

LETTERS TO THE EDITOR

The Corporation's Obligations

I ACCEPT everything Mr. Sorensen said in his editorial: "Public Obligations and the Private Corporation" [SR, May 14]. The question is: "How do we get the corporation to accept these obligations?"

I live and work in one of the twenty-one counties that Governor Rhodes of Ohio has placed in the Appalachian Program. The reason, in my area, is the strip-mine industry, which, under the present weak and almost totally ineffective reclamation laws, is simply an unending disaster. As this industry creeps and crawls and chews its way across unfortunate counties it leaves in its wake complete and utter destruction, both geographical and emotional.

In my community we have organized a Community Improvement Corporation. But after years of efforts we still do not know our rights in the face of this monster's inexorable advance.

Our letters to the state Attorney General disappear as though down a rat hole. When, at a governor's conference on state poverty, I inquired about our situation, I was informed that our destruction by the strippers would be complete, that we have no rights.

The point is this: Neither the coal company involved nor the lone one-shovel, one-truck operator will assume any public responsibility. The situation here nowhere approaches Mr. Sorensen's ideal of corporate leadership.

(The Rev.) PAUL DOUGLAS,
The United Church of Christ.
Mineral City and East Canton, O.

I TAKE EXCEPTION to Mr. Sorensen's editorial regarding the social obligations of private business.

Mr. Sorensen would have us believe that business should support social programs even though it disagrees with the politics of the Administration. This is quite convenient, but I was not aware that it was possible to separate programs from politics in a democratic form of government such as ours.

The fact that a business has prospered does not create an imperative on it to give away its prosperity.

BRUCE E. DECKER.
Denver, Colo.

MR. SORENSEN'S EDITORIAL has flashed across my mind such questions as:

Should stockholders question corporate involvement in South Africa?

Because of corporate influence on public policy, is not shareholder suffrage as important as voting on election day?

Might not an endowed religious institution achieve greater moral leverage through enlightened proxy action than by means of its pulpit?

(The Rev.) JOHN I. DANIEL,
Grace Universalist Church,
Campus of Dean Junior College.
Franklin, Mass.



"Surely, a clever and imaginative writer like you can do better than 'sincerely yours.'"

MR. SORENSEN CONTENDS that the growing participation of corporations in social issues is brought about by "an evolution . . . a recognition of its social and other unwritten obligations. . . ." It may also be because businessmen today find they need something more than their jobs to satisfy life's will to meaning. And may it not also be that society will annihilate the large corporation? Government is a serious contender with business in many fields, and government is very sensitive to the temper of the people, even to their whims. Could it be that the corporation is trying to find friends among the people to forestall the day of reckoning?

RABBI SOLOMON J. SPIRO,
Young Israel of Chomedey.
Chomedey, Que.

I AM A LITTLE SURPRISED at Mr. Sorensen's making such a point of the fact that business is accepting its public obligations—as if it were something new. And I am amazed at his citing "the reduced proportion of great personal fortunes as the result of estate and income taxes" as one of the factors contributing to the increased role of the corporation. I am convinced that this is an erroneous statement and that the proportion of great personal fortunes is much more than at any time in the history of our country.

EDWARD L. RYERSON,
Honorary Director,
Inland Steel Company.
Chicago, Ill.

College and Culture

IN ELMO ROPER'S "How Culturally Active Are Americans?" [SR, May 14], he attempts to measure cultural and intellectual activities in the population by developing a scale

on which points are assigned on the basis of activities such as reading newspapers, attending college, interest in art, etc.

He finds that 62 per cent of people with college degrees received culturally active scores and/or intellectually active scores. He matter of factly informs us that these scores were obtained in part because points were received for graduating from college and other college-related activities. But, consider that by attending college, studying one of the subjects mentioned, accumulating text books and supplementary books, and graduating, a person could account for thirteen of the fifteen points required to be labeled culturally or intellectually active.

I fail to see how anyone reporting research could dismiss such a point so easily.

JAMES JACOBSON.
North Bergen, N.J.

Unsafe Drivers

I AM A LITTLE CURIOUS at the lack of imagination shown by John Fuller in his TRADE WINDS column of May 14 on auto safety. I do not mean to say that there is sufficient common sense, economy, or even safety in American automobiles. But I don't think the automobile per se is a particularly lethal weapon. Moreover, when I watch drivers slam their cars to a halt and then dig out savagely from traffic lights, take corners habitually on two wheels, and blunder wildly over construction potholes and railroad crossings, I consider it a tribute to automotive design that cars don't shake apart far sooner! Also, he missed a fine opportunity to point out the need for electronic traffic controls for vehicles on all heavily traveled parkways and their arteries.

EDWARD A. MACPHERSON.
Syracuse, N.Y.

High Energy for Space: A report from General Dynamics

How can you add calories and not gain weight?

The question, only rueful to waistline worriers, is vital to space flight. Calories are energy that has to be unlocked from fuel. The fuels that now lift relatively large payloads into earth orbit are not really efficient to take them all the way to the moon. Something with more "calories" to the ounce is needed.

The theoretical answer has been known for years—hydrogen.

Hydrogen contains more heat units to the pound than any carbon-derived power source. It burns explosively when mixed with oxygen. Under proper control, it would be ideal.

Enigmas of ultra-cold:

Hydrogen, existing naturally as a gas, is unnoticeable under everyday conditions. To be used as a practical space fuel, it must be carried in the vehicle as a liquid. In that form it is one of the coldest things in existence, 420° below zero Fahrenheit.

In this world of ultra-cold, most materials become as brittle as thin glass. Should the temperature rise only a few degrees, liquid hydrogen "boils" into a rapidly expanding gas that could burst through a sealed container.

Could liquid hydrogen be contained within a vehicle light enough for space flight? Could it be kept cold enough? Be controlled so precisely that its reaction with oxygen would give exactly the

amount of thrust needed?

Today, hydrogen has been tamed. When the National Aeronautics and Space Administration's Surveyor lands on the moon, it will have been put on its way by Centaur, the first space vehicle fueled by high-energy liquid hydrogen.

Centaur was originally started by General Dynamics as a research project for the Department of Defense to test the feasibility of hydrogen as a fuel. Now operational for NASA, Centaur is the most powerful upper-stage space vehicle for its size and weight available. In nature the most efficient container in terms of weight to strength is considered the shell of an egg. Centaur, which needs only 1/35th of a pound of tank for each pound of propellant carried, is three times more efficient.

But before Centaur became operational, major problems had to be solved.

Early hurdles...

On the ground liquid hydrogen must be stored in large stainless steel tanks with double walls filled with insulation and evacuated to a high vacuum. Similar permanent insulation would mean a substantial weight penalty for a space vehicle.

With the best available insulation, relatively high external air temperatures on earth and the friction heat generated during booster flight cause some boil-off, creating the danger of constantly increasing gas pressure inside a tank.

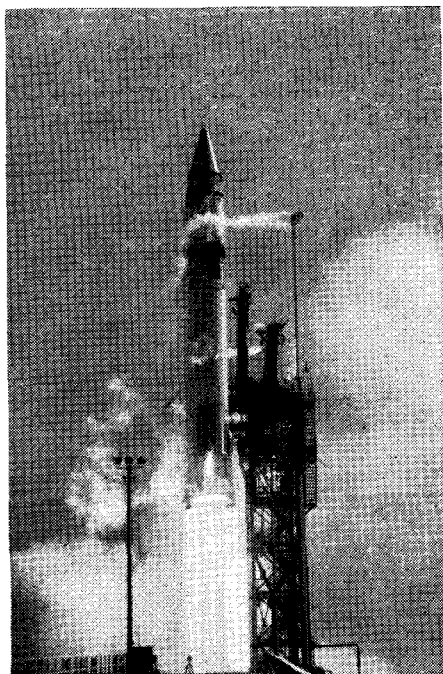
Liquid oxygen must be carried in the vehicle to react with the hydrogen. Lox is pretty cold itself at -297° F, but "hot" enough to make hydrogen boil.

Centaur's stainless steel tank, which is also the external skin of the vehicle, is only one-third the thickness of a dime. The extreme cold initially created microscopic cracks, visible only under magnification, in the stainless steel around some welds. Such cracks could cause structural weakness—and leaks, since hydrogen, the smallest of atoms, can seep through openings that will hold back everything else.

...and answers:

For external insulation Centaur is wrapped with 1,200 pounds of inch-thick glass fiber panels filled with plastic foam. Just before the upper stage separates from its booster, the panels, which have served their purpose, are forced away by explosive charges. Now Centaur is free to reach its required speed at a minimum insulation-weight penalty to the mission.

To control boil-off, venting systems bleed off hydrogen gas during propellant loading and until launch at 18 pounds per minute. Excessive pressure is prevented from developing inside the tank, yet the gas is sufficiently diffused that it can be fed into the atmosphere without danger of explosion. During booster flight, venting continues until the vehicle enters the frictionless cold



Atlas-Centaur launches a payload.

How Centaur works as a space vehicle

Space flight requires both muscle and speed. Whether the payload is a grapefruit-sized satellite or a manned capsule, it must be pushed to a speed of 25,300 feet per second to reach a 160-mile high orbit around the earth. To go to the moon, it must hit 36,000 f.p.s.

The muscle is supplied by a launch vehicle whose initial push, defined in pounds of thrust, must be sufficiently greater than the total weight of the vehicle, fuel and payload to overcome the pull of gravity.

The heavier the combination, the more thrust is needed to get it started against the pull of gravity and to keep it moving fast enough to reach its destination.

Just adding more propellant to a single stage vehicle would ultimately make the propellant containers so heavy that the vehicle could not reach the necessary velocity.

So for speed, a second stage is used.

This tandem combination can be compared to a sports car being pushed

by a truck. The truck goes as far and as fast as it can. When both vehicles reach the top speed of the truck, the fully fueled sports car starts, adding its own acceleration to carry its driver farther and faster.

Centaur's "truck" so far has been an Atlas, the same General Dynamics' launch vehicle that boosted the first American astronauts into orbit.

Fully fueled on the ground, Atlas, Centaur and a two-ton payload weigh a total 303,000 pounds. Atlas' 380,000 pounds of thrust, provided by a kerosene-derived fuel, push the combined vehicles to 91 miles and a speed of 12,700 f.p.s. before it drops off and Centaur's hydrogen fueled engines take over.

The high energy of the smaller Centaur now need push only the 36,500 pounds of itself and the payload against less gravitational effect and without the resistance of the atmosphere. After 440 seconds of firing, Centaur is traveling at 36,000 f.p.s., fast enough to send its payload along its orbit to the moon.

of space, when the bleed drops to a half-pound per minute.

One step in the elimination of micro-cracks was to thicken the original skin of Centaur a bare .004 inch to its current .014 inch. To reduce them further, all the vehicle's 162,000 spot-welds are X-ray inspected, and any imperfect welds are repaired before assembly continues.

Extra chores:

In addition to its fuel energy, the hydrogen even helps itself work.

The ultra-cold actually solves one insulation problem. Oxygen and hydrogen tanks are separated by less than one-third of an inch, but the liquid hydrogen freezes air between the tanks into a solid, creating a narrow vacuum that minimizes the passage of heat.

The thrust chamber—where the fuel is burned—develops temperatures of some 5,500° F. Such heat could quickly bring the cryogenic propellants to the explosion point.

On its way to be "burned," liquid hydrogen is first pumped through a cooling jacket surrounding the thrust chamber, separating the very hot from the very cold areas.

In absorbing the engine heat the liquid expands to a turbulent gas to be used for the energy reaction. But some is temporarily diverted to drive turbo-pumps that feed the propellants in required amounts to the engines. Without this technique, propellants would have to be force-fed to the engines under high gas pressure, requiring thicker tank walls and greater weight.

Slimming down more:

Centaur, for its size, is the most efficient single vehicle in operation today. Its fuel is the most efficient currently available for space use.

Yet further improvements are being worked on by General Dynamics: metals equally strong and possibly lighter; "super-insulations"; uprated engines, advanced control systems and fuel additives to increase performance.

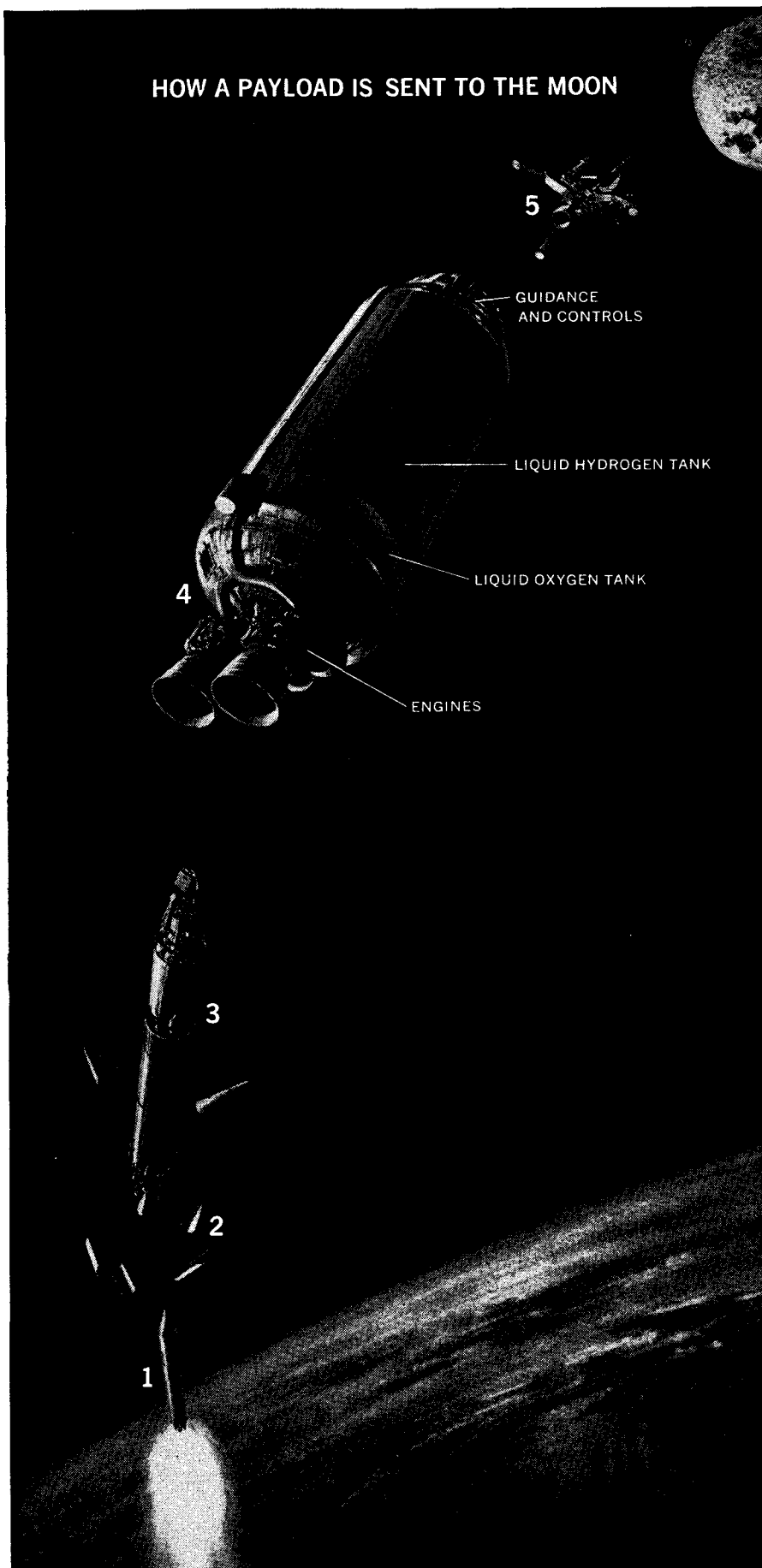
As Centaur matures, it's going to take on even more calories—and probably lose more weight in the process.

General Dynamics is a company of scientists, engineers and skilled workers whose interests cover every major field of technology, and who produce: aircraft; marine, space and missile systems; tactical support equipment; nuclear, electronic, and communication systems; machinery; building supplies; coal, gases.

GENERAL DYNAMICS

One Rockefeller Plaza, New York, New York 10020

HOW A PAYLOAD IS SENT TO THE MOON



1—Atlas starts Centaur and its payload on their flight. 2—Shortly before Atlas and Centaur have separated, insulation panels and then nose fairings have been jettisoned. 3—Atlas separates and Centaur and payload start their phase of journey. 4—Centaur has completed firing and separated from payload. 5—Payload continues along its orbit to the moon.



WHEN A SALUTE to frivolous unorthodoxy jiggles at an appropriately shallow depth of focus, it can be continually if not cumulatively diverting. Thus it was with the 1956 Broadway hit, *Auntie Mame*, in which Rosalind Russell scored a personal triumph. Now, Jerome Lawrence and Robert E. Lee, who originally adapted the Patrick Dennis novel for stage and screen, have turned this comic caprice into a musical comedy that gains a little something because of the even lower specific density this medium permits.

The first portion of the musical version has fun with the absurd fashions and foibles of the Twenties, with Robert Mackintosh's *outré* costumes and William and Jean Eckart's ingenious scenery as major contributors. There is a delicious parody of the sort of production number that Broadway boasted in those days. In this cheesily celestial charade we are invited to regard the moon more romantically. To syrupy innocuous music, a showgirl reveals one of nature's secrets, singing, "Don't ever offend her, remember her gender, for the man in the moon is a miss." Southern chivalry is also satirized, both by the amusing amount of manicure torture an enamored Southern gentleman eagerly makes light of and in the first-act cakewalk finale, "Mame." While one could criticize the latter as an attempt to emulate the "Hello, Dolly!" pattern, the fact is that songwriter Jerry Herman, who wrote the former, is expected to come up with such a number again, and his willingness to repeat heightens our pleasure.

The second act, which jumps forward to the late 1930s, a much less interesting period to caricature, is nevertheless the more effective of the two. Perhaps it is because the older Mame is now forced to defend emotionally what she formerly did carelessly. Thus Angela Lansbury, who plays Mame, suddenly becomes quite moving when she sings, "If He Walked Into My Life Today," voicing an anguish felt by all permissive parents who blame themselves for their grownup offspring's lack of judgment. Furthermore, she has a strong action to play, the breaking of the match between her nephew and his stuffy suburbanite fiancée.

A musical Mame is a more difficult role than was her stage cousin. Not only must she sing and dance, but also there is little time for her to do more than nominally demonstrate her exploits. Miss Lansbury, who was superb as the permissive mother in the play *A Taste of*

Return of the Matchbreaker

Honey, has warmth, energy and discipline, and even stops the show with a jitterbug dance number. But she does not seem to possess a naturally zany personality, so that a considerable part of the show's comedy must be created by her co-workers. Chief among these is Beatrice Arthur who plays Mame's bitchy actress friend, Vera Charles.

Miss Arthur can deliver the most obvious joke with an inflection that makes it uproarious. For instance, when a would-be imbiber of straight Bourbon cautiously asks, "Will this mix with Dr. Pepper?" Miss Arthur brings down the house with the perfectly timed and stony-faced reply, "He'll love it." Miss Arthur is consistently hilarious with curt baritone rejoinders, and in her two songs. One is the aforementioned romantic parody, delivered in brilliant "camp" style. And the other is the amusingly vicious "Bosom Buddies," in which she achieves that degree of insult possible only in the guise of a best friend's advice.

Stringy-haired Jane Connell shrieks with tackiness as Gouch, the gauche governess, doomed to become the most outrageously pregnant blimp ever to maneuver herself up a stage staircase. Willard Waterman is drolly stuffy as the conservative bank official who objects to a progressive school where the children take off their clothes in order to relive the reproductive cycle of fish. And as

Mame's young nephew, Patrick, Frankie Michaels proves a disciplined performer who has boyish charm, and can sing "My Best Girl" to his aunt without nauseating his audience. Onna White's choreography is relaxed and serviceable. And director Gene Saks has shrewdly used his components to create a show that is the most light-hearted and consistently funny musical of the season.

BY CONTRAST, the new musical version of Richard Llewellyn's *How Green Was My Valley* emerges as a self-defeating attempt to apply musical comedy technique to a story of poverty, union strife, and mine disaster. Called *A Time for Singing*, it lives up to its title only by being considerably denser in sung numbers than most musicals. Unfortunately Gerald Freedman and John Morris, who wrote the songs, are content simply to embroider some of the homespun universalities in a very special story. To make matters worse, its inherent Welsh flavor is further diluted by some alien casting in key roles.

Tessie O'Shea is a spirited performer, but her personality is distinctly Irish. Shani Wallis sings vigorously but colorlessly. Of the others, only Ivor Emmanuel seems attuned with the music and language of Wales, and this only serves to isolate him from a story in which he should play an integral part.

Theoni V. Aldredge's costumes are excellent, and Ming Cho Lee's settings operate smoothly. Yet the show's focus is too much in close-up, so that we lose the landscape, and this deprives a tragic story of the lush richness that might save it from seeming quite so ordinary.

—HENRY HEWES.

Your Literary I. Q.

Conducted by John T. Winterich and David M. Glixon

SAINTS AND SINNERS

According to Alexander Pope, "The worst of madmen is a saint run mad." The men of the cloth listed below include madmen, saints, sinners, demons, doubters, and devils. Heyward W. Sauls, Jr., of Daytona Beach, Fla., wants you to associate each of them with the work in which he appears. Revelations on page 102.

Parson Adams ()
Jim Casey ()
Mr. Collins ()
Rev. Arthur Dimmesdale ()
Gavin Dishart ()
Father Dolan ()
Claude Frolo ()
Rev. Septimus Harding ()
Brother Juniper ()
Father Jean Latour ()
Friar Lawrence ()
St. Maël ()
Parson Manders ()
Dr. Primrose ()
Zosima ()

1. *Barchester Towers*
2. *The Bridge of San Luis Rey*
3. *The Brothers Karamazov*
4. *Death Comes for the Archbishop*
5. *Ghosts*
6. *The Grapes of Wrath*
7. *The Hunchback of Notre Dame*
8. *Joseph Andrews*
9. *The Little Minister*
10. *Penguin Island*
11. *A Portrait of the Artist as a Young Man*
12. *Pride and Prejudice*
13. *Romeo and Juliet*
14. *The Scarlet Letter*
15. *The Vicar of Wakefield*