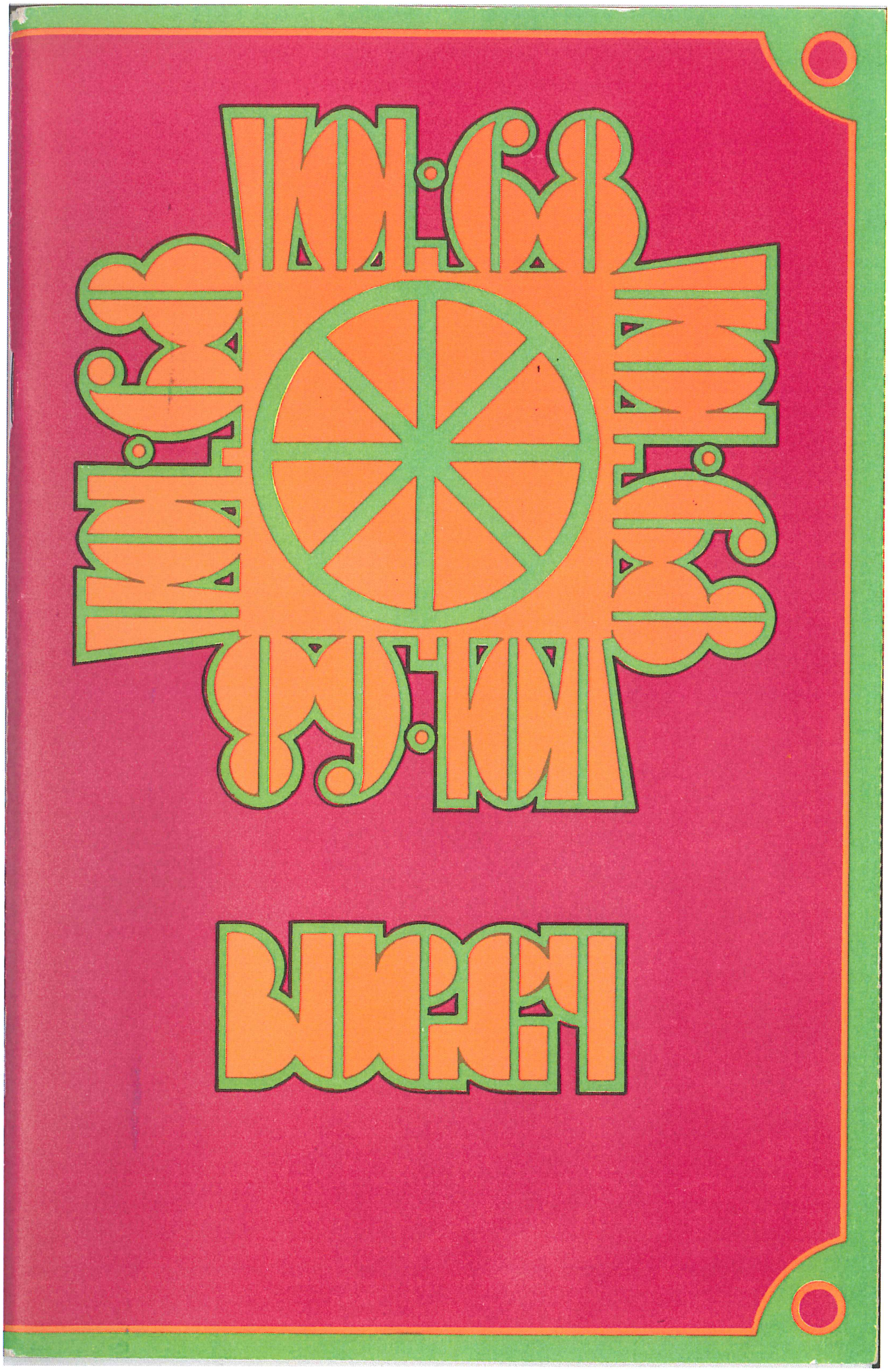

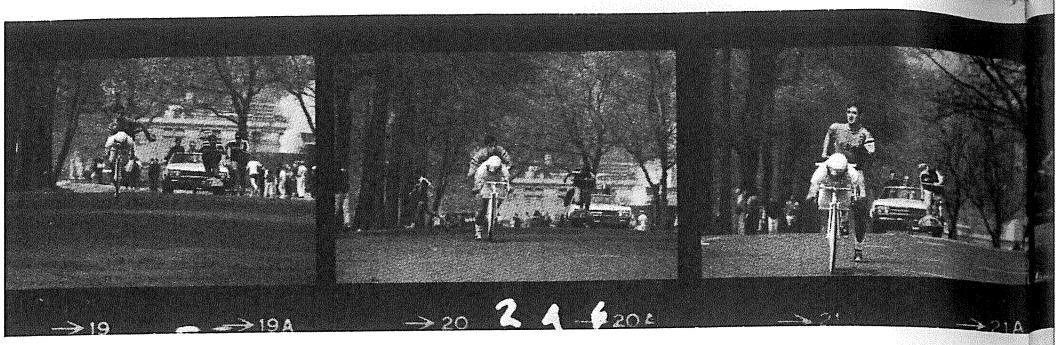

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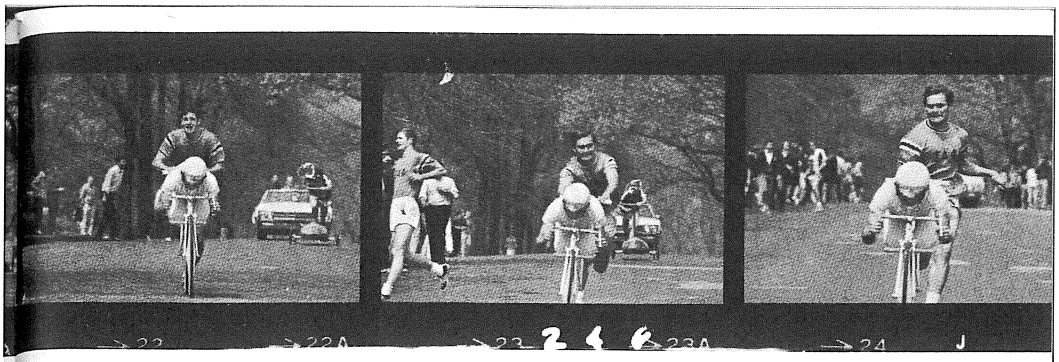

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Howard Green Dave Chou Don Whipple	Photography

SIGNS OF SPRING
by daniel nagin

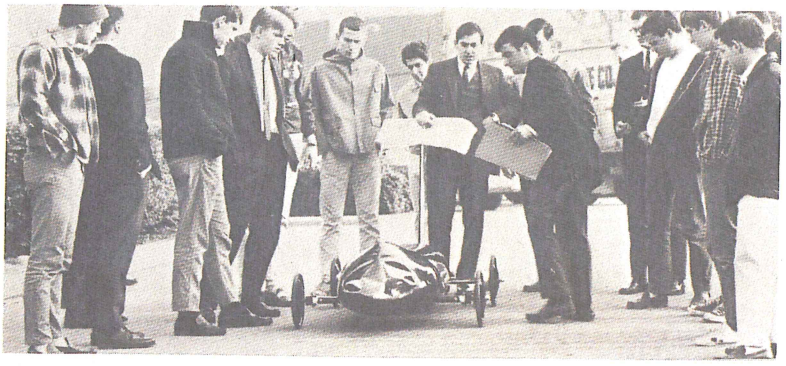
Since early March more and more effort has been focused on Spring Carnival, the event which for many CMU students marks the culmination of the year. What gives Spring Carnival the power to draw so much enthusiasm from a campus renowned for its apathy? Possibly it is because Carnival time provides such a wide variety of comical, novel, and even absurd happenings. In the past months most of us have noticed a few of the signs which hint at the coming of Carnival.

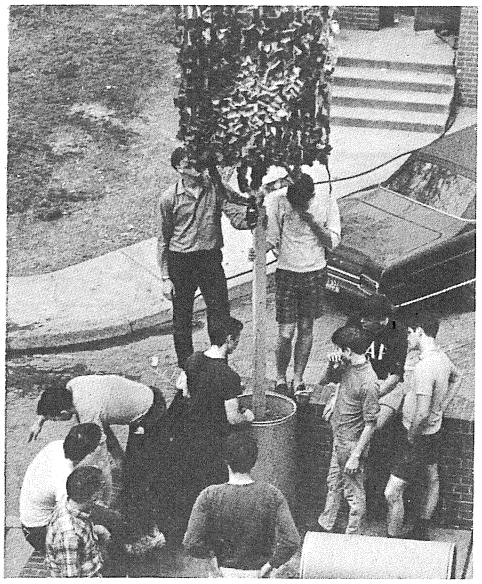
. . .Suddenly, tight-lipped engineers become regular Daniel Websters when they plead with a professor not to give an exam the day before Carnival.

. . .The Greeks witness a sudden metamorphosis in a certain tall, lithe brother who generally uses the basketball court or the dance floor to vent his aggressive instincts. Since the transformation, he uses other tall, lithe brothers whom he incessantly badgers to take suicidal runs through Schenley Park.

. . .Not everyone is changed by Spring Carnival. The Fine Arts people still walk around campus without the slightest change in their casual and disorganized state or their uninhibited but aloof manner.

. . .Buggy chairmen give long-winded oratories exhorting how the speed and maneuverability of the buggy will win the race and how the pushers "better be in top-notch condition" because they win the race.





. . .Early in April, novel wooden skeletons begin growing from the porches of the Forbes Avenue duplexes. They closely resemble the tree-houses of six-year olds: two by fours protruding in every direction, no square corners, and a wild spattering of pastel colored panels.

. . .During the height of rush hour, fifty brothers begin carrying the wooden shell across Forbes, placing their faith in the temperament of the traffic and their judgment on the height of the wires. Amid the confusion caused by meaningless or opposing instructions and the guy who tripped, they continue the short but precarious journey to Skibo parking lot.

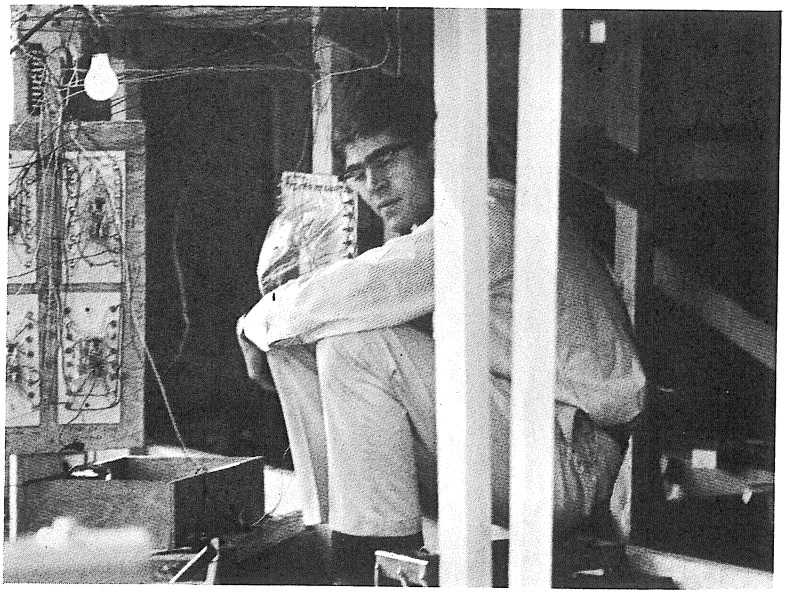
. . .Smiling and exhuberant faces (though a bit pale) emerge from the dorms for the first time.

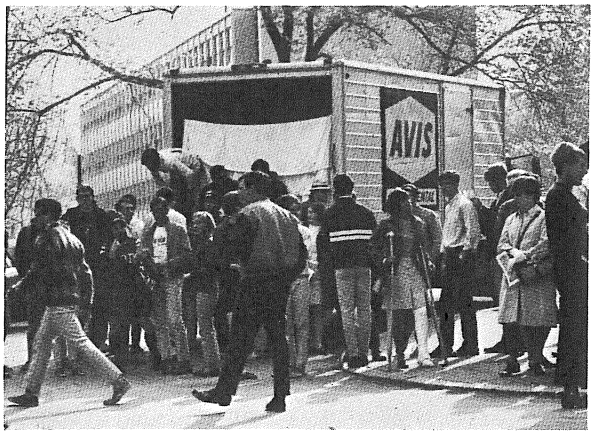
. . .Hours are spent sanding out scratches the buggy collected hanging in the closet.

So here we are just a few days before the start of Spring Carnival, but there is as much to come in the next few days as has occurred in the last few months.

. . .On Friday morning the design judges closely scrutinize each buggy's magnesium tie-rods, tennis ball suspension, and synthetic lubricants. They examine each buggy's aerodynamics and compare them to designs created by Ford or General Motors. Then the judges give the design trophy to a buggy which rarely wins.

. . .At four-thirty on Friday booth judging begins; faces on the Midway will have all the color of a Beaux Arts Ball. A few look as if they have completed a rival to the Pieta. The faces of some of the sorority girls are filled with tears when their booth collapses upon completion. But most faces are filled with bewilderment and exhaustion as the race to put the final touches on the booth and to get "the damn mechanics to work" continues.



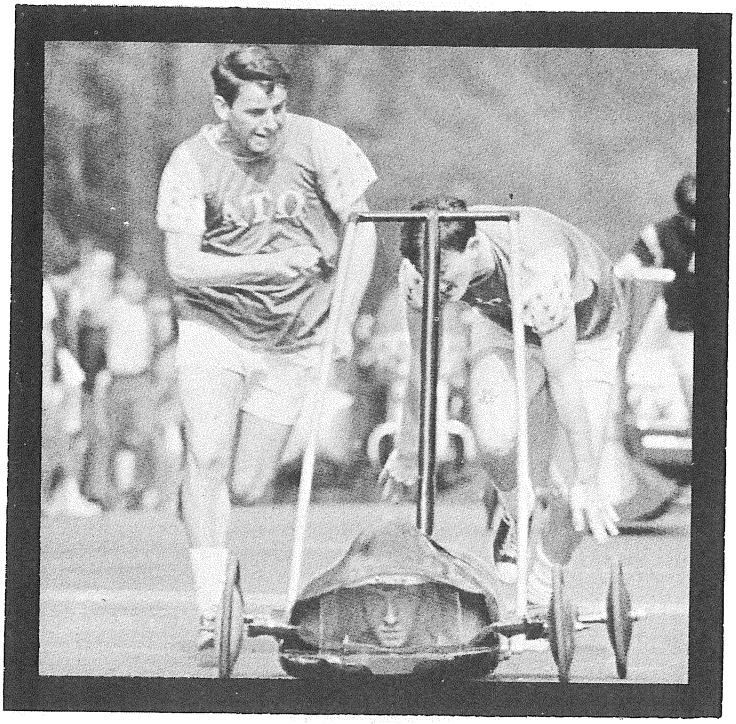


. . .The endless speculation continues about the heat waves which rise from shrouded vans holding the buggies. The stone-faced sentries do not give a hint, but most theories center around either heating the wheels or the lubricants. Who knows, maybe they're just making rum toddies.

. . .There is a large pressing crowd at the bottom of Frew Street anticipating the yearly "wipe outs." The "wipe out" is one event which not even Fine Arts people will miss.

. . .Of course, there are the annual disputes between the judges and buggy chairmen. It's difficult to forecast what they will be about, but there are sure to be some.

To the casual observer, Spring Carnival might appear to be a ludicrous waste of effort. Well, that may be true. . .but so what? IT'S FUN!!!

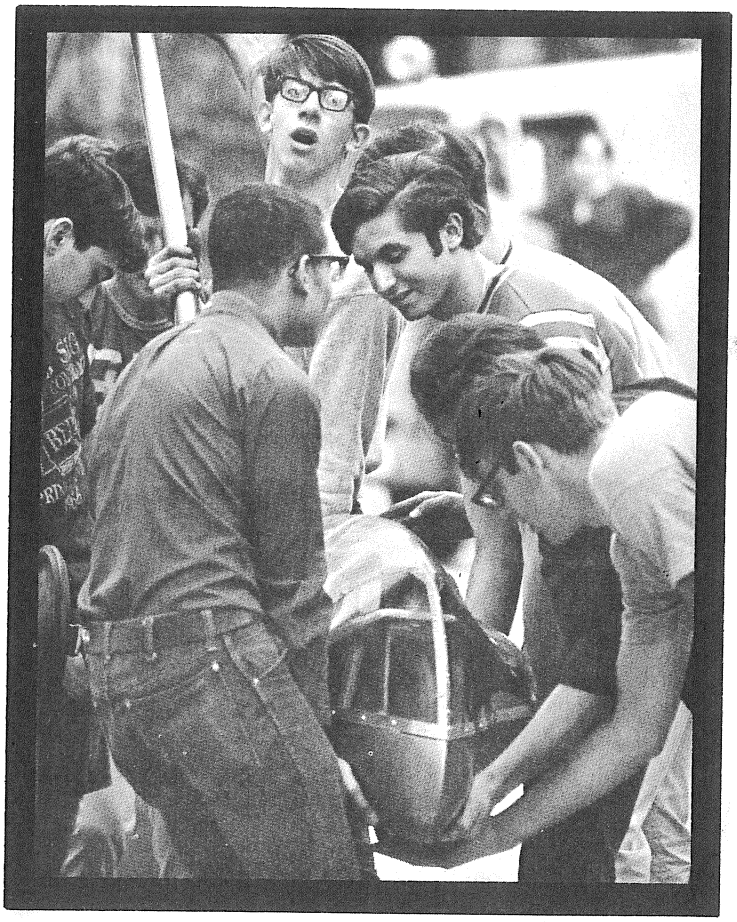


alpha tau omega

The "Golden Goose's" design is based on the aerodynamic features of a teardrop and is constructed of a plywood and steel frame with a molded fiberglass shell. In 1959 air scoops were added to improve the aerodynamic qualities of the buggy.

Last year, ATO introduced a buggy which was dubbed the "Whale." Its design is very similar to the "Golden Goose" except that it is slightly larger and made with a steel frame and a lightweight plastic shell. Both buggies use four solid soap-box derby type wheels and are designed for the driver to ride in a prone position facing forward.

Despite good times last year, both buggies were disqualified because of failure to pass a brake test. This year the ATO's will add improved brake systems

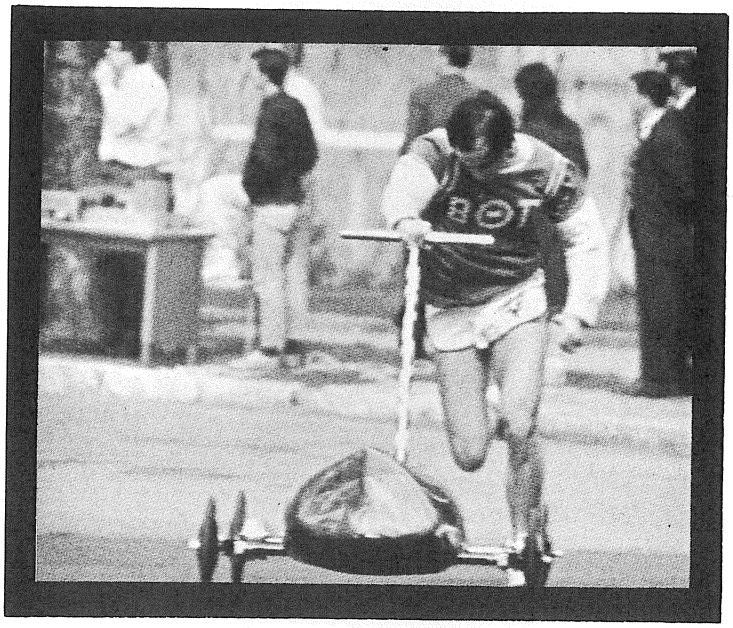


beta sigma rho

The famed Beta Sig ''Dolphin'' will get a new fiberglass body this year. This is one of the few three-wheeled buggies on campus. Last year, this buggy ran consistently fast free-roll but was never able to come to terms with the Frew Street turn.

The new body has a more efficient, streamlined shape. The three wheels, it is claimed, offer no alignment problems. Added this year are ''do-or-die'' brakes.

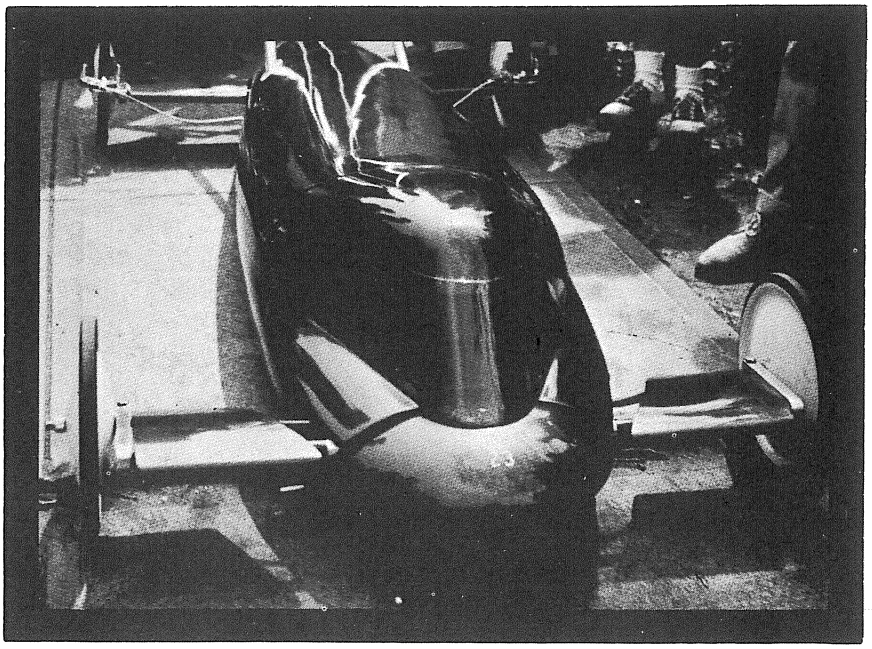
Driver Phil Meyer, and all except one of last year's pushers are returning to lead Beta Sig to victory in '68.



beta theta pi

The ''00'' consists of a flat aluminum and cardboard honeycomb to which the mechanism is attached. The driver lies prone, steering with his hands at his sides. The two halves of the molded fiberglass shell clamp together. The most interesting feature of the ''00'' is its braking system. It is powered by compressed air with free floating cylinders. When the brakes are released, they emit a loud, hissing sound.

This year's Buggy Chairman, Michael Steuert, hopes to change the designs of both buggies to improve their free roll. Also, the push teams will be strong, experienced ones, with Mike Kalish, Ron Finnin, Jeff Sheldon, and all of the ''000'' team returning. The drivers also look promising. Steve Peck, two-time driver of the ''00''; Tom Farkas, two-time driver of the ''000''; Stuart Berni, a ''000'' driver, and a pledge are all in contention for the two positions.



delta tau delta

Delta Tau Delta's new buggy, 23, is the result of three year's of work. The final designs made by Paul Adler, Mark Moore and Steve Wolfson, emphasize speed and simplicity. 23's light weight will benefit the push team. Though two strong pushers are missing from last year's team, Bill Kaye, Homer Suter, and several pledges, led by team Captain, Bill Bullers should push 23 to a good showing. The driver, either Lew Sloter or Rick Reinhart, will lie on a honeycomb bed covered with a fiberglass shell.

The second buggy, 8, was originally built in 1952 and has been completely revamped. With some of its heavy steel frame removed and the addition of a lightweight fiberglass shell, old number 8 should keep up with the newer buggies.

WHAT HAPPENED TO THE CIRCUS
by vito cedro III

The evolution of the Spring Carnival midway to its present form can perhaps best be described as a random mixing of circuses, sideshows, a country livestock exhibition, floats, concessions, and amusement rides. Indeed, the contemporary form of the midway, situated in the Skibo parking lot with its few amusement rides and complex fraternity and dorm booths is hardly a tradition, dating back only as far as 1962.

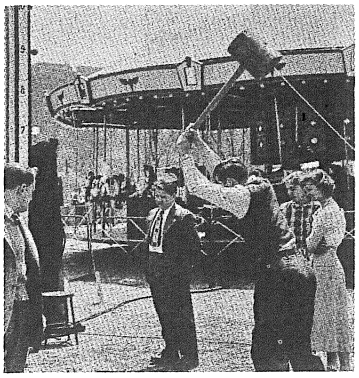
The first records of any form of midway on the Tech campus are found in the **Thistles** of the early 1920's. At that time, during Campus Week, (as Spring Carnival was then called), the "midway" was located on the athletic fields in the form of a professional circus.

> The outstanding feature of Saturday was the Circus. We had all the attractions that Nero had, to entertain himself with, and a few Barnum overlooked. The Circus opened with a parade which was followed by a trained animal act. Horseback races, tight-rope walkers, side shows, and a chariot race were several other of the numerous attractions.[1]

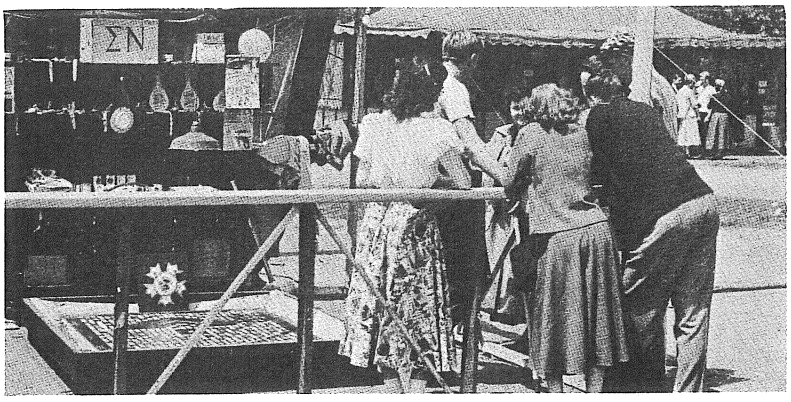
Perhaps the earliest ancestors of the midway fraternity, sorority, and dorm booths were also born during these years. These were the floats that were part of the all-school parade that wound through the streets of Pittsburgh on the Thursday of Campus Week. A description of this tradition runs as follows in the 1922 **Thistle**:

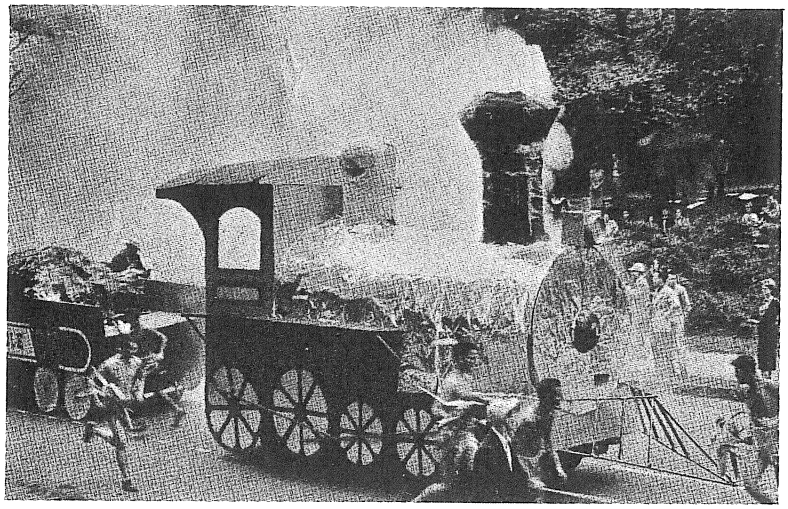
> In the beginning, on Thursday there was a peerade. Automobiles, floats, girls on floats, on automobiles, and on top of same, lots of girls. The fraternities turned out en masse with individual floats. The printing department had Ye Olde Printe Shoppe on wheels. . .By the time we had circumnavigated the downtown district, all Pittsburgh knew that Mr. Carnegie's School for boys was on the map and going strong.[2]

By modern standards of float and booth building, these early floats were quite crude, consisting of some thematically dressed students and a minimum of decorations.



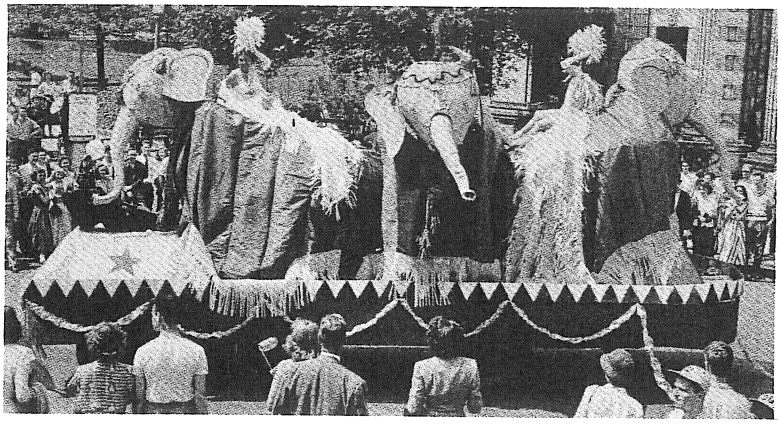
By 1927 the Saturday midway resembled a country fair as the size of the circus shows was reduced with livestock and country fair exhibitions filling in the gaps on the athletic field. However, the physical appearance of the midway was to be included in the long list of things that were irrevocably changed by the Great Depression. The circus, sideshows, and livestock disappeared from the midway to be replaced by fraternity concessions and games of chance on the cut. These concessions in no way resembled contemporary fraternity and dorm booths. They were usually small carnival tents with a bit of decoration on the front. The midway also included a considerable number of amusement rides.





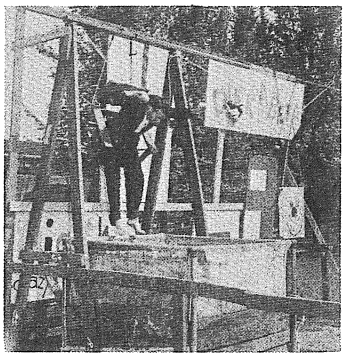
Along with the rapid expansion of Tech as a professional school after World War II, there was a similar expansion of Spring Carnival activities. Fraternity floats greatly increased in complexity and appeal, while the route of the parade was greatly decreased in comparison to the route followed in the '20's. Though "lots of girls" still adorned the floats, they began to incorporate some form of mechanical action.

> Complete with band, caged animals, and elephants, the Sigma Nu's placed first in the competition for prizes, but the Delta Upsilon's were not to be denied as they pulled up in second place with their great-headed, eye-rolling lion.[3]

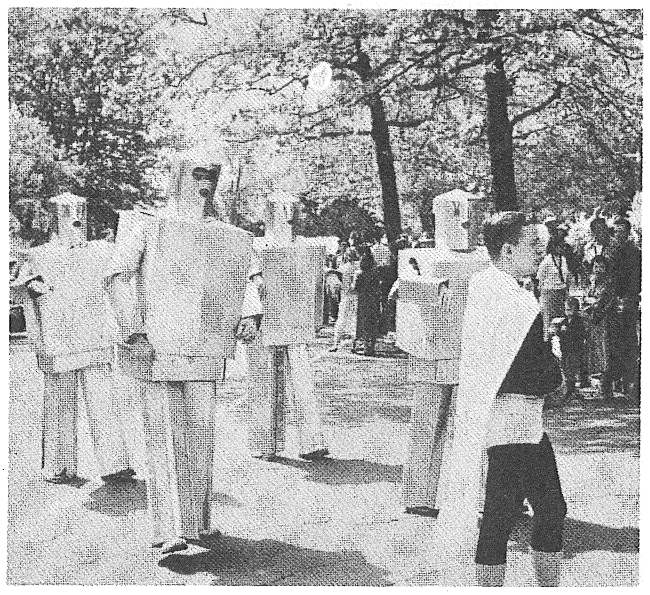


A unique feature of the float parades in the years after World War II was a special PanHellenic float on which the Spring Carnival Queen and her court rode. The 1951 **Thistle** gave the following desciption of the parade:

> At 2:30 P.M. (Friday of Carnival weekend) the Queen and her court took their honored places on the flower-bedecked PanHellenic float especially prepared for them; and the big parade began. Led by the Kiltie Band, the line formed, starting at the women's dorm and picking up float by float as it proceeded up Forbes Street, across Margaret Morrison and to the front of the gymnasium where the judges waited.[4]

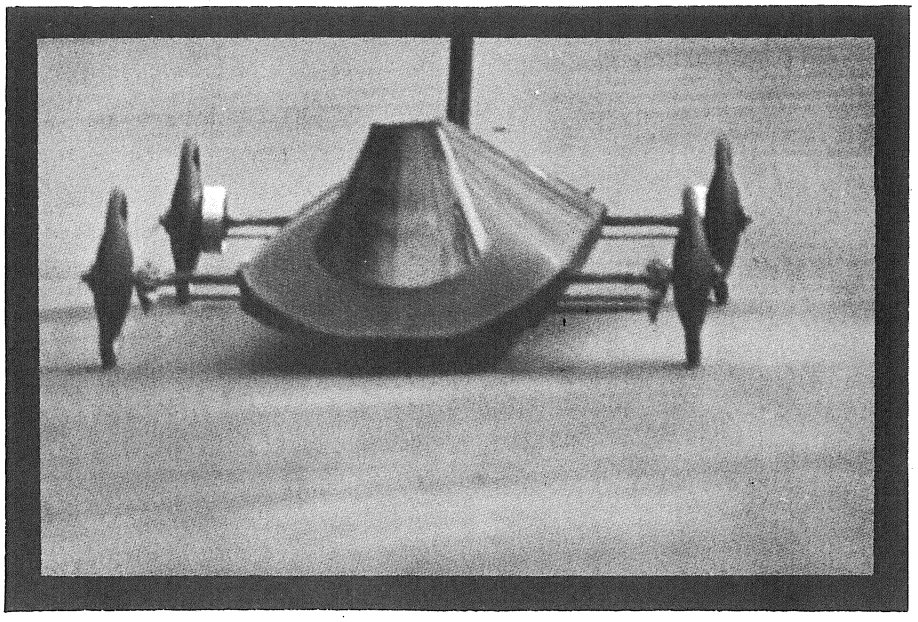


On the midway, fraternity booths still resembled typical amusement park concessions in form though not in spirit. An interesting feature of these booths was the appearance of several fraternity midway games, such as "Konk a Kappa Sig," "Duck a Beta," and SAE's "Skibol," which in the 1950's became classics of a sort. At least one of them, "Duck a Beta," is still appearing on Spring Carnival midways.



Several changes were effected during the 1954 and 1955 Spring Carnivals. A costume parade replaced the float parade in 1954. "From robot men to cavemen, dragons to multi-legged monsters, entries showed a varied and colorful collection of futuristic ideas."[5] In 1955 it was decided to completely eliminate any form of parade; instead, the emphasis of competition would be switched to the fraternity booths on the midway. Thus, the floats became stationary as Tech float builders put their best ideas into their booths. The Booths were becoming "bigger and better" with more emphasis on art, originality, and workmanship rather than the pure functionalism of a carnival concession. In the following years the booths did indeed become bigger and better with a much greater stress on "mechanical." In 1962 booth builders began carrying their creations to Skibo parking lot as the last major change in the midway was made.

1. *Thistle*, 1922, page 377.
2. *Thistle,* 1922, page 374.
3. *Thistle,* 1950.
4. *Thistle,* 1951.
5. *Thistle,* 1954.

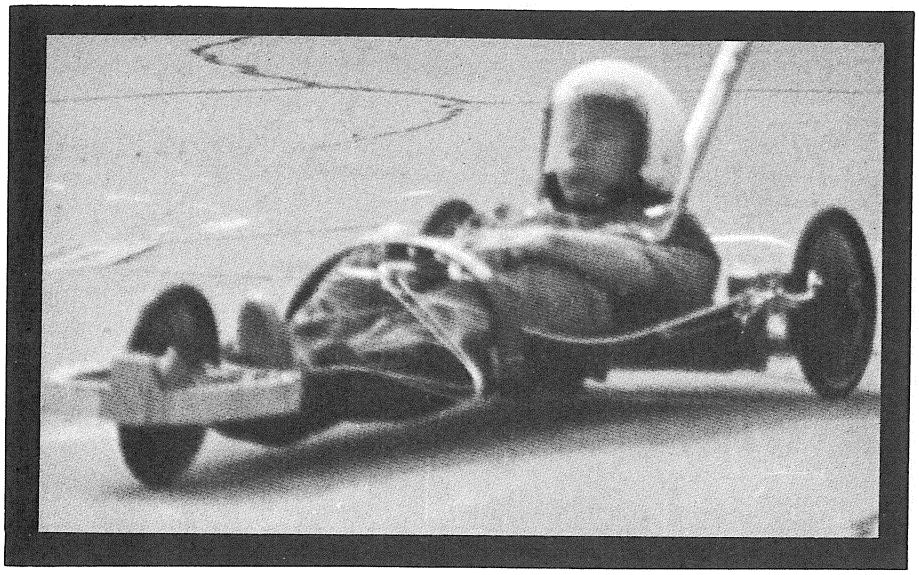


delta upsilon

DU's entry in the '68 Sweepstakes competition will be the same basic vehicle that ran last year. It has a welded aluminum frame and aluminum components. The brakes are the internally expanding variety, and are spring loaded. Very low ratio steering is controlled by the driver with each hand as he lies in a prone position.

The buggy is light in weight for easy pushing, and it is constructed such that it can be easily worked on or even remodeled. Because of the axle, there is little wheel alignment problem. An interesting feature is the dropped front axle, affording better vision and easier steering.

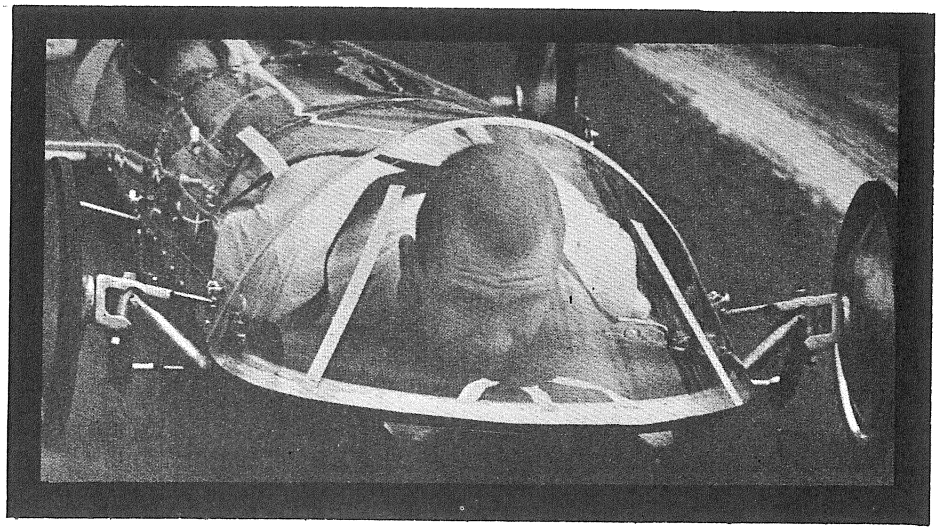
First run last year, the buggy has since been extensively revised. Pushers this year will be selected from freshmen John Svenson, Joe Straub, and Ron Gunther; sophomores Bill Beyer and Jay Brenner, and seniors Howard Illian and Terry Lunghofer.



kappa sigma

The Kappa Sigma buggy is constructed along typical automotive lines with a conventional box frame and unitized body. The rear wheels are independently sprung and the suspension is very similar in design to that of the Brabham F-1 car. The entire front steering and suspension system is a radical new design idea.

The buggy has only three wheels to take advantage of the best features of both the bikes and the conventional buggies. A three-wheel buggy has the stability of a four-wheel buggy and the corresponding low silhouette while also having the advantage of the smaller rolling friction of the two-wheel bikes. The driver, lying on his back, has a greater margin of safety in the event of a collision. This position also affords excellent visibility and yet retains good streamlining characteristics.

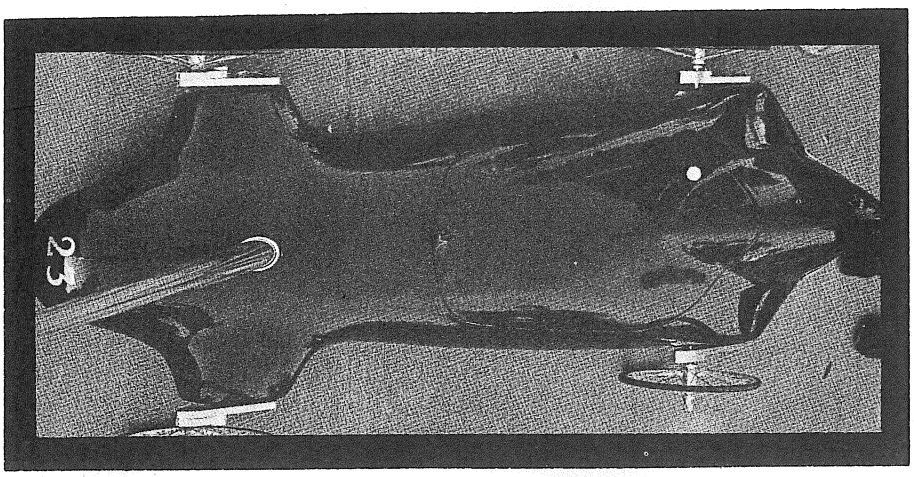


men's dorms

Men's Dorms will enter two buggies in the Sweepstakes this year. One will be the same entry as last year, the aluminum framed, four wheel conventional vehicle, and the other will be a newly modified bike.

The conventional buggy's driver lies in the prone position, and steers with both hands at his sides. The body will probably be formed from fiberglass, as in the past. The four wheels are modified soap-box derby variety. The buggy finished second in 1960.

The new bike is a stripped down and modified Schwinn racer. The driver sits in the "pike" position, and streamlining has been added to decrease freeroll time. The pushbar is arranged in a unique manner so that the bike is actually being pulled, thus increasing stability. Naturally, various lubricants are being tested.

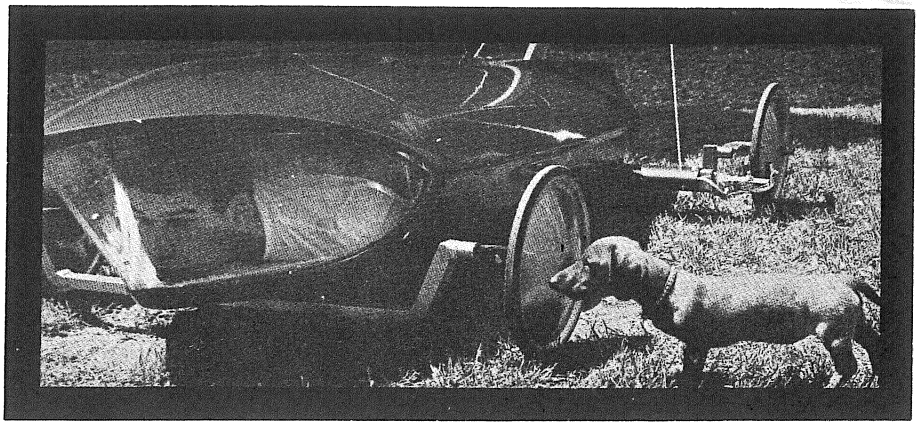


phi kappa theta

"Shamrock" is a four year old veteran who has twice won second place design and third place Sweepstakes, once in 1964 and again last year. "Shamrock" was built on the theory that simplicity and lightness are qualities a good buggy should possess. The tear-drop shape is spoiled only by the pointed plexiglass dome which affords the driver excellent vision. Bob Arias who piloted "Shamrock" last year will again be at the controls this year.

"Snorpus" will be after more trophies again this year. The five year old buggy has two design trophies and one Sweepstakes trophy to her credit. She will be out to better her sixth place finish of last year. "Snopus's" special features are a fiberglass unibody and independent torsion bar suspension.

Buggy Co-chairmen, Tom Kilgore and Ray LeClair, have been directing the buggy crew which has put many long hard hours into the preparation of the buggies. Research and work by the buggy crew has eliminated problems and perfected several new ideas for both buggies.



pi kappa alpha

This year the brothers of Pi Kappa Alpha are coming back to try to duplicate their sweepstakes victory of last year, when after fourteen years of perfecting, the PiKA's "Shark" smashed a ten year old record of 2:25.0 with a time of 2:24.8. Last year also saw PiKA's second buggy, "Tiger Shark," halted by the hay bales as it was heading for a record free-roll time. The two buggies are basically constructed the same, utilizing the prone position of the driver low to the ground, but the older "Shark" uses a metal frame with a fiberglass body while the "Tiger Shark" has a fiberglass frame and body. The big news this year is the creation of a new buggy, the "Tiger Shark II," by buggy Chairman Ken Jenkins and his assistant John Gade. The "Tiger Shark II" is designed on the same general principles as the "Tiger Shark I" and it is hoped that it will share the fast free-roll time of the "Tiger Shark I."

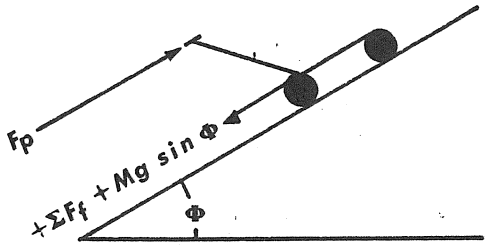
BUGGY vs. BIKE: AN ANALYSIS
by john good

The construction of a buggy illustrates many of the essential aspects of engineering. The engineer must evaluate and translate innumerable mathematical relations based on relevant physical principles into practical design considerations encompassing performance, cost, and construction, which dictate the design parameters. Of these considerations, cost rather than performance must assume primary importance, for in every case a finite budget, be it one hundred or one thousand dollars, restricts the builder. Costs are relevant to every aspect of design and must constantly remain a controlling factor. Clearly, a professionally built monocoque titanium alloy frame might be prefeable from performance and construction considerations, but it is prohibitively expensive. The engineer, then, must weigh cost and utility and determine the distribution of available funds in such a way as to maximize performance.

Buggy designs have evolved into two general categories: hereafter called buggies and bikes. Buggies are in general low, statically stable vehicles with three or four wheels. Bikes, however, are characterized by their high driver position, static instability, and pair of large diameter spoked wheels. These are not the only possible categories for general vehicular structures, but at present all entries fall within these two categories. The

primary design consideration which led to the evolution of the bike is its small mass. To see how such a property affects the performance one need only apply Newtonian mechanics. Given a buggy and driver of relatively large combined mass Mbug and a bike of comparatively small mass mbike , the accelerations can be compared theoretically for the various course conditions.

On hills 1, 2, 3, 4, and 5 during the uphill pushing segments



$$abug = \frac{\Sigma F}{Mbug}$$

$$= \frac{Fp - \Sigma Ff - Mbuggsin\theta}{Mbug}$$

where θ = angle hill makes with level.

$$= \frac{Fp-Ff}{Mbug} - gsin\theta$$

$$abike = \frac{F}{Mbike} = \frac{Fp^* - Ff - Mbike\ gsin\theta}{Mbike} = \frac{Fp^*-Ff}{Mbike} - gsin\theta$$

Since the forces exerted by the respective pushers (fp) are large in comparison to the sum of the frictional forces (ΣFf) due to bearing friction and aerodynamic friction, and gsinθ is a constant for both vehicles, the equations reduce to

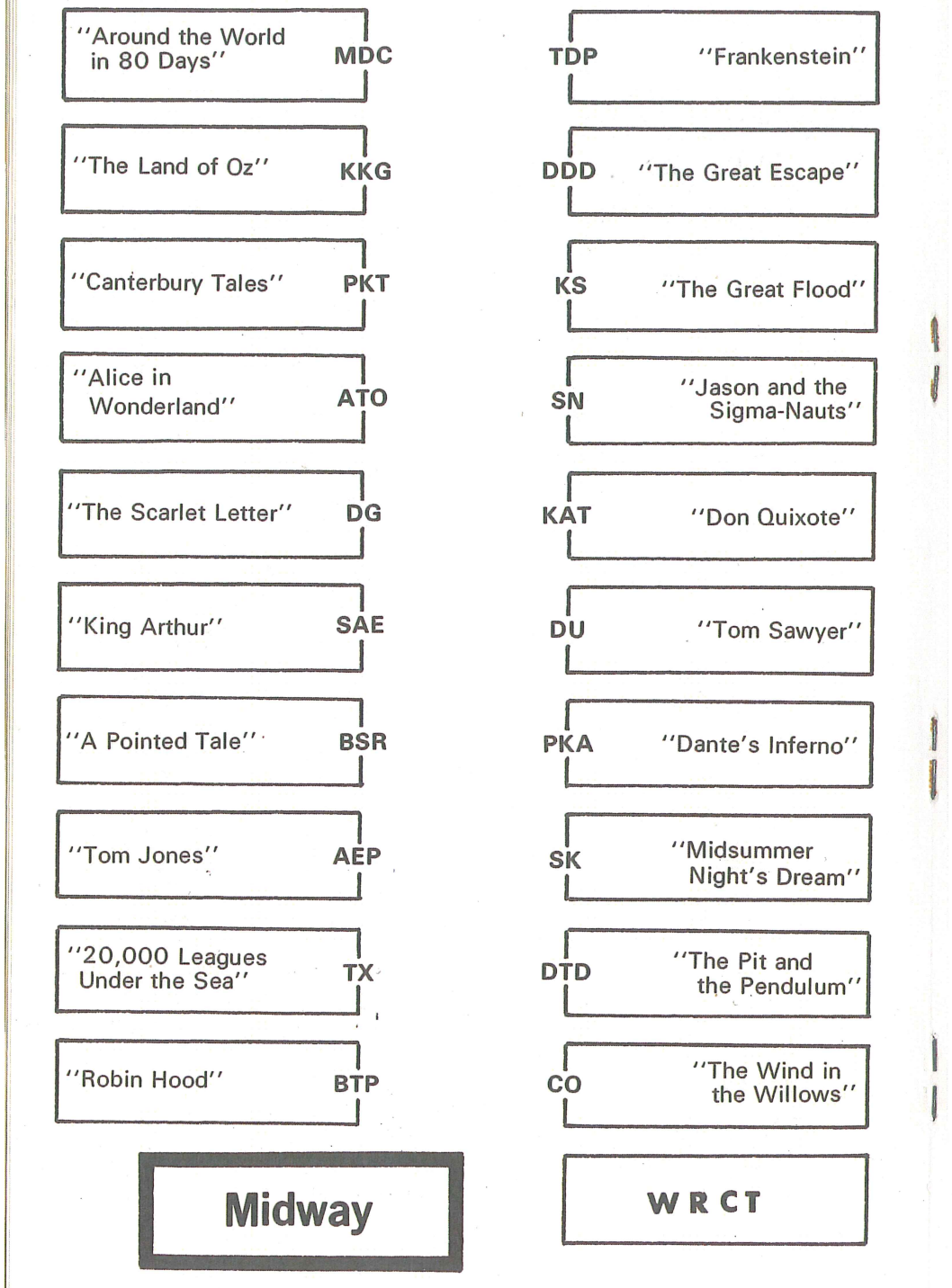
$$abug \frac{Fp}{Mbug} - k \quad \text{and} \quad abike = \frac{Fp^*}{Mbike} - k.$$

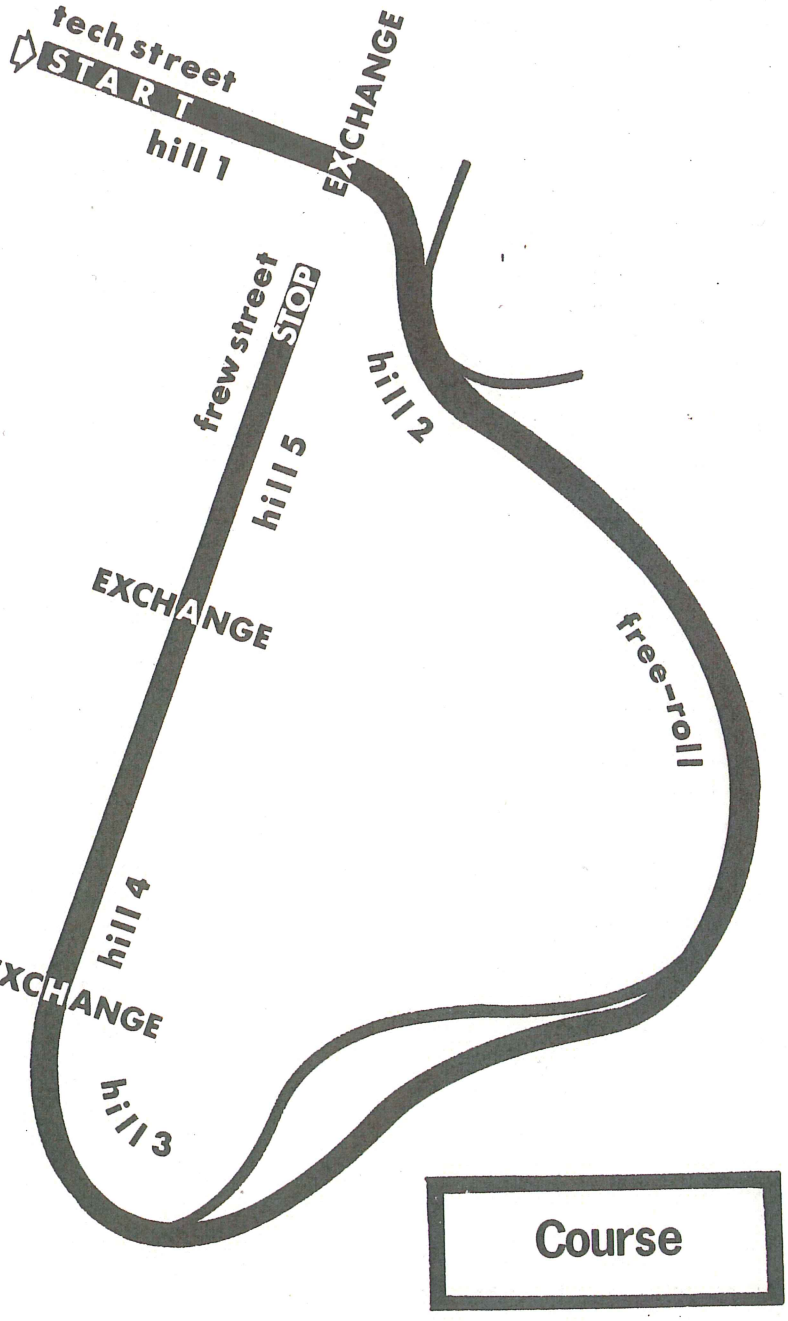
The difference in accelerations is

$$abike - abug = \frac{Fp^*}{Mbike} \frac{-Fp}{Mbug} = \frac{Fp^*Mbug - FpMbike;}{MbikeMbug}$$

$$\text{and } \frac{abike}{abug} = \frac{Ff^*}{Mbike} \frac{Mbug.}{Fp}$$

If Fp* = Fp, that is if each pusher maintained the same force on his respective vehicle, the bike would have a clear ad-


"Around the World in 80 Days"
MDC
"The Land of Oz"
KKG
"Canterbury Tales"
PKT
"Alice in Wonderland"
ATO
"The Scarlet Letter"
DG
"King Arthur"
SAE
"A Pointed Tale"
BSR
"Tom Jones"
AEP
"20,000 Leagues Under the Sea"
TX
"Robin Hood"
BTP
Midway
TDP
"Frankenstein"
DDD
"The Great Escape"
KS
"The Great Flood"
SN
"Jason and the Sigma-Nauts"
KAT
"Don Quixote"
DU
"Tom Sawyer"
PKA
"Dante's Inferno"
SK
"Midsummer Night's Dream"
DTD
"The Pit and the Pendulum"
CO
"The Wind in the Willows"
W R C T

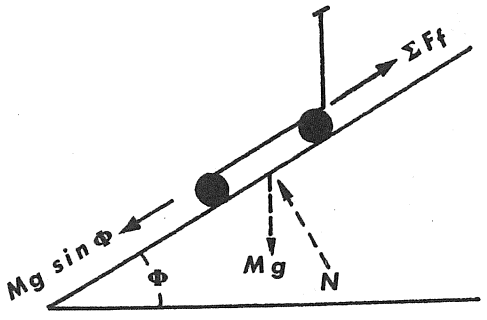

tech street
START
hill 1
EXCHANGE
frew street
STOP
hill 5
hill 2
hill 4
EXCHANGE
free-roll
EXCHANGE
hill 3
Course

vantage because the acceleration is inversely proportional to product of the masses and directly proportional to the difference of the masses times the opposite's push force. In reality this is not a good assumption. First there is a terminal speed for the runner which is an important factor on hill two. Here the velocities are approaching normal sprinting velocities and the pushers simply cannot maintain constant pushing forces On the uphill segments it is reasonable to assume that the pushers of heavy buggies will actually exert much higher forces than those of the bikes because the buggies simply do not accelerate relative to the pushers as quickly or as easily as the bikes. In many instances bike pushers use a push and sprint system in which they exert a maximum force for a few strides, causing the bike to accelerate beyond their own velocity, and then sprint after it until contact is made once again. If Fp (bug) can be made larger than Fp* (bike) then the difference in the numerator becomes smaller and the difference between the accelerations diminishes. Thus a one hundred and fifty pound bike will not have twice the acceleration of a three hundred pound buggy as it would appear if one incorrectly assumes equal push forces.

On the free roll section, there is no longer a push force, and gravity now tends to accelerate rather than decelerate the vehicle. For this segment

$$abug = \frac{Mbuggsin\theta - \Sigma Ff}{Mbug} = gsin\theta - \frac{\Sigma Ff}{Mbug}$$

$$abike = \frac{Mbikegsin\theta - \Sigma Ff}{Mbike} = gsin\theta - \frac{\Sigma Ff}{Mbike}$$



Here the advantages of high mass, streamlining and a low bearing friction are apparent. The decelerating term is inversely proportional to mass and directly proportional to frictional forces. Historically buggies have higher masses and better streamlining and indeed do perform noticeably better on the free roll.

The corner of Schenley Drive and Frew Street also makes particular demands upon the buggy relevant to design. Preservation of momentum at this point is critical; especially for the buggies, which are slow to accelerate at low speeds on the hills. This means that sliding and bearing friction must be minimized. At the same time the length of the path of the vehicle must also be minimized for the shortest elapsed time. Unfortunately handling characteristics demand a rather wide smoothly varying radius to prevent or minimize high reaction forces on the wheels and subsequent skidding, whereas the minimum path is a sharply varying tight radius. Assuming the same path length, no difference is gained by dropping lower because for every extra foot the vehicle drops, it must rise an extra foot on the return path. Stated differently, if both vehicles start at the same level and finish at the same level, the change in potential energy is equivalent and path independent. At this point a bike has some advantage, for it can bank through the turn which allows a tighter radius with less skidding if there is sufficient stability and traction. This also creates bearing forces perpendicular to the axis of the wheel, whereas buggy wheels experience rather high thrust loads and bending moments. The bending moments would seem to indicate a need for roller bearings or paired ball bearings, and the thrust loads are most efficiently handled by thrust bearings or combination ball and thrust bearings.

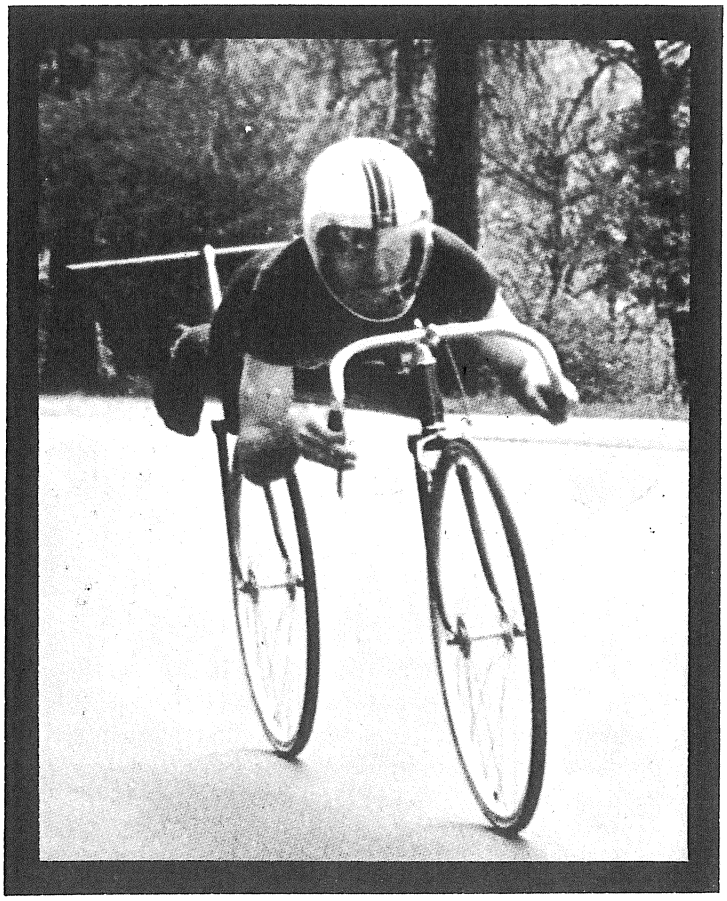
Hill three tends to favor vehicles with minimum friction and high mass when they are rolling uphill. At this point the decelerating is $-g\sin\theta$ for vehicles of any mass, minus an additional term, $\Sigma Ff/M$. For a bike of little mass, the term Ff/M_{bike} is large relative to $-g\sin\theta$ and Ff/M_{bug}, which means a bike decelerates far more quickly than a buggy. Past performance shows that indeed buggies do coast uphill better if sliding is minimized and momentum is conserved.

On the remaining two hills, four and five, a light bike again has the advantage, for it allows almost maximum sprint

speed immediately, due to its short acceleration time, whereas more massive buggies, if they are rolling below sprint speed, take longer to accelerate to a maximum sprint speed.

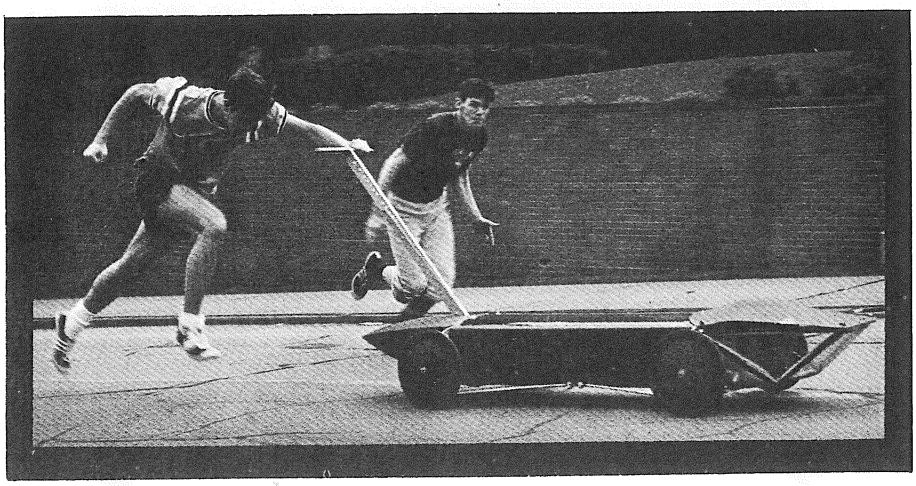
Remaining differences between bikes and buggies lie primarily in areas of construction, cost, and handling. Structurally, bikes consist of modified tubular bicycle frames or single tube chassis utilizing bicycle components. Use of manufactured parts makes custom fabrication of parts unnecessary and holds down construction costs. Forks, brakes, steering components, wheels, and tires are readily available, and in many cases these components are available modified for racing. Buggies, however, share components only with soap box derby racers and in some cases the available wheels and axles prove inadequate. The frames, be they tubular, pan, or monocoque, must be custom built, necessarily incurring higher costs. In an attempt to minimize frontal area, volume is decreasing to the point where steering and braking systems are difficult to engineer and operate, and visibility is becoming restricted. Counterbalancing these disadvantages of the buggy are several advantages gained in the design and handling characteristics. The smaller wheels allow an extremely low center of gravity which enhances the handling and almost eliminates the possibility of flipping. Because a buggy does not share the balance problem of a bike, it is easy to push and the driver can be enclosed in a heavy shell of fiberglass or similar material, improving aerodynamic characteristics. Unfortunately body and frame construction of almost any design are very expensive and somewhat difficult to alter so they are usually designed to be adaptable to several driver sizes somewhat less than optimum.

Although specific design preferences cannot be drawn without knowledge of exact specifications and experimental evaluation, the criterion used to study and compare the performance of bikes versus buggies can be valuable conceptual guides for construction or modification of new or existing vehicles and can provide a theoretical basis for explanation of existing performance characteristics.



sigma alpha epsilon

Designed by Bill Faircloth, the ''A'' buggy is constructed with a rigid, hollow steel bar with holes in each end for the forks which hold the 26'' wheels in place. The driver lies on a molded chest plate which is bolted to the bar, and he controls the buggy with special racing bike handle bars and caliper-type brakes. To minimize air resistance the driver wears skin tight racing leathers. He has advantages over the conventional buggy driver in maneuverability,

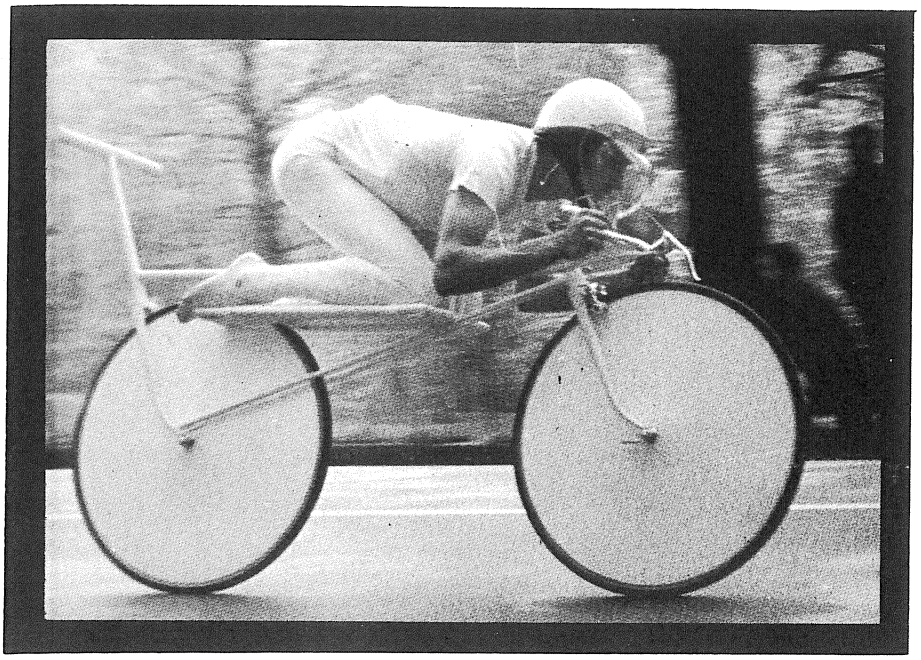


sigma nu

Spurned on by their best showing since 1959 and their breaking the 2:30 barrier last year, Frank Stark and his buggy committee are working to put together a winning combination this year.

Last year SN ran its old buggy, the "Lizzard," and a new B buggy. The "Lizzard," with large diameter wire wheels, aluminum frame and external shock absorbers placed seventh, while the new B buggy, having a somewhat modified design, took fourth place with a time of 2:29.7. The new buggy, as yet nameless, has an aluminum frame, a fiberglass shell, solid smaller diameter wheels, and a fully independent suspension system.

Stark, with the help of Bill Schuchat and Ernie Toth, has been refining both buggies to insure an even faster free roll time. With all of last year's pushers back and a fine pledge class, Sigma Nu is ready to make its bid for the buggy honors.

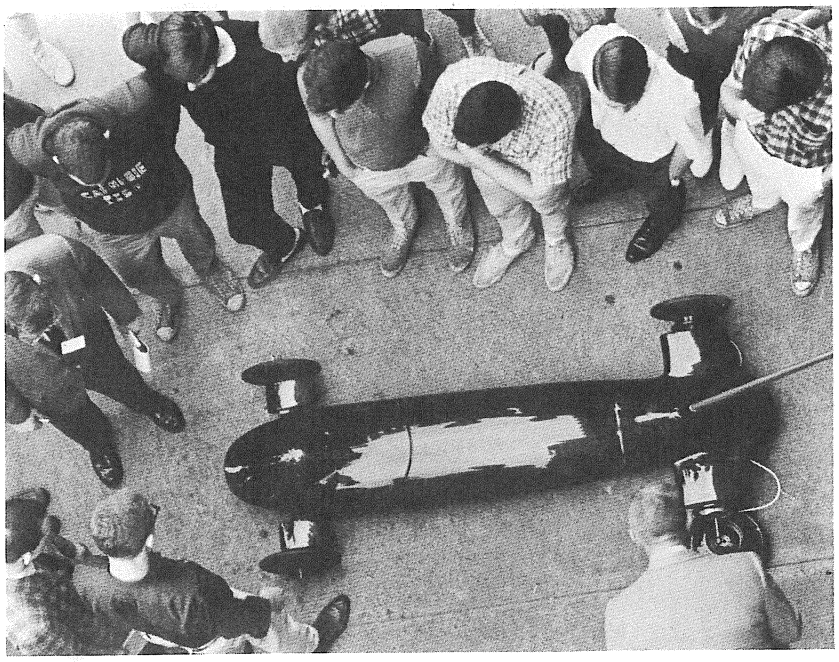


tau delta phi

Tau Delta Phi is again entering two buggies of the bicycle design because of the weight advantage and cornering ability. The "White Scorpion," made of tubular aluminum weighs only fifteen pounds, while the "Widow," made of steel weighs thirty pounds.

Last year the Scorpion turned in a place-winning time of 2:27 but was disqualified on two counts. Both buggies were designed and built by Mike Pollack. They feature racing bike parts, including caliper hand brakes and specially designed wheels and covers. The drivers are perched in a jockey position on padded supports to increase maneuverability, cut wind resistance, and provide greater visibility.

This year with virtually the same push teams returning, and possibly streamling to be added by Chairman Bob Rosen, TDP should make a good showing.



COMMENTS ON THE RACE
by michael I. smolens
1967 sweepstakes chairman

The 1968 Sweepstakes, more commonly known as the buggy races, should prove to be the fastest in the 48 year history of racing at Carnegie Tech. The earliest record was 2:43, set by Kappa Sigma in 1938; that was lowered to 2:25.0 by ATO's Andy 1 in 1956, and tied the next year by ATO's Golden Goose. In last year's races, Pika's Shark ran a 2:24.8, the existing course record. In addition, 1967 saw four other buggies roll to clockings under the 2:30.0 mark. This year's races should see six or seven organizations with times of under 2:30.0; they are ATO, BTP, Pika, PKT, SAE, SN, and TDP. The Dorms, DTD, TX, DU, KS, and BSR, on the other hand, have yet to break this magic barrier.

Beginning in the second semester, the work starts in earnest to make the buggies 'race ready'. Experiments are done on reducing wind resistance, obtaining nearly frictionless bearings, and even on trying to introduce legal (that is, by the Sweepstakes constitution) flywheels or motors. The work of the buggy chairman and his crew increases in direct proportion as Spring Carnival nears, and during the week before Carnival, the Buggies are attended to nearly 24 hours a day.

The problems of the mere existence of the races are many. Until last year, practices were held at night on Schenley Drive, with each organization sending its own men to strategic points on the course to try and insure that no cars would endanger the free-folling buggies. This practice, besides being very dangerous for the driver and the buggy, did not provide a chance for the driver to drive the course under race conditions, in the daytime. When, in 1966, several fraternity men were involved in a fight with intruding teeny-boppers, the administration sought to establish a safer means of practice. From this desire stemmed the Sunday morning, police protected practices.

With the innovation of daytime practices came a new 'openness' to the races. Previously, everything was done secretly, and no one house knew what the others' buggies looked like, or what times they were running. Now, anyone with a stopwatch and enough interest to get up at 6:00 A.M. Sunday morning can come out and determine how his competition is doing, or what design changes have been made over the winter. These practices under race conditions were a large part of the reason for the fast times of last year's races.

Safety is another of the areas of concern. With the buggies and bikes rolling to a maximum speed of nearly fifty miles per hour, and then barrelling into the Frew Street turn, any slight miscalculations on the part of the driver, or a mechanical failure on the part of the buggy, can prove to be disastrous. The addition of bales of hay around the Frew Street turn probably saved the Pika driver from serious injury last year, and the continuation of this tradition, with even more hay, will only be an asset to the race.

A big area of controversy are the bikes, currently run by SAE and TDP, with the possibility of several other organizations entering them this year. Last year, neither of SAE's bikes finished the race, but this was the first time an SAE bike had fallen in their six years of running. The basic idea of the buggy races is, given the conditions that the buggy must free roll for approximately two-fifths of the time, and be pushed by five stalwart pushers for about three-fifths of the time, to propel a vehicle over the course in the shortest possible time. Thus, it is in essence a very complicated engineering problem, and the winner of the race is the organization that solves the problem best. It is for this reason that bikes, if they meet the safety requirements, should be allowed to run. The bike is a different solution to the engineering problem, and any organization which enters a two-wheeled vehicle knows the advantages and disadvantages of it over the conventional four-wheeled buggy. A bike SHOULD NOT be outlawed because it is easier to work with, or cheaper to build, or easier to push, or any other such reason; for each organization has the opportunity to enter any vehicle to try and solve the "problem." SAE has been running on Saturday ever since it entered the first bike, and except for the over-exuberance of the Tau Delt hill five pusher, TDP would have had a 2:27.4 last year, one of the fastest times ever.

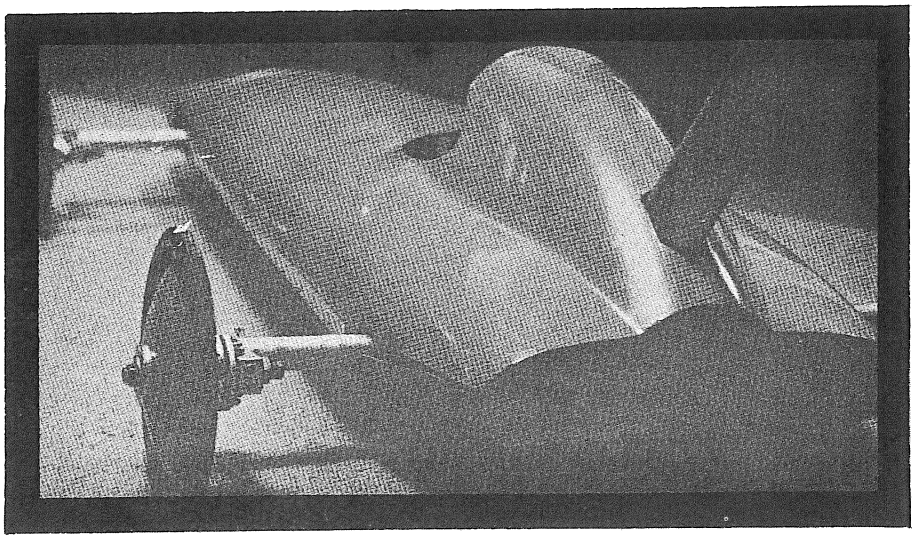
Several improvements could make the race more meaningful year after year. Among these is the necessity to establish a charted radius of curvature for the turn on top of hill two. Depending on how the arc is drawn on race day, and how far down Schenley Drive it extends, the advantage shifts from lane one to lane three. Precise lanes should be measured once and for all to try and give each lane an equal chance.

The course judges should be carefully briefed on their various responsibilities, and their decision should be final, except on interpretation of the rules, which must be left to the Sweepstakes chairman. The head judge should, however, ride in the lead car and not the follow car because any accidents or fouls that do occur are with the faster, rather than the slower buggies. If at all possible, one member from each organization in a heat should be allowed to ride in the lead car, to give everyone a first hand account of the happenings through-

out the entire course.

Design judging is an important part of the races but the Sweepstakes event is concerned with who can cover the nine-tenths of a mile the fastest, not who catches the most glances. The design judging should be separated from the race itself by several days, so each buggy chairman does not have to worry about his buggy looking pretty two hours before race time. Instead, he should be making last minute checks on the entire buggy, to insure that such tragic events as loose brakes will not cause a potential record-breaking buggy the embarrassment of disqualification.

The buggy races have been, and will continue to be, the single most important, exciting event on the CMU campus. The amount of pre-race argument and guesswork as to the winners adds a mystical aura to the races which is not dispelled until the final heat on Saturday afternoon. In the near future, a mile will be run in under 3:50.0; someone will run the hundred yard dash in under nine seconds; and a buggy will encircle the course in less than 2:20.0. . .Who. . .When. . .?



theta xi

This year, Theta Xi will enter 1 and Pi,

1 was built in 1964 by a pledge majoring in mechanical engineering. It first ran in 1966. The body is made of plywood and is painted midnight blue. The suspension and steering were built as simply as possible to eliminate mechanical failures. The driver enters through a hatch in the roof and lies on his stomach.

Pi was built in 1959, while it first ran in 1961. Its free roll and cornering ability are excellent. A molded fiberglass shell clamps together to cover the aluminum tube frame. It will race in red.

The push team will be the major difference this year. Many of the TX pledges are trying out for positions on the push team, and two of them may become drivers. A few veterans, including Scuern, Moritz, Schleifer, Albert and Harris will be working for a place on the first team again this year.

The Sweepstakes has always been a time of fierce competition among the fraternities. This year, under the leadership of the Council of Fraternity Presidents, the twelve CMU fraternities united to build a special buggy. This buggy will never be raced. Instead, it will be used by a fourteen year old boy who suffers from muscular distrophy. On the day when the strong and swift men of CMU display their talents, this boy, unable to get around by himself, will be given the means by which his friends can bring him with them when they go places to play. Although he will not be able to participate in their games, he will know the joy of being with his peers. Thus, the buggy is an attempt by the Greeks to share the joy and excitement of Spring Carnival with someone less fortunate.

ALTERNATE SCHEDULE

Thursday, May 2

4:30	Dance in Skibo
8:30	Queen Coronation in Gym

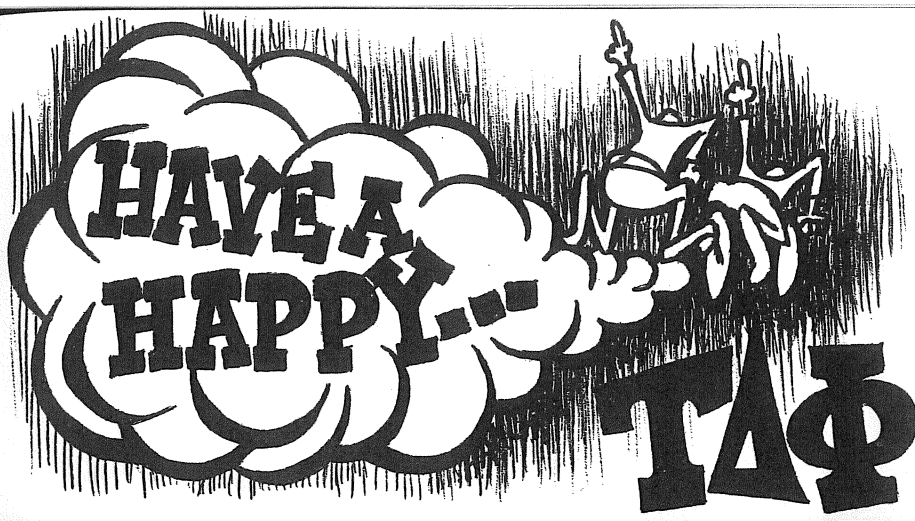
Friday, May 3

7:00	Design judging
9:00	Races cancelled until Saturday at 9:00
12-3	Picnic, Call Day and Relays in Gym, Egg Toss cancelled
8:00	Concert as scheduled

Saturday, May 4

9:30	Sweepstakes cancelled
2:00	Plank Joust as scheduled
8:30	Dance as scheduled
11:30	Awards

CARNEGIE TECHNICAL
Carnegie-Mellon University



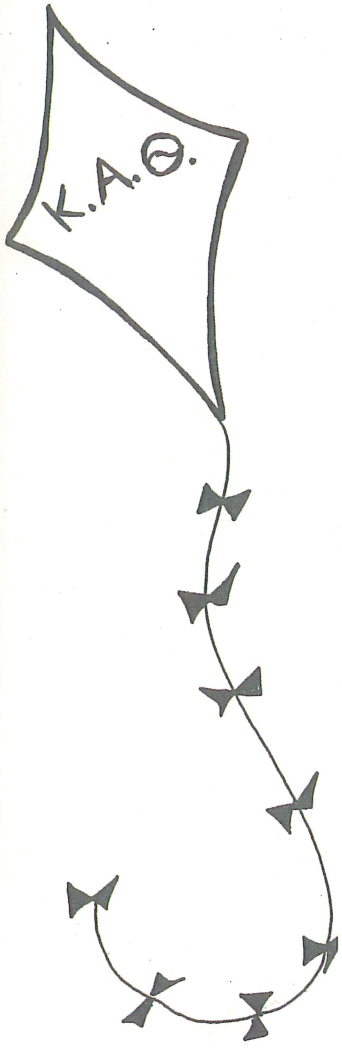
ΘΗΝ

BETA ROLLS ON

DRAF DE FURD III

wishes you
a happy
carnival

UP, UP and AWAY



RULES

Any recognized organization of Carnegie Tech undergraduates may enter no more than two teams. Each team consists of one buggy, one driver, and five pushers. The driver and pushers of each team may only participate with the buggy in their team.

Safety:

In order to participate in the sweepstakes, each buggy must pass a safety inspection where it must demonstrate:

1. adequate vision ahead and 45 degrees to each side.
2. adequate braking system.
3. nuts involved in the control of the buggy must be fastened with lockwashers or locknuts.

Construction:

1. The length of the buggy may not exceed 15 feet and the width may not exceed 5 feet.
2. No internal propulsion of the buggy by steam, gasoline, oil, electricity, jet, liquid air, or any other mechanical means will be permitted.

Contest Rules:

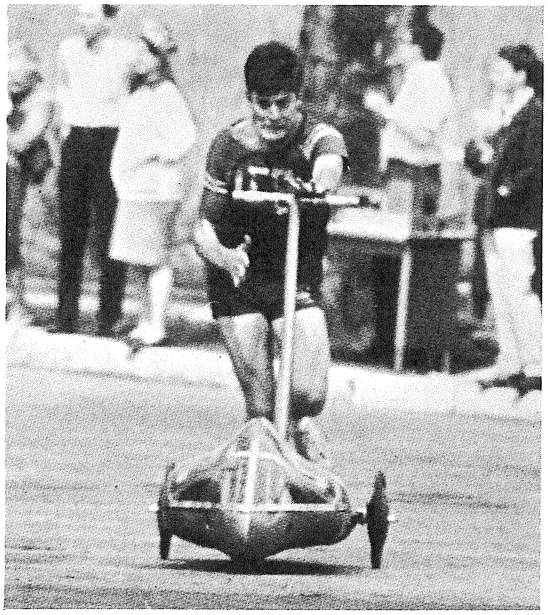
1. The Friday Preliminary race shall be run in heats of three buggies each. No two buggies from the same organization may race in the same heat.
2. The race shall be run over the course shown on the map.
3. Each pusher may touch the buggy only in his push zone (see map for zone) and the adjacent neutral zones. The last pusher must have his hands on the buggy when it crosses the finish line.
4. No individual may enter the street to pace a buggy pusher at any time.
5. The combined weight of each buggy and driver must be constant. Jettisoning of weight is prohibited.
6. The time between the start of each heat will be ten minutes with warnings given at 5, 2, and 1 minute until the start of each heat. Any extension of this time interval must be requested before the 2-minute warning.
7. The three buggies with the shortest preliminary times will race together in the finals on Saturday; their order of

finish in the race will determine the first three places. The three buggies with the next shortest preliminary times will race in the consolation race on Saturday; their order of finish will determine the 4, 5, and 6 places. This arrangement is used to prevent any possibility of mechanical timing errors in determining the winner.

8. Any buggy that has a design failure or that deliberately collides with or cuts off another entry will be disqualified.
9. Any buggy that complies, in the judges opinion, with the rules and is involved in an accident or slows or stops to avoid an accident will be eligible for a rerace. The rerace will be granted if the buggy is immediately impounded and passes, except for accident damage, a safety inspection.
10. The judges may disqualify any entry for going outside his assigned lane.

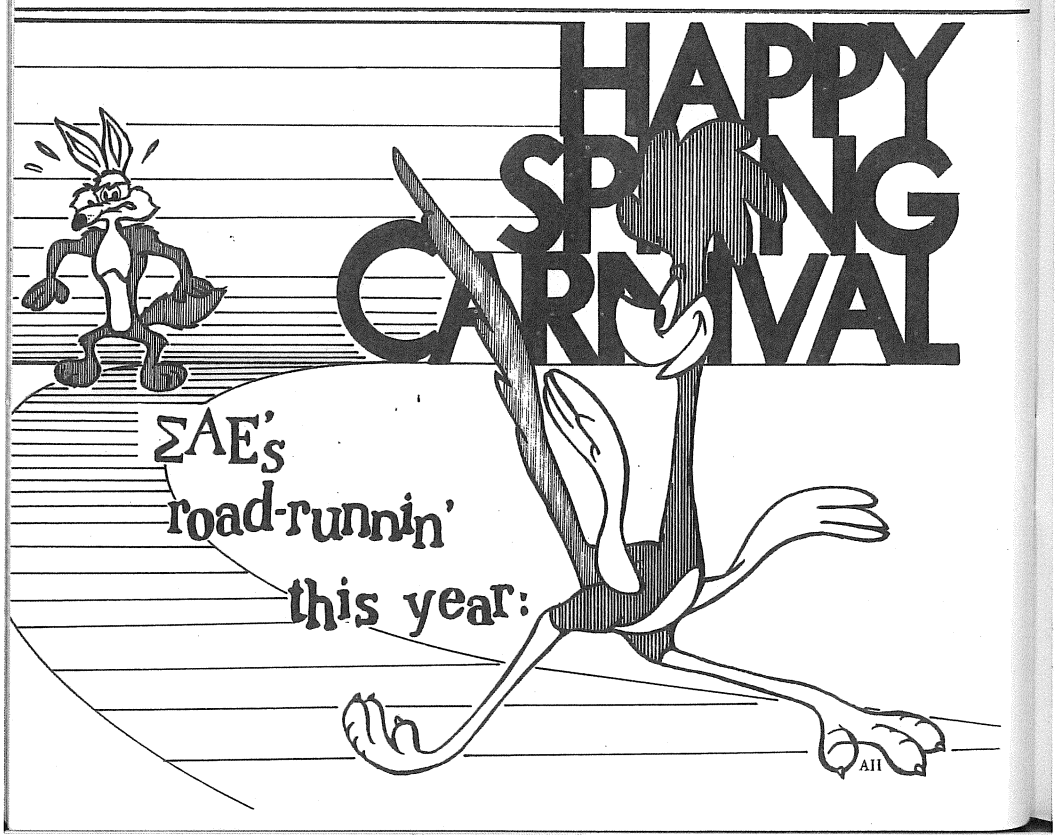
Inclement weather:

1. The judges may cancel the race due to inclement weather or insufficient course protection.
2. If the finals are cancelled, the winner will be decided on the basis of preliminary times.



CARNIVAL COMMITEE

Alan Witchner	Chairman
Les Hough	Vice Chairman
Virginia Cannon	Entertainment
Bill Benthal	Midway
Jim Wentz	Sweeptstakes
Randy Wright	Publicity
Rich Steffens	Program
Dick Immekus	Activities
Jim Figura	Treasurer
Barrie Dinkins	Secretary
Andy Hickes Marilyn Walsh	Graphics



SWEEPSTAKES HEATS

Preliminaries

LANE: HEAT 1

1	Delta Tau Delta	_____
2	----------	_____
3	Tau Delta Phi	_____

HEAT 2

1	Alpha Tau Omega	_____
2	Sigma Nu	_____
3	Theta Xi	_____

HEAT 3

1	Kappa Sigma	_____
2	Phi Kappa Theta	_____
3	Sigma Alpha Epsilon	_____

HEAT 4

1	Beta Theta Pi	_____
2	Pi Kappa Alpha	_____
3	Dorms	_____

HEAT 5

1	Beta Sigma Rho	_____
2	Dorms	_____
3	Delta Upsilon	_____

HEAT 6

1	Delta Tau Delta	_____
2	Phi Kappa Theta	_____
3	Theta Xi	_____

HEAT 7

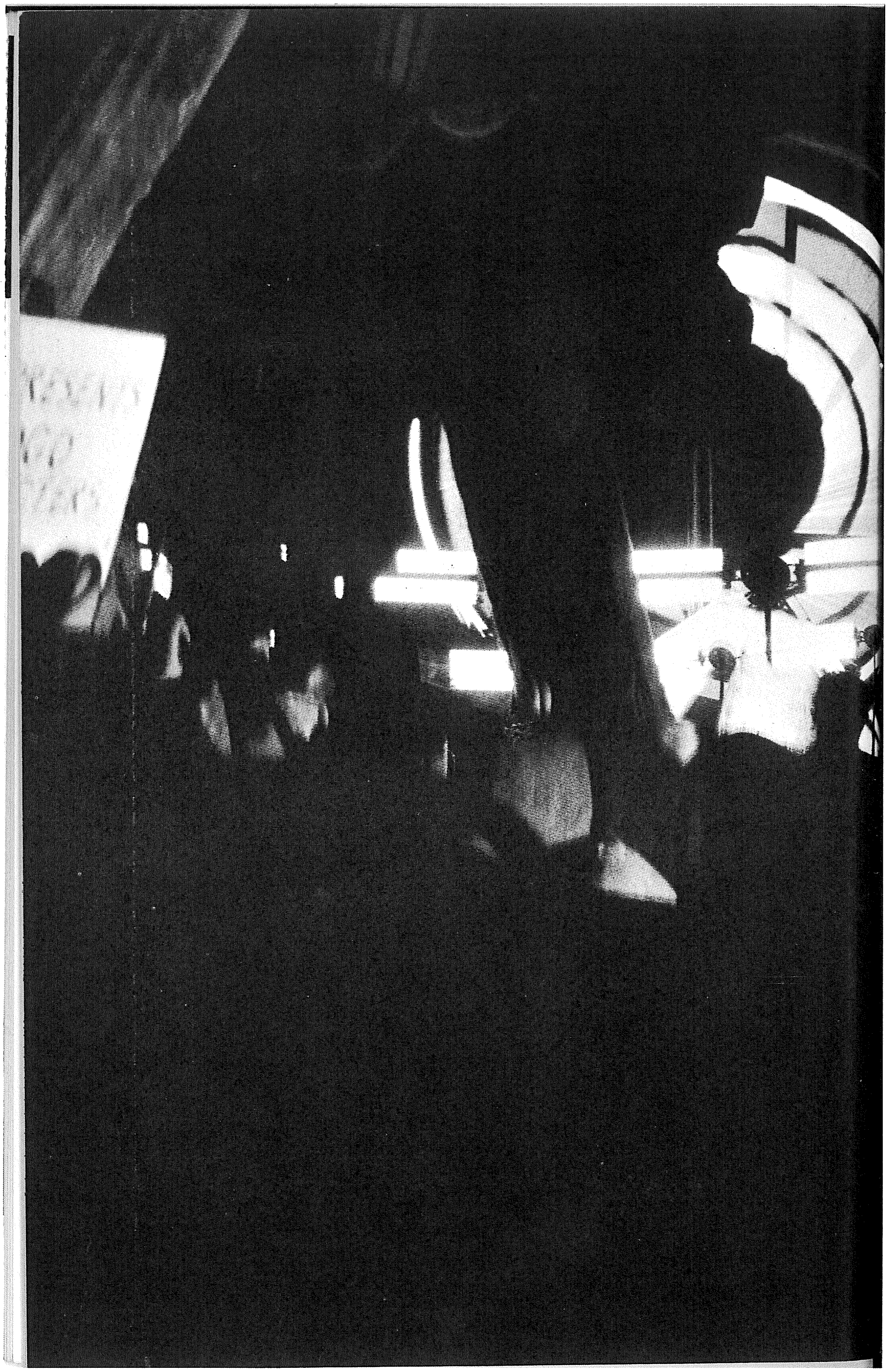
1	Beta Theta Pi	_____
2	Sigma Nu	_____
3	Tau Delta Phi	_____

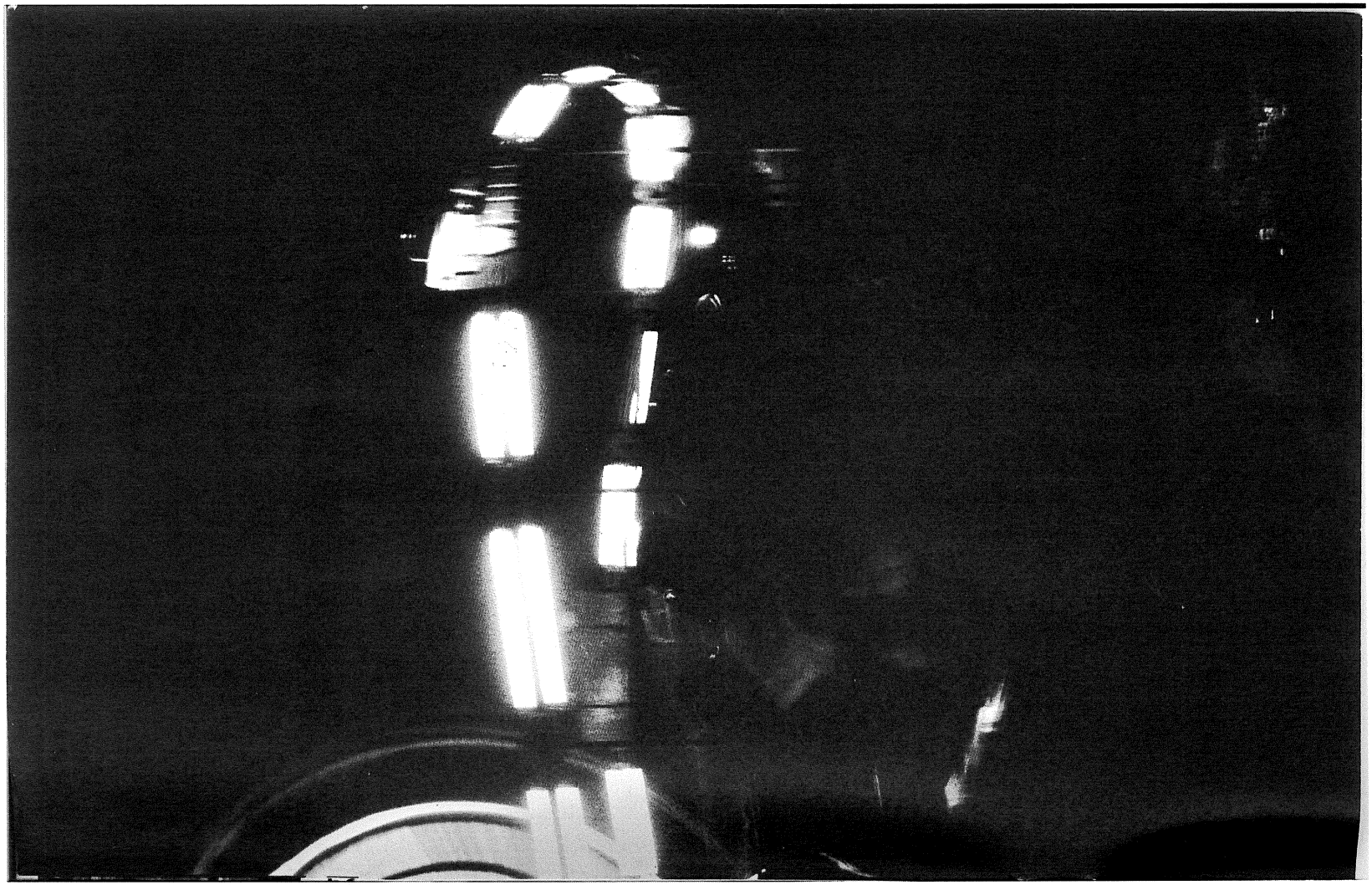
HEAT 8

1	Alpha Tau Omega	_____
2	Pi Kappa Alpha	_____
3	Sigma Alpha Epsilon	_____

Finals

CHAMPIONSHIP HEAT	CONSOLATION HEAT
_____	_____
_____	_____
_____	_____





CARNIVAL SCHEDULE

Friday, April 26

4:30	Sorority skits - Gym

Thursday, May 2

4:30	Dance on Midway with the Groov-U
8:30	Queen coronation and fireworks on the football field
8:30-12:00	Midway open

Friday, May 3

7:00	Design judging
9:00	Buggy races
12-3	Picnic with David Green performing on Flagstaff Hill
1:30	Call Day
3-4:30	Sorority relays and egg toss on the cut
8:00	Concert at Carnegie Music Hall
9:00	Midway closes

Saturday, May 4

9:30	Elimination Sweepstakes
2-3:30	Plank joust behind Morewood Gardens
8:30	Dance in Skibo with the Drifters and Jack Purcell
9:00	Midway closes
11:30	Awards-in Skibo