done now. For with the evils of war there comes one good, an unexampled limbering of will and resources, a profound willingness and even desire to accept painful change. President Wilson may have schemed too much. To avoid his error by scheming nothing is to correct surfeit by starvation, a remedy that can be overdone. Nature has a cure for surfeit, none for starvation.

To defeat our enemies is obvious first business. But when are they defeated? When they can no longer forcibly deflect our own political will. To win the war means to recover our own freedom of political action. Unless we have something to do with it, the recovered freedom is meaningless; it is the aim beyond victory which alone justifies the fighting. To have no such aim suggests a mental and moral vacuum not creditable, and hardly credible, in a great people.

There are understandable causes for our present loss of nerve. Some of them go back to the between-wars period. It may clear the air for a positive policy to get a better perspective on this period.

Did we fail at Versailles?

After we entered the last world war, we improvised a foreign policy that was positive and specific. We had Fourteen Points and several speeches. We tried to put the ideas contained in these documents into effect. We have been told that we failed. With strange meekness, we have accepted this dour and inaccurate verdict.

We did not wholly succeed, but who does? The point is, we did not wholly fail.

Our plan was indeed mutilated. Only five of Wilson's points were set into the Treaty. Our Armistice agreement was betrayed and our nation, unwisely but not without ground, declined to

back the crippled program. We had lost our first battle, that of convincing the warmakers of Europe, who were unfortunately also the peacemakers. The remnant of our plan was accepted with an undertone of cynical amusement; long after the Paris Conference our associates in Europe were still referring to "les idées wilsoniennes" with an indulgent shrug.

But the main thing to remember—aside from these vanities and strummings or even the massive disappointments of that time—is that a great experiment in international collaboration went forward, in part an American project. Every subsequent effort along this line will have the experience of the League of Nations to guide it. Because of the League, the whole problem of a future international structure is concrete, and not purely conjectural. The League's successes, and its failures as well, become the essential data for drawing specifications for a new attempt that must be made and will have American participation.

Let me make two passing remarks, one concerning hidden successes of the League, the other concerning hidden causes of its weakness.

On hidden successes. The League influenced practice even where it did not officially act. For instance, in setting up mandates, it influenced the administration of colonies, which were wholly outside its field. When colonies and mandates existed side by side, as throughout Africa, two things were bound to happen: the mandate would slump toward the colony, the colony would rise toward the mandate. In spite of grave defects in the mandate system the average treatment of dependencies was improved and can never again revert to its pre-1914 level. That is something done.

On hidden causes of weakness. The common criticism is that the League had no army to enforce its advice; its "military sanctions" were too far in the background to be effective. This is bad analysis. The makers of the League Covenant considered and definitely and wisely rejected the idea of a "League to Enforce Peace" which would have been a League with few members: its main reliance was to be public opinion. The hidden weakness of the League was not that it had no army, but that it had no public opinion. And the reason it had no public opinion was chiefly lack of time.

It is easy to overlook the immense influence of the time factor in all political events. Public opinion cannot be assumed and cannot be improvised. Where there is no information, there can be no interest; and where there is no interest there can be no opinion. If Mr. Chamberlain in 1938, returning from Munich, could refer to the Czechoslovakians as "a faraway people of whom we know nothing," what shall we say of the average news-reader of the planet for whom all foreign lands are too far away? Ignorance of the distant taken as the normal state of man becomes an argument for complete isolationism. We can only escape this argument by setting up organs for creating public opinion and giving them time to work. It is not surprising that on most of the

One Scientist's View of Relevance in Biology

ASER ROTHSTEIN

THERE IS an elite group of perhaps two hundred people in the world who are really interested in my subject, and another somewhat larger group who, under semi-captive conditions of a symposium, might patiently listen to me while waiting for the next speaker. If I were a genius who could claim that my work is so sophisticated that only eight people in the world could understand it, I wouldn't worry. The hard fact is that my work may, on occasion, be clever but it is not inexplicable to a reasonably intelligent, educated individual. The reason I don't often find myself addressing an unspecialized audience is that people in general aren't sufficiently interested in my expertise to suffer through the explanation. They don't find my work relevant to their own more immediate interests and concerns.

This relevancy gap is well expressed by my mother-in-law. She likes me but I puzzle her. About every three years, to be polite, she asks me what I've been doing. I patiently explain. About halfway through the recital, she will interrupt to ask, "But how will it cure cancer?" and I stop explaining. That the University should pay me a salary to make irrelevant studies she accepts. It is a fact, after all, that her daughter and grandchildren are fed and clothed because of this strangeness of the University.

The gap in understanding and interest between scientists and non-scientists has been brilliantly outlined by C. P. Snow. To quote: "Thirty years ago the cultures had long ceased to speak to each other, but at least they managed a kind of frozen smile across the gulf. Now the politeness is gone, and they just make faces." My mother-in-law represents a rather benign attitude toward the gap. A more pungent expression can be attributed to the modern poet e. e. cummings:

"While you and I have lips and voices
which are for kissing and to sing with,
Who cares if some one-eyed son-of-a-bitch
invents an instrument to measure spring with"

But the situation has moved far beyond "politeness," "frozen smiles," and "who cares." It is no longer just Snow's intellectual gap between scientists and humanists. The general public is now a major factor, bringing to bear its concerns about

Professor Aser Rothstein is co-chairman of UR's Department of Radiation Biology and Biophysics and co-director of the University's Atomic Energy Project. He received a Ph.D. in zoology from UR in 1942.

Professor Rothstein's article is based on a talk given at this year's Trustees' Dinner for the Faculties.

On Reading with a Pencil

by David McCord

I AM NO STRANGER to the State of Maine, so let me begin by reminding you that a Maine Guide's license may be worth more than the bachelor's degree. At least it guarantees you won't get lost. But since life is the only thing we have to live; and since your life will be rich for others only as it is rich for you, I propose to talk about one way in which you can attain at an early age what Justice Oliver Wendell Holmes referred to as "the subtle rapture of a postponed power."

Many of you have surely noticed in your reading in the past few months an increasing use of the word *autodidact*. Without going to the dictionary, where you may not find it anyway, you can guess that it means a person self-teaching or self-taught. Now Lincoln, Darwin, Edison, Bell, Burbank, Franklin, Whitman, Edward Lear, Winslow Homer, Mark Twain, Henry Ford, and Ernest Hemingway were autodidacts. Not one of them went to college. Of course it is the function of our schools, our colleges and universities, to *teach* us to be autodidacts; but the tragedy is that most of the learning process *as we learned it* dies with the diploma. You may pursue this dismal thought somewhere in Jowett, introducing Plato:

The want of energy is one of the main reasons why so few persons continue to improve in later years. They have not this will, and do not know the way. They never 'try an experiment' or look up a point of interest for themselves; they make no sacrifices for the sake of knowledge. . . . hardly any one keeps up his interest in knowledge throughout a whole life.

The most appalling phase of this indictment is, of course, the crass indifference of the average U.S. citizen toward the English language—the speaking,

reading, and writing of the richest, most sonorous, poetic, searching, and rewarding of all tongues west of Babel; Shakespeare's universal language; the one language which circles the globe; the one language which people born in France, Germany, Holland, Denmark, China, Japan, Brazil, and India, as I have heard them, often handle with a grace, command, and reverence enough to shame us: my friend Chiang Yee, the self-styled "Silent Traveller," for example; or Vladimir Nabokov; or Professor Kozo Tada of the University of Tokyo; or the late Isak Dinesen of Denmark, one of the great stylists of our time, whose voice I have heard on records.

I do not ask why this is so; but I do ask why the self-teaching instinct in us, so strong when we are learning to play baseball, collect stamps, skin-dive, ski, or reassemble a gasoline engine, fails to focus in our riper years on what can give delight, distinction, and explicit power to our speech, our writing, our reading; and—so infinitely more important—to the art and spiritual enjoyment of living, which means you and me. Or, wanting for this, just why the autodidact in us fails to focus on our language as a simple tool, the mastery of which has proved itself for centuries an asset beyond price in business, industry, the professions; in marriage, parenthood, and

David McCord, poet (The Crows, Odds without Ends) and essayist (About Boston, In Sight of Sever), served Harvard for 40 years. Now, as a writer of verse for children (Far and Few), he speaks often at schools around the country. This month Barre will publish his "Observations" in a book of New England lithographs by Stow Wengenroth. The present essay first took form as the 1968 Commencement Address at Colby College (Waterville, State of Maine).

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