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JAMES A MICHENER ON OUR PUTURE IN SPACE-BUILDING A TIME MACHINE-BRAIN WARS-TECH 2000-MULTISEX SOCIETIES-SOCIU-TWO FIRST LOOK AT SHUTTLE FUGHT FECK

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Space Commentation demonstrate to support for MASA true election year by donating to the Winnig Fund and continuing the exploration of Mars *

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CHAPMAN

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The American Institute of Aeronautics and Astronautics is sponsoring a speciacular display of technology and a cost hardware in Baltmann file moth The exhibition department in Pallace In approx 2000, where the international Global aerosphane and the international states aerosphane activity of some 350 aer

The monthin Fairth ookiners, "Ecologic (rogan Hi, Jarovskiels by comensation specialized): Reisning Ack meaning Judished The Saking Ack meaning Judished The Saking Ack survey for the Netional Academy of Sevence and Treparal Towers: The response which has pust been Netionack by the National Present Councol. Workington DC In Driver Myers discusses the despresence on Categoria Special Sevence and Theorem Special

Although we cannot yet control the engines and messes required to make a time machine, we know the principles behind time travel. This is what physical and incence write (2: Robert J. Rowers). CARACINE

says and in "How to Build a Time Machine" the good doctor provides a Ahle defails it starts on page 22. Ara varial complement for Torwards a tradition, we present "Time Travities", a struming collection of organisati (page 966). The fits painting: Ang Dower, whe collatorative effort of two arises. Rechard can Cohen and John Towniey. The antists work from their staction Columbus. Of two and how done covers for Havey Metal magazine and Delin. Are and Science is.

Crem is May factor features wropes for Cash (Jose and the Elevanov, rapps 60) and Francosa Canolo ("Some of My Beg Finands Air Athenicans," page 1021 The finatiolis about elevalors and what might happen (rjourne not more to one Camora story is a gim for in which Arneticans, have become viscals without rights in their our country.

Finally economic Hazzi Handirszni decomen alternative latures in this month s interview (page 86), and aerospusce engineer Stan Kent makes a pike for the Weng Fund in "Tirst Wood" (page 6).

We is a phased to arrounce fail our profile of astronene (Saynhen Hawing (The Ward of Space and Time by Demise Owebsey, Netroury 1998) has received the 1990 American Instatuse of Physics Averand Ta Journalem This prehippion activities of the Instate of the end years to the one article that beat endines the accesse of physics to the Isamar CO



COMMUNIC/ATIONS

Ground-In Dirt

In his account of Leon Ledeman is appearance on the Phil Denahus show Phople Pohuary 1980], Dick Toxis writes "Oddy enough the high-energy physicst proved to be a big hit with the ladest"

What's solodd about women being interested in physics?

Undoubledly Them sums a time when an interest in the physical world was considered unlockles. But newsdays an understanding of particle physical is a must for getting out really ground in det. Jance M Fillip Los Angeles Calif.

Dock Transa weaken if your, in remeet my ockmm my unterse buil (add mich four o add the at hypotect that all home the in provide Damhane community) (balante doctors), built postporter community (balante doctors) postporter community (balante doctors) postporter and the postport doctors and provide the postport doctors doctors), tables allow more allow and an early more providente adjulante and provide the postport doctor adjulated and postport doctors adjulated and and postport doctors adjulated and and postport doctors adjulated and prises the evolution adjulated adjulated and the evolution adjulated adjulated prises the evolution adjulated adjulated and the evolution of submach postports the evolution of submach postports and the doctors postports

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All for your ground-in det 1 d recommend adding half a cupiel antiquarks during the imme cycle. This will annihilate any stain within 10²⁸ years

Paying Through the Nose

Every set Enshed reading the article by Scot Men's entitled "Prove: "December 1979) and feel compelled to make a few comments

First of all the so-called \$10.000 perief offseed by Mr. Philip Klass for proof of administrational UFC weeks in the twenhold beinary is a bot incl. a price. Those of us ubliques which have based with beil must pay Mr. Klass \$100 per year up to ten years, sig parts his promise to pay us \$10,000 should an demonstrate such UFC proof as long as we both me alwa

Consistency that Mr (Nass is about 25 spars clater has 1.1 measurable) before that the proof will come at the next tan spars are not here is madely paid the times Wr. Kisso is reaking title. Mit has several propelling the proof is has several constroly will have the same value as Approximing Europeans and American Has to visiting Europeans and American Has states is not indue to about 50.

Exercision all breast factors into account itsok tim up on the bat i believe faminght and i'm willing to back up my behall Anywey is great fun and a time conversational topic

One does wonder however why Mr Kless excluded all but the twenterh century from the bet is he not folling smarthmen?

Arlah K Andrews Indianapolis Ind

Hommoly Peace

Integration the item on pathological (Continuum, Focusary 1980) I had begun daming plinies to develop the Introductions Bunal Carpenaton: Why for goodness take, spend 50 000 to give creanitated remainshelfs in no Earth orth/F ENASA regrets 51 Semillion for score of the spencargo had of the speno shudje, why not take a leader but on surrootate/?

Is the comparison of the second secon

DAIOGLE

FORUM

in which the readers, editors, and of the editors. Letters for publication

The Good Life

Underground Lienuary 19801 by Mike underground homes. Fuel costs are going

I would like to obtain more information or together with blueprints and diagrams

Church Street S.E. Minneepoint MN good sources Maloalm Wells P.O. Box 1149 Bounter MA 02521. John Barraco

The Voice of Ressort

macie, eredicating several killer diseases ungrateful 'shock hoops of gromence' difficult to see how this small myopic group could ever "destroy science, simply No DNA experiments

Rulon Hacking

Sheme on Ben Boxin using a national

meant to herroer research but to invito



prevent tracedies such as those caused researchers - to secure benefits to

Thops that Mr Boxs would agree that work logether by these methods to reach

Ben Bova replies it is fascinating to see

Civilizations have been destroyed by slogans in place of rational shought

and have drawn conclusions that disagree mobs that bother the. They are too easily manupulated and when they run out of one

As fer as ruppleer power is concerned, o the electricity for my home without it we would be freezing in the dark



EARTH

By Norman Myers

which are destroying -- king eff revocativy -- at least one peritor is minil apposent way day, each day of the year if passant invols contrave, we may lose one spoces per hour by the end of the decade is all, work in the possibility of winghes, at 1 million of the waith's estimated 5 million to it million of the waith's estimated 5 million to it million of the waith's estimated 5 million to its million passa by the year 2000

What is the basis for this dismal prognosis? Is the outlook maily this bleak?

In the past the Ariman train we than the comparation as well-knowned to packed have comparation as well-knowned to packed have compared to the comparation of the comparation compared to the comparation of the comparation of the comparation of the comparation of the or encode coactify here many i comparate from the coal document here and introduced to the coal document here existing and the coal document here existing and the here packed of the those and a large many and the coal of the coal document here and the the packed of the those and a large many and the coal document here existing and the the packed of the the packed of the those and a large many and the the packed of the those and a large many and the the packed of the the packed of the those and the set of the the packed of the the pa Industricts of species are actually bang pushed toward incrinction. The cause destruction of habitats by man's insatiable need for taw materials, such as lumber and memory.

Moreover, the problem is even more care calina Matek welvew Here accould Most thopcal forests owner less than 10 percent of the events to under contain 40 to 50 percent of the winth is species. These forest net being dischaped on an alloring table forest are underkleigt to autivation their present form paid the and of the operatival are discharged on the and of the operatival are discharged on the and

Unlike temperater forest species which as far less attundent toppose/livest species find to have specialized ecological wavements or set limited to habitas statulog just a faierhundhed isputer klometers. This feaves them achieves ly subcaptible to astimation ance there environment thas been destrieved. This faish wave of mass extractors is stready occurring in the carlinguist of Southwest.



Types are among the andangenid species we are losing at the rate of one par day wach year 14 OWN Asia a badogidal tressure house to the scientist and a commercial pold mme to business interests (Smiller); ecosystem distruction imperia other species-noh habitats, such as coral reefs and wellinger].

Martis domination over creation is a wholly new situation. It implies a total responsite line a consideration of how evolution works to create the diversity as beneficial to us.

Chief of the apparent rules of evolution suggests that an outburst of solutions interview in a solution of specision. The process whereby hav special come into evolutions whereby hav special come into "coological ining special" of special entitience previous species to coccupy them And with these new norther will come the * simulation (for specialize).

Unfortunately the opprents that occupy these reminities are by devinage capacitancial, pioneeting types We alkely have rearren examples of these indexing these reasons are the opposite coloring species in our immediate elementment mit, speatrows activings coloring the second length of celetingsment allow all have and celetingsment allow allowed the production of protection that keep these experimence seconds in these

One comparing insulator for assung wild species there intrinsic occorring to kilos. Of this 1 percent of AI species that have been investigated for their occorring in wildle many thousands sileady make author communication for med one and industry. Scincton of the huge, unaxiegorized and uniform quantities of cellular proclubes from reaking a

For example, we call three which of the existing 250,000 plart species — one titred of which are adolete — may make a substartill controlution to future deta harmone traver used only 3 000 of these text that the second plants — rotably ince, corn what and adoldating — phasefly account to 90 percent of the foce we consume cally A larray constantion by the Marced

CINEMPED ON PHOE 125

GALACTIC GERMS



By Dr. Bernard Dolon.

The notion that Earth was organally seeded with long organisms from opace has now taken on a modern gaze. Sin Find higher the empetcosmologist has invised the theory to organ why unvelocities unuses arrive to clause air went to fairs.

Discoast from Space which Hoyle has writen with Professor Chandra Wickramaanghe, is being published in the United States in June The book is destined to cause a sensation because of netward concern over the origin of novel strains of influenza Doce Hoyle provide a convisiong answer?

In this earner work hope theorem of that come 4 billion years ago concerns termed protoctes substances to our planet. Then incomentational baceglit fills integri bace in a second time of the grant point is accounting for intermittent ranges of such infections as influenza. Includes, or elevant the common cold? All this point the stary takes all into what most microbiologistic vegatod as source factors.

The main thrust of Hoyle's argument is

That cultimates occur yast as if the interceber emponetative ensineing occursicative and werkcaby installed of thereing ensities and the ensities of the ensities of the college and schools in Card II. Waters for example comes includers: Investment have base manary affected by risk agrounds while others have included randomic as infections and teaching and controls intervised and controls.

Critical file hypothesis toos on three partis Frast increases auditant bisente radation mouter space Second ver understand prefactly wellhowmen mfuncta viruses ainsi, by ginistic troombrathor among ald ones. This is is nacricavuble that miscorganisms generated in space whole bis is a expanding ingenerated as to made the human expension fruid.

The fing objection can be answered, nor just pleasibly but devestatingly Bacteria and viruses have highly efficient mechanisms to repair damage caused by



If consets farroed the first guerra of life to Earth could they be present-day camure of decess? 26 Other

utiliaedel light at waxiengtre treg donort experience on tanh Buit to argue ao the alegtines do i thet these worked to sustain incrobase bidhom the planet acquired an atmosphere waxies an important point flager insuland. They have after i wax no larger insuland? Holyde socily. The machinery assis ao monotes can pamely point to Each

The atomney teams of the second decision argument to all of barging provide the first of the all of barging provide the first outper to all of the means of the first outper to all of the means of the second teams of the and the second teams of the and the second teams of the first of the second teams of the first of the of the first

We must take the third criticismments where the second second second second second second based on the second second second second second second peritod second sec

Nanethalves, the psictucal repleations of this possibility are disturbing if implement and other plaques really do arrespin in outer space, our skill in dealing with them subdoubted yout on stateme loundations than we had supposed. Could lear make us least inclined to accept such an idea?

SPACE

By Brian O'Learv

world hunder problem is said the recent report of the present energy crisis-appears likely

damage including possible szone depletion in the atmosphere. Drought

developing fewer strains of food plantal we

picolem an elutrar. The development of modern agriculture - fre so-called Green controlled-environment agriculture in creenhouses. And aproporties below Department of Agriculture. We say the

is tensible. The Russians have selated



22 DMM

successfully grown wheel and made bread. They ve done experiments in

A number of spentsts in the United States have investigated the feasibility of carrying on intensive aprocifulity in space class could be reised in closed acricultural alles adapent to optimo priories, where light temperature and mosture can be visited according to the requirements of a

instead of resorting to the duliness of Droughts pests, and pervasive disesanaliminated Fertilizer could be produced in space by using splar heal to combine asteroids The supply of materials conclusively verified, if appears likely that

Recent engineering studies succest satisfies solar-power sisters and send motenais removed from the attellow gravity

Even if sale the power closes not turn out



THE ARTS

By Sam Bruskin

A distribution in the sector of the sector o

Mathemi has contradently recognized the point of which artistic advances produces scientific response. He calls for scientific to recognize their responsibility to art— to make innovations in technology evaluable to the artist

At his home in Murray Hill. New Jersey over a been and supper this planeer of sound and speech processing gave Orms a short course in computer music.

By researching speech analysis central to automatic speech recognition and low chennel-capecity speech transmission—Mathews and his colleogues developed the first methods for which the balancement or communications

That result when we wanted to try a new phone we doth to toolly have to build it " he staat. "We could simply write a computer program at one end. The speech asseed through the program and you hoard it at the other and sort if had groe firough the set slophone. This work was functimental to the development of computer was on.

The basis principle for making computie-graining that greech or music Mortwey says, is the objects and assume Sound as a previous where in the off tag explains. We instruce there changes why hosparely for tag in the provided times each societ. On a computer sale of these measurements becomes a number so that a second's worth of isand a thirty toosand in uniform. By this half high cashed digital to avoid proside on the previous of the on-the pro-

This is theoretically the most attractive at care achilitage of the computer is munical instrument. It can make the sound of any instrument that events today or of any instrument that anyone can possibly concerve of making in the future.

In a Malfewar Imseediamship between made to the couplet listing dars right with its fixed John Resco. The Scholberg and cutting and Malfewar recalls: our the Scholberg and John During the intermentation Processing and During the intermentation of the computer cugrits to the Island schol months' Scholberg and Scholberg months' Scholberg and Scholberg months' Scholberg and Scholberg months' Scholberg and Scholberg The Scholberg and Scholberg Scholberg and Scholberg Scholberg and Scholberg Scholberg Scholberg and Scholberg Scholberg

"That was Music 1" the sags if thesis a smple program if thedring one wase one brittice ose founders, one etituschand decay—and produced to etible sounds Maheren continued to produce the Music program, writing Music 3.11. M land V which is in generatives today. Other pac



Authors interasting oncash to make munic.

ple started using for oppes of Music Y and started woking in their various places John Chowing, as Startood University developed Music 10 for another kind of computer Bing Various wwite Music 360 for the IBM 360. Computer itsuic was here to start

In ociating computer manate forfware the heat problem (Markews incountrated) the heat problem (Markews incountrated) 30 IROD days per account of source - tool and has the conceptors to write down cosh individual number that is contruct and the cost of the source - tool work of the source - tool control - auch is priori appropriate flag. Sources - auch is priori approximation downstrol - auch is priori approximation that structure and structure and young the test of the source of the source of the sources - auch is priori approximation of the sources - auch is priority of the source of the sources - auch is and the source of the sources - auch is and the source of the source or sources - auch is and the source of the source of the sources - auch is and the source of the source of the sources - auch is and the source of the source of the source of the sources - auch is an auch of the source of the sourc

There was enother major obstack to spenistring comparison music the question Washwell sund the read challenging the could be the psycholae state of physical series in a says we do not understand why sound waves produce a gaven imperation of induse with impolence indeptioners do not access understand the physical sound waves. The impact of a state of the same the impact of a state of the same the same the produces is not sound waves. The produces is not sound wave benefiting a saw and one two bares provide the sound wave.

"The have to understand sound and its effect on the sam is much more fundamental songe than over bakine. Mathews comments: Musicians of the Mathews comments and the physicians of the events.

Mathema boguti vorki on the singhtmacounter problem with French bompaels and physical Jush Claude the second standard to turned to unstantial standard to turned to unstantial standard to turned to social bas financial social social consistence social bas financial socialita computer to social bas financials reporting at some transpectiones the social of a some transpectiones that were institutionautications financials (based to the social social social transpectiones the social social social social to the transpection of the social social transpectiones that were institutionautications financial social constitutions financial social social constitutions financi constitutions financial social constitutions analysis by synthesis, and because of it we understand far more about normal instruments now than we did back in the Fitnes '

The state of the art in computer musice is which we issue syntheses "In the lots ten years paople have built special-suppose dights for usits that can that couple the calculate one second" have computer in any second the computer in any second the left of the computer in any second the left of the second second (ive a normal instrument that is use partners are and the second that is, a partners are and the second second partners are an and them and the second second in the second the second second partners are and the second second the second second in the second s

Antiop synthesizers, such as the well-known (loog, an out-off-dimentition) coloppater isstraments (Nertows) disconteasities synthesizer auxiliary (http://www.instraments.com/offloods/preview rend/pris an accurate, signal (activation of accurate, signal) (activation of accurate, signal) at vances pithas, West to modify the spectrum and thinker, and generations to stati and using the oeclisters of the beginning and and of noos

Comparing the second se

We there are "during ways to play inside part machine". Makwai cells one of here the organization was an end of the organization of the organization organization of the organization of the organization organization of the organization of the organization of the organization of the subscience of the plass the within score of the composition of the organization persons the busins and bits the instructions persons the busins. This is usualization performed and the full full business and performed and the full full business and performed and the full business and the organization of the organization of the organization performed and business and the organization of the organization

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muse-making considerations are more instructions, Multiversites, but instructions of Applications and heat constraints of Applications and the applications of Applications and the Applications and applications and applications are automatically the the particular simplication automatically the the particular simplication automatically the the particular simplication and the applications and the applications are transformer many, the Stateback constraints and the Stateback constraints and the state transformer and the stateback and applications are transformer and the stateback and applications are applications and the stateback and applications are vector and the stateback and applications are then applications and the stateback and applications and the stateback and the vectors and participations are applicable and them.

There is another manifestation Mathews calls the conductor mode. IT amanged an electric bation if you will, to control the computer Many of the functions of a conductor are accompliated with the device. It sets tempor and balances the voices I goes through a schedosal phase, it puss the right information in the mentory—information a conductor could's put in during the performance. The transformation is exposed, in control mesoner. Once transf, it may be not that respect Tomo transf, it may be transformed to the transformation is exposed by no in that

Mothews also invested a muscularmachine interection that he calls the social at 3-9 concession devoes "how he the antheor of this two foot necranglia like a normal durum but the impact descrit produce a sound interest. C produces three electrical organis Theorem puter generative like sound from the three exercisi."

One signal is proportional to how hard one hits the drum "Usually! use this signal to intense a note. It does not the tact that the clium is hit add determines how loud the note should be. This is the indher radiitatal use. The hard other controls are

The Schönberg was good, but the Schrabel was awful During intermission Pierce and I looked at each other and agreed that the computer ought to be able to do better than this.

the X and the Y coordinates when you hit the drum i usually use these locators the thritee of the sound sengr played, i use X is control the docay smoot the redde ink on the right. A clackly stable y and the left, anged Y use Y to control the anchrone is of the inches II in the drum at the too. I you do not be a stable of the control of the too of the too control of the control hear the bottom & Shod uses a mooth sound

What is requested about 4" The pitch The drum is band liketimpain ill car play different pitches. The socies just ano the computer ahead of time, as a sequence of pitches. Each time link the drum i get the heat note: in the requesce automatically

There is a philosophy administrated task isses behnd this sequential midmiss, and Mathews deterstari. Plent, in the mightly of muscal sights, as due of the platienties the performer has no leaders booth file missipling the picture controller has specified, or half booth is specified, or half well it specified toward file sightly be performer had no control your he should in theme control your he right, lefts give the pitch control to the camputer. The devous wey to do it is with a sequential control microsimer and a score. So fair live only built this drum a manaphone metaument. But therk about sequential control of paches applied to a polyphonic value—a whole orchestra of vaces?

At the heart of this science-art interface is the relationship between the people motival diatheeit, the sciencial, tas worked extensively with maricians and controperse. The himself is a navid violand, and he etyps demonstrating the bodiese electror with mark to developed

Think the relationship botween a scenaria and an arbitrican be a wery presonal one. For some time I worked at RCAM (Instable for Research that Coordination of Acoustics and Nataci) in Pranse, with Peren Boules: Their instatuto is a mixture of massies and scenarios. and through their live come to understand make the adhesing between these are since of second.

It contents what one slowing form the Sourthest in general get to too out of solving potbalans, discovering semanting the source the world of the the source of the world. The the source of the source of the the source of the source of the musical methy the Source of the source the source of the source the source of the source of the producer table has source or unable to discover compting to both cases.

Where will this relationship of musician and computer take us? Will the computer, the tool, shape human forms into more machine/ker imaces?

T don't think the function of the computer will be to depend all music." Wothews says. "I trust that as a recut of the computer's facility propie will be able to appreciate music more.

Computers will add a new dimension to music especially the home computer (it will be achieved years to play so that many people who otherwise could only latent to music will be come active micropolishment of the home computer majorit

Automatic speech syntheses and seechimograms, too also charging the subporting balance matchings and using scale magnetic crusis that maken pass the magnetic crusis that maken pass that so build powerful and practical speech moggings. Matching particular, communicab batwent passes and communicab balance with a solution communicab batwent passes and communicab

HONEST ILLUSIONS

UFO UPDATE

By James Oberg

The maps difficulty in explaining the UPOs same by howing some to be clearbreaded and clear lead wheneves its There are handleds of proster and explainable wags in which becifie can be loaded by there can stemates the stores that come and it leads the UPO signed that emergin the where can be note be drawn?

In the local J. Aler Hyreks: Catala to the topological sector of the sector of the Hort topological sector of the sector of what has a sector of the sector of the Hort catalant sector of the sector of the sector period and the sector of the sector of the departer to be a band fright linear departer to be a band fright linear period catal the National Linear departer to be a band fright linear departer band a band fright linear departer band and band fright linear departer band and the band fright linear departer band and the band fright linear departer band and the band fright linear the depart lines in bot of experiment in the band and the band fright band fright linear the depart lines in bot of experiment in the band and the band fright band and the sector sector sector the band top departs and the sector sector sector the sector sector the sector sector the sector sector the sector t The plane which admitted ylocked quite thange-time ran angle soccare a UFD because according to the report the permase microal classical that approximately an additing the entre UFD implication and additing even the most commonplice eightings into becapeutications. This tage soon exappoint admitted in the site of the additional social additional planet the provide the site of head the provide additional head the provide additional head the provide additional additional social and a site of the site of the site of head the provide additional additi

The believers no stifthat their phenometron is well because hundreds of high quality eventhals reports and dozens of photographs and that have not been express as hower. But photogtrafy argent Poblet Sheethin claims that it has proved UPOs are not if then people have ont to believen infiniers to

The evidence for fair as is at least as good as the evidence for UPOs, Sheether has written longue only partly in cheek. "There are tooks full of eyewithoss reports and photocraphs too

One of the most arclast pro-fary scokesmen was roted British author Sir.



UNINGAIr clouds, such as this one near Mount McKinley are key assisted of UFO muperception

Arthur Comm Dayle the creats of Startical-Halmes Dayle works The Comma of the Reness in 1921, claiming that by all laise of scientific workers the existence of life orestimes in gauge clothes, playing perspace, could not be legitimately denied. Shaatler needses to any is monokulous shoul tense but he has been unable to persuade many UFO halfs not bolievem influence.

Example A second or makes: Philip J - Klass has also been rout-roly seting of multi-register been rout-roly when UPC begins in rolds insubion and uPC register in rolds insubion may UPC register and the routing the three-himself into serious investigations of whetever-register as the best classic three himself into serious investigations whetever-register as the best classic UPC classes has the best classic UPC classes has the best classic uPC classes has the best classic becarre a parameter and have put UPC process becarre a parameter and have put UPC process and the process of the process of the second parameter and the process of the process and the process of the process of the process and the process of the process of the process and the process of the process of the process of the process and the process of the process of the process of the process of the process and the process of the proces of the proces of

With the death of astronmer Donald Memory in 78% faces has energing to sho hatten's lakaring LHCD alkapte. He source thatten's lakaring LHCD alkapte. He source the privid amanging that the unorthoods points of level in the animative like investigates. LHCD assessment desply that might othat instance he animative like investigates. LHCD assessment desply that might othat instance inter shoomsooks deserved in the observed in the source concentration your in the goneral volume more of the lapse fibality of levels does by pro-UHCD excents.

¹¹ EVPT Attemption with events is not assuming the transmission of the second sec

CONTINUUM

A "MANHAITAN PROJECT" FOR ENERGY?

have the Acade imposed there of interport on Progen: To renergy. The was an amouncement Progen: To renergy. The was an amouncement Manhatan Project who renerges that waterines of World Martil Subchraft and project debated on watering and thordy - these subchraft and project debated on constructing a landar for subchraft and project debate on constructing a landar for Naps: mgH debate a invicent weation first "storing to mean and some bont

These for an oway model of half where ended in the second in the end of the second in the second interval is a formation of the second interval is a second in the second in the second interval is a second in the second interval is a second in the second interval is a second interval is a second in the second interval is a second interval interval is a second in the second interval is a second in the second interval is a second interval interval is a second in the second interval is a second in the second interval is a second interval interval is a second in the second interval is a second in the second interval is a second interval interval is a second in the second interval is a second in the second interval is a second in the second is second in the second is a second in the second is second in the second is a second interval in the second is second in the second in the second is a second in the second is second is second is second is second is s

Has the Linked Shalas were head? Since Neen's call for call in call subservice we have been an abuming increment in our digend, ence on imported of allecting our foreign paicy and deviation and protect data per today. During those years the ACC became ence on the sub-Network and the common weight of the Every With analy have change of became baget more can be rearry. In the subset in the now a section monitor that as is for by them the out Methatian Poolation.

It is cortainly late in the game to urge the President and his advisers to puestie a more productive course. but it will never gat surfare. What can be learned from the Manhattan Project is that scientists work best in a climate in which they feel urgently needed and where their technical needs are quickly mit.

When Character Spacity-mine Minister using Audional Carrier subscription in 1975 association, In Volter Street Reservice with states of stage and screens was abbreaking by on Alvertion men of accessible Minister and Minister Street Street American angle attergy physics, space Michiology and Is-American angle attergy physics, space Michiology and Isminister angle attergy approximation and the stage T and American a dishedular and Street Street Michiology and Istimes from Hollwood Gener much direction from Integ IP Take to the Street Minister and Street Street Michiology and Istimes from Hollwood Gener much direction from Integ IP Take the Street Minister and Street Street Michiology and Istimes from Hollwood Gener much direction from Integ IP Take the Street Minister and Street Street Michiology and Isstreet Minister American American Integration (Street Minister) Minister American Integration (Street Minister) Minister American American Integration (Street Minister) Minister American American Integration (Street Minister) Minister American Integrati

The very best incompanyment in India 42-bit work of courses of a loconer buckmann program of the uninformed courses of processing the second second and the second and courses of processing the second second second second and and the second seco

Function grants in to enough writers interested of the contract of the contrac

Neon was climitated from the goal of applying the leasers of the Apola Project and the walver Markhällin Project to our energy needs. These leasons soil instant the same gonorous transcring under gualitied scientific decision without recessive beareursche recenting il we hand than it may public all variants "Ne can do estratochrany trangs". We who were withing Markhall and Project that that en can - JAME 5 WILSON

CONTINUUM

THERMO-SKYSHIPS

Committees of the future will inde to work in birmps shaped like thing success if a Briesh company called Thermo Skyshesk Lad, has its way The company is thy rig lobalismovientcal-biooft-and land no whicks. Although not decagned to appliant lang-hauf amplanes the Thermo Exysteps, with a maximum speed of 90 knows may actually not use taxet ing ame because they can and within selected of be after this or the outskins. The theckstonary witholds at teach one simple accurate the more simple accurate the teach of the outskins.



Healing filled convestor bimps in the shape of lightg searcers may one day sail through Brook shear powered by turbapeap engines.

comparing aspaces of pothbilitips and helicopters, that will be used to transport passengers and cargo over short distances

The Thermo Sepainp 100 will use helium for its more lifting betwer and turbopeop exgmens for thread and set bookspaces of autyprographs the Sepainp 100 has ever one-entronal sepainborned schapes and thread sepainborned entropic control seen at an appendix set and an applicable to ground for locating and usbasiting as the outdoylest pamp. Resengans will be assisted airbund the perphany where they can oncy the scening By associng the traffic congation that that will be of transportation deate. Themo-Skephper Ltd plants to athend passering who approaches a quet and efficient form of taxes, eyes of close look lies a without prop from Forbidden Parse. John Ib a Without

There is a hapaful symbolizer or the fact that lags will not wave in a lags will not wave in a

-Arthur C Clarke

VEGETARIAN PETS

And now radical chic for the health-lood set, vogeta fan dogs and cata

In a faceful socie of Harwinter magazine among life add for dolernes and vitamin E a column by welarinarian Richard H Proatm explans how wepformers can wean their prosition animal serve with out subjecting them to physical sobjecting them to physical sobjecting them to physi-

Dr Philaim noise that degs need 10tmos as much protein as humane do per pound of body weight catas need 20 times as much So to prescribe a catefuly belanced dot of railed oats blears, command accilioere, bran and keip powder wincig obre things

(California) where there are a lot of vagetarians, com pared with the rask of the country, Pilcarm said in an interview. I facatimended the (pat) deit to chents of man who are vegetables

Beyond the matter of conscience, however, Pitcam science, however, Pitcam cauld free conventional prodem sources for people While meety perfloads oo cupy an enter assle of many supermarkets there is a growing affortage of highcuality protein for surgers.

- Sheri Ulemond

We are such ldse men when the stars come out --- Nemster Heandom



Now calend, upp of call probably prefers horsement or tune, but one supplif explains how to investore them into weaper dockers

EDUCATIONAL ALCOHOL



"The rangulator

RED STAR



of avoilar energy (1907) | ourset! After the hol asset

and the largest owsang MHD - Jeff Hacht

CONTINUUM

SAFER SURGERY

For certain linds of highrak electrice (nonemergancy) surgary choose a regional hospital whose 200 or more such operations are per formed each year and you il have a before chance of surwring. That is what is such and Das John P Bunker and Wath C Einhawsh of Stantord University found no was San between the number of spectrons and the deep of spectrons and the deep spectrons and the spectro spectrons and an uncerbid register to and an uncerpatients



blooks surgery gives you tree to make a choice, and the astrum be access to be those hospitals where many operators we performed

gested, anyway, by a study done by threa California researchers

The clears refer in logitate with more expensatical staffs is about one-quarter lower for open-local surgery visecular surgery occonary bypass, and prosterie-gland surgery than is those hosptals where fewer such open. host an culmed out

And the mortality was in total hip-veptacement operations is about one third tewer in hospitals performing 50 or more each year.

The study by Dr Harold S Luit, of the University of Celifornia at San Francisco

R CAN

The two-year 640,000 pc tent study asummed the re lationship between surgical load and montality for 12 opembors at 1 500 hospitals — Alton Biakoslo

I can accept the theory of reletivity as little as I can accept the existence of aloma and other such doctrans

- Einst Mech (1838 - rúné), protessor of physics at the University of Viewns

Renders to stand on Hore that hopes to lough procent

-- Triomas Fuller 1

PLAY BILL

Last year Enkagy Gen News, a trade publication islational from the instronol islation in the instronol protocularity of the instruneous performance in the instruneous performance in the instrution of the instrument of the instrument of the instruing data the instrument by described as primitive instal daranty for early instrutional manual instrument instrument instrument hearing and participations (instrument in the instrument participation) in the instrument instrument instrument instrument instrument instrument instrument instrument in the instrument ins

The highest electricity to lig dog the club that page the real for altract everything the Naw York Yarlees. The cost more than 3350 000 a yola: the result of high electric ratios and a lack of Agginesize energy manageties. The pager tourid

Interiowenergy champion was the Chicago Cubs who rely on solar power because Wogley Field has no lights. Total electric cost \$22,000 in 1978

Some cities such as the hinkschaftlan Hinks have instruments of computational instruments and instrument Alter last summer s galatine criss al termo apportad club energy coordinators to upged e in formation and systems. As with the last of La progress a stready but slow — 8 D

Fooling around reach alternating content is used a weath of time. Notiod/X also Lever X stabilities and a spack as a balt of lightning. Cirroc summer is safe.

Akola Iksla

Typo don trahaansi over and over, you re going to be surprised in space. And the surprised main out three the dead one. We get hadde the best made that, by trying to surprise ourselves. — Bre Deads one.



2x8 prister words up in "solar Knested" Wigley Field

CREATING OLD LIFE IN THE LAB

Excense of Me on Earth 3.52 billion years ago the ofdeet yet come ocross has been found by a group of scientists working on a spe owl project at the University of California air Los Anceles



Scientiste wit alternpl to inmutate Creation In the cigajoment

Priteen scientista from Inva countries are participating in the Precambrian Paleobiol ogy Retrainch Project craated by UCLA professor J. Wilkem Schopf

Formal last summer the group has sort fossil humber to Canada Africa and Austalia whas the ovidence of 3 SP-billion-year-old stormakelaka (structures formed) bacterial long-ment) was decovaria of a chart formed bacterial long-ment) was decovaria of a chart formed bacterial songeriem was decovaria of a chart formed bacterial concellant and fissial functions, devocated be North Pole The Austaland fissial functions, devocated bacterial to obtain 70 contents of the bacterial to obtain 70 contents of the sond the obtain 70 contents of the sond bacterial for sond the obtain 70 contents of the sond the sond the sond the obtain 70 contents of the sond the sond the sond the obtain 70 contents of the sond the so morefassis ver discovered dated at 2.7 billion veres

We found morphological as well as less estable check ical evidence of the entromotides Dr Walars ead and lated the estigation dates These endomentary notes are fainty well pro served for these age but it (high rota be possible in the environmentary and integrate the possible in the call the endos datemarks the possible endos datemarks and possible endos and po

Schopl said the project which will formally end in August 1980 is designed to artister guastitums fundlamontal to everything we know and want to know about the – when and how it came about

Detection incomp and analyzing the default Percambrian fossils avaitable for spectratis will alterret to re-create the auity exits is atmosphere in the laboratory and pheno-ality age it to simulate changed that would have occurred over bifliots of years. They will also create and study liaboratory models of the mapphenes all other planets —Ahn D Status

What I His about scientists of Stat they are a team, so Stat one need not know their states: 1

> -John Wilmot Lond of Seimeston, 1893-7964

7 dan 1 know whet you could by sboul a day in which rou have seen four besuchul kunteda _____inter Groon

February 20, 1962

ASTROSTRUCTURE

Giganic orbiting "space screppins: of the future may not be made of metal but of "bengliato say chemists of Hughes Anoralit Company in California

Ine abrooppor Internadeveloped fiberglass medwhich internated by the out 5 ultraviolet tays in space sumeintaining fitransformaterial half the weight of alumnum.

The fiberglass a impose mode with a polyester rose which starts out set and story baccompliant and constant blasted by the constant blasted by the constant blasting of roler raciation. The subsence begins hardening whin a het-hour of exposure and becomes completely tim when as hour Enginearis believe the historelike majers in indular form can be made into a sense of beams gamedo. form mise wells platforms in space Such structures, build by shuffe construction creme, would combuild lative opermitions or pomaps reme, would combuild have opermitions or pomaps rems loads oper-tradeos to beam-oper tradeos to beam-oper tradeos to beams to be power tradeos to beams to be the tradeos to be trade

Haghes is outrently building a prototype arrien by three foot instant beam for evaluation by NASAe Marshall Space Flight Center, in Huntpolle. Alabama

- Lebhard David

Science & spectrum inslysis Attra stotosymthesis

Highes Alexan isotropic press tests away developed thorphile mesh which terraiess when basing to such visco joint over

CONTINUUM

NOSTRUM FOR

Modifierramean Seal haven

cholers. The sea has been



FUELISH HINDSIGHT



-Sétet Kerkerrent

cosid make a better one

SPERM PERK

Sounds wilkly but give speim a cafferie boost and they is sain twos each field. The endnessit according to an israel expert on fertility is a higher probability of benchrifty.

Dr. Joseph Barkey of Centod Erreck Hospital in Abile loraci a statiocally insertineeds 53 women with free parts semant to rein part calform. These were 10 percent group than in a control group of acmet antificably insertirised with unknaud sparm. Happing Latines from to these transmission to these transmissions in the Happing Latines from to these transmissions in Happing Latines from to these transmissions in Happing Latines from to these transmissions in Happing Latines from to the transmissions in Happing Latines from to Happing Latines from the Happing Latine

Knowing that callerin interferent with odi instatucian accentrate statistic, in the early 1970s many the stransition with server samples. Early experiments using built server showed that celliante causes energy to shift out of the speem backy to the taillies fagelia, which proper the speem.

Dr. Oy Schoerfeld, head of New Yok School of Meticane a fartility clinic and the Increase and the Construction to the research on collexing and human sperm, laid Com- Under the moto come. Under the moto back lake auth-four conside and the New Yoke subways. An unpreview statistic looks moto New Yoke subways. An unpreview statistic looks to beyowe

Or Schoenfeld hights to say about his Istank colletigue's work. Barkay size perments clearly show that catterine helps infertitie men whose unfit sperm can I make is to the overlain tubes whose fertilizazion takes place I would like io be dong work atong the same



ren secrie streke Abday Alle is a decididy unperfectaet somes" But unite interast somes" but unite interast somesti balon sumerous animal usta balone domg sussasch on humans

My accuracy amply been there the resources o do the animal testing choenfield says

-caune not

To Arif a main will be considered as disguishing as e in this day consider it lisguishing to ear one " —Andrew Carnegre peaking on an end to wer in

NATURE TRIVIA

Another installment of ecological emusement from the National Wichle Federation

 Wetentissical weinin tai water made imm sigair and packaged in plastic Once upon a sime they were made into the code of the match risk plant. The mote also invated a systep for some triviate, coughs and burrs.
Order plasts their humans. The Suman body hard 568 musues The categorian face mote and 400 muscles.

 More Americans die each year from bee stings than from snakebtes in a mooni year 4 was bee stings 25 unakebtes 16

 These is truth betand the phrase keep frog. A full-scale free frag car jump 20 times higher iten sits body length it would be as if an adult human male jumped 120 feat high. The English spaces has 16 Minutes in the functions are many as the quality is as the quality is as prevent of all alternative as protocol and an any space of the space of the

Ref travel at high speed as not possible, because pessengers, unable to breathe republicitie of asphyse

> -Dr Dionyaya Lacothe (1703 – 1858)

Science organities from concerty and weak eyes ' —Bernard to Bower de Fortenete



Befrete the to some ultraportal White we purply further body's days a mere \$50 yourses, she extended boats more than 4 000

CONTINUUM

RUNNERS' EDGE

Stock car drivers dont bicycle racers dont and so do some speed skaters Runners obvir doit, but e new study shows that maybe they ought to

We refailing about chaft og the racing technique of can reduce wind drag by 30 parcent

Kyle in an article in the Briteh journel Ergonomice claims that by using paces or 'rabbits' to sheeld an eventual writer the world thike or 1.500 meter record ocuid be broken by several ancorder. To do the would



Runners challing bahind one another radiust rend orag. Used acc cally clustering could live serverial scoonds off the twile record

cutting wind drag on a with cle or person by following closely behind another competitor behind a bibly cle on akates in a car or on font

According to a mobilit atopy cancillated by Cheeler R Wyte a professor of me chance and the second me califormia State University at Long Beach summers calin cut wind measures over 50 percent by (closing within five test of another unities who beasts the wind Even at the notest Kyte brys one in content rapure rol only the traditional use of rabbits but also eract pacing and previous drafting, which is rearry impose bie in open compastion

Exan so: Kyle says ia na sonal team with several world-class middle-chitaince tunners should be able to wer this factic with drametic tests."

You swill rener amount to very much

 – A Murach schookmester to Albert Ensites' sged ten

FEMALE SUPERIORITY

Genes may be the reason why men are hit with more diseaseal their women why men live about eight years lives on sweege and why they are more trieguant parnets of viruses.

Concerning Subjects in we opposed landses with in mark Controllations for any opposed in encoder for additional gradient state of the second state of the second state of the second distances of control second state distances of control second state distances of control second state and second second state of the second second second state and second second

mity may be a compensation they say for the suppression of herrismune culorities during pregnancy — so that the workark does not reject their foroign fatus — and so ensures the survival of the pregnant accruan and also the survival of the entire spaces — A B

Animatic which move have limba and muscles. The earth does not have kinds and muscles therefore it does not inper

-Sopro Charamont

THE CHEMISTRY OF OVERWEIGHT

It the extroverted yoly fat men loses a lot of woight frequigh a physical litness program he sign to become an informert, swai professor A H Ismail of Purdue Un-

A physical ducation specialist. Dr fornal says muscle training can alias the body is biochamsely and this in turn can produce peracriality changes including lass of fat person systemers.

People who and below lend to be gregarous and to how high chalesterol levels he ways. Dropping pounds through exercise quite (kely means they will undergo a periodicity metamophous and become intervented

Periods who based low in enciciant solution based low in enciciant solution based on gram bactaria informative minimator reports They also chosed graphic impose ment in servan cholesteol blood asgar and blood pressure – all of which be caree lower according to small – A B



Exercise can torn existovented fat people area introvents





Prime coverage of the nation's "super bowl of tomtoolery"

BY RICHARD CHAPMAN

san everyopiasi is the deem terms of the resultants eventosizing Rescents Calence and the second second para Belend them in the dem para Belend them in the dem para Belend them in the dem resolution of the second second second second second second the second second second second the second second second second the second second second second terms and the second s

a initial doi you only? Form one doce emmake a sense of inactionne boogs, the sense of inactionne boogs, the sense of measure of the sense here and the sense of the sense doc, which clear subgestion that the doc, which clear subgestion the sense of the sense of sense doce, the senser hermitik, signifiant and concrete, but the sense of states compare to the sense of the sense manufacture to the sense the sense of the sense of the sense the sense of the sense of the sense the sense of the sense of the sense manufacture to the sense the sense of the sense of the sense manufacture to the sense the sense of the sense the sense of the sense the sense of the sense of the sense the se

It's Ditch Day an eccentric yearly intellectual field day for the young gamuses who pit their

> PAINTING BY RENE MAGRITTE

considerable head thusdes against one another in a daylong tournament of wit and brawn. These are, the inchrouzawes, the same pack of whick kids whose sturts have behudiled gaber minutes of order ranging from the FBI to clarit or promittion.

Doch Jag kad es organis assensis obtaus: modest parsi i wilch understeinsomen breke into ha sansa i noome white Biscoouparts were of io a darg of elevation before freet same. Sanse then Dikch Bay law metkel da saw jo the Refette same uneverse of a Cateorhi to become a many classes were to save a link herbight fol classes were to save a link herbight bal notively an exclusion to pre-same students a chance to blow of pre-same students a chance to blow of pre-same

Effect bay in governed by an established set of rules and a rigid code of honor. The wmps must follow—to the letter—any instructions, posted on the sensors, closes, and they must gain entrance before the sensors referre at 3:00 PM

The values that three simula of locks or tracks, only doors The risk the Turke force stack, can be opened by anymense best of naces weapons. Galling with a but of force stack, according to one seturwhat is deal with averal. The apparts for inside grant according to one seture with a grant with averal. The apparts for inside the naces of the state of the rest as grant according to creat into a seture is come

The "Intesse stack must be opened by manpakating whitelet to the depart of the vace (electric, chemical, or tablogical) is installed on the door. This year an entire room would be transformed into a radio bitistope, and every close would relate to radio astronomic.

The hotor stack requires wrings to solve a writen problem or puzzle before opering the unknowed out. Is a clarined that the other enry way call for lazy sentes wit several years ago a senior deviced a quantum mechanics problem that into my wapt out protectionme but allow stymed a Nobel Proceeding of the sentence.

 Neptation as campus practical joint whoaly ensured outrageous acts against his nom the year. "I coald leave three neked women Columbian dope and a bottle of Sengrams and theyd still counterflack me⁻¹ Liver's bribe the year would be a hait easin coocele.

All BIS all the whore we making but share have been as the amount of the expect plays an uncertainty of the amount or the second second second second second craw logaces show the norm. Another anself break let by a macular writip molement Fragge, stacks the steel plate molement Fragge, stacks the steel plate molement of the second second second plates at the group of dissibility for the works and break letters both one we

Coverstains the weips are stumped by Chris Leels muscal door lock emitting an insistent senis of grazing tones. All in repeated attempts to break the code by serenacing the door with a variety of mas-

 One year a senior scuba enthusiast returned Io his room only to be greeted by a pool of sharks Another opened his
door and found a horse and a cow rummaging through his closet 9

cal instruments, a call goes out for any wrips with perfect pitch.

Across campus in Blacker House some inderdesamen discover ar erfore condor has been stackets. They crowd argurd is forge spropioacide Henglis and studies vivesing a halvey recentling a gant pinbal machnie- heatscrend with beer batfes Christmashote lights and Pachtouse controlladi. The wamps lear interity to a set of seconder instructions, hearing year been instrumed the tape will activitation.

In the adjoining domin a small yeal datamined group an already hard at work on what appares to be a simple honor struct. The ensure has left has physical pockdems tacked on this door. Simple innough year adjust cantal, along the provide structures adjust cantal, along the provide structures adjusted by after consuming four curricus adjusted by a structure and the provide adjusted by a structure and the structure and the base of two departs the memory and structures and structures and any structure and structures and any structures and the machine of the halfway.

But at Ruddock House this write are typing hard to panahata Star Cohris room it would be a distinct honor not to mention pressure to be the first underclasamen to break into the room of the serior class pendant By attacking the dom't a idealand system, the workshops to activitize a sense more the guarding COFF a doahang the way, they discovered another borns that Com has left them a charring to write a method to reflect loarners are write a demonstrate to obtain writehening part discovered the entert of CoFF hening and discovered the entert of CoFF ultient CoFF the unmitted write cathren faultening differ – thrown in got for leagte

SPRANING GROUND

Anyone who's survived four grading years at the California Instatuse of Tochnology deserves a two laughs its a deceptively peaceful and lash campus, where some 200 professors and 1600 students pender everything from black holes to the basic situation of matter

Add up the LQ is of the Callech football been and the sum exceeds the total number of pounds they weigh. But then, Callechs is immere are not being groomed for the NPL, Callech's Jat Propulsion Laboratory, which ciporates the sophistication instangaisentilithia are reverplaning our oake system.

Tech students also log time at the swamological lab monitoring creaks and grams in the earth, trying to pizzle out when the Big One is coming—the superquale that will see Californians treading water in the Pache Coeen

Callech autonomes scan the right sizes with their telescopes, including the 500-lan gain at Pilome – pathering light from quasars and exploding galaxies. Wet averance isoportobilities like these its oasy to see with Taches' axen out on Saturday rights smultang the fall of Rome invertient Reth older.

Callebra academic dentarias and is no isotana school (separta anexpany) and oracallebra et al. (Separta anexpany) and oraan et al. (Separta anexpany) and oradisers and school (Separta anexpany) school (Separta anexpany) and (Separta Separation (Separta anexpany)) person the school (Separta anexpany) person (Separta anexp

BPEAKTHROUGH

By microenerg, mounts of sand poor into the hall fort Pyka's room. The bank bolos wrips cowher their way through the first inteel plating, showing out the second layer. They know it'l be only a few meni minutes before they punch through the sets of raiload the and out no the sladgehammening sophomore its a pixed of cake

Several vectori statismis entra Bicchar House under an achieve with this scupped retain. "Depet thrus love lise, then do not signander time." Timeta a big proper weathing no time is obtaching the dataket hallway A using standing at the Plessing wandbar using standing at the Plessing wandbar nogle of a Plesticuse centerbard. "We re sure these is laiser detector so them, the shock

Access to an investigation of the data from the terms of the basis provided in the data provided the terms of the basis provided the terms of the basis provided the terms of terms of the terms of term

CAUBICKERY

The edgy of Pasadera basettes a munorbase do 1 evices to Data Day. It means as land 24 hours of pasas for Pasaderatina, A stand 24 hours of pasas for Pasaderatina, A stand of pasas of the General George Photowood to us created to collwair moain. Hours, Catelon instruction decard to collwair moain hands, getware rester a stand to the facility. Encounter had not down in a sea of well bracks, hours guite sum hour doministic memory and sum hour doministic facility.

Beedes annoying the neighbors with an occasional good-resilued prack, the studarts frequently engage in come clause with the harmed Pasadana police, who by how are throughly convinced that Califect students can ze into other dimensions at with This beers to be the only esplanation (beadea manh gail) for some of the amaging student canned.

Technes once surreptitiously hauled a full-sized E 84 pt fighter on droplay at Caltech through three miles of downtown streets to install i on the lawn of the ROTO commandant's home

Gent agris cannots and sculptures routinely vanish from their rightful locations only to appear in the countyards of Calecch dottes. Entenally original decostations occutionally materialize in the mest unexpected. of places. When a newly constructed sudionum resembing an emails weeking of the text to be deducted on campus a hype hole and groom appreased stor. It gazing seenely down at the assumbud digitings and onsity pattors who if pad to the buding. A gigatic Mickey Mouse complex withands sprouted on the men Datech clock towe another year.

Someone claims you ve bean tapping the professors phones the agent told a student who was a prime support as the culors

Oh no not the professors phones the

student replied "Trapped the Strategic Are Command hot line

Pot the next lead has the student pleasantly anglamed how had tapped into the SNC shift ine from a nearby an force bace to be advected and the student was worned in the shaken agent emerged to phone histopetons. Thes lake reported that sponilleant changes had been quecky made in the SNC communications evident.

If they coald get to the ar fulce, another group of electronic carries from Callech reasoned. Then they were ready for a tagget to be Nebranit a. When the tranburger chain that a promotional context in califorms in the years top Catchich studentia explaints al controls in the rules readgened as there computer to carrier out 1.2 million entries, briking Penald McDaneld contenue contexts to

DRAMBUIE OVER ICE WITH ELLA FITZGERALD



The future is coming. And with it will come at benefits for manking. And a whole new set of blems. Because we are a forest products com v. and plant seeds that take up to 50 years to come mature trees, Champion Internetional has think a lot about the future. Wo'd like to share me of the things we've learned with you... to help ou make intelligent choices in the years to come Here is comething you might went to think about

n the future, we may discover that we are not alone in the universe, and we may even make contact with powerful beings from another world.

How might that awesome possibility affect our view of ourselves and our world?

There are trillions upon trillions of stars in the universe. It is a cosmic light show of unimaginable wattage, and it is getting harder and harder to believe that we are the only spectators.

Amazing discoveries about our universe are occuring more and more often. Quasars, which radiate more energy than can be accounted for in earthly physics. Black holes, where all the normal laws of nature seem to be repealed. We are even beginning to understand what bappened during the first 90 seconds in the life of the universe.

While there is as yet no direct evidence of extraterrestrial life, complex organic molecules have been found throughout the universe. Man has landed space probes on only two planets-Mars and Venus-and the vital ingredient water was found on both of them.

Indeed, scientists have already derived a formula which strongly indicates that there must be many, many technological civilizations out there, and there are huge radio-telescones trained on the skies, listening, So it should not come as a complete surprise if one day an astronomer looks up from a printout and reports that someone just said hello.

The benefits of an exchange of information could be enormous. They might give us short cuts that would save us a few hundred years of Research & Development, They might present us with practical fusion power which so far has eluded earth's scientists (It could solve the energy shortage in a flash.) Is cancer universal? Progress report, please, And the cold? Is it really common?

There will also be a few problems. How will earthly religions handle the new facts? How will we manage to get along with an alion race that has a different culture, ethics, habits, expectations, rituals, and maybe even four arms, when sometimes we even have trouble getting along with the pouple next door, not to mention other nations.

On the other hand, maybe these differences will teach us something fundamentally enlightening about differences, and we'll end un getting along better with each other here on earth. Just that would literally be a gift from the heavens.

But the greatest fact of all will be the demonstration that highly technological societies more advanced than oursexist. Have lasted. In other words, if they've managed to keep from destroying themselves, maybe we cun too

You can learn more about some of the other critical issues we face in the future and get a bibliography for further reading by sending for our free brochure. Write: Champion International Corporation Dent. 200N PO Box 10141 Stamford Connecticut 06921 Don't wait too long.

Championa forest products company wi its roots plented firmly in the future.

We are in the firrest marking business Because we make our trying from the were planning-and planting-for it.



FICTION **JOSIE AND THE ELEVATOR**

Spolled rotten and prone to temper tantrums, she was asking for a trip to the ground floor

BY THOMAS M. DISCH

Tau shouldn't do that said the "Don't bother pression buttons Jose stace and keeping har last here until you apploaded to within its cape, for it meant to Jose pushed the alarm it didn't seech har a losson. You can't be inno She pushed it repairs She he gang to fourteen and to theen as a distator wouldn't budge furteen You're simply causing me to justione. Labould like to know

It wated for the life get to speek and, when she wouldn't produled her schoold are go up and down it didn't

said Jose, without seeming con- child ligo where I live, at the page I tounded, mixe bit surprised. After all like As Datalso happens to be where she d often been in elevators that my passangers want to go, there s no played music

an apology-and a promise that be sury Now answer my question you'l stop punching all my buttons (May time way leave You've been wented to said Jose not at all in an failven't noticed. It's wrong and it

Jose made no reply She simply building! This building stinks? stand up at the numbers over the door none of which was it Theo. pausing a moment to think site people who have to wait for me? Do

elevator closing its doors in young lady I is not letting you out of Why have you been pushing those

I don't need your permission. conflict. But I can keep you have as "Never mind supposed I demand long as ever I like So you'd best not

'And so you ditake out your resent ment on me? And on all the other

PAINTING BY KLAUS DIETRICH



"I don't care if it is on it shift So these " "On seelly? the elevator projection above

building. It keeps you warm in writer and you sat for denter if you clight have a kitchen to cook in?

"to an awty' building. Josie revalud petularity "I know what nice buildings are Hite You can't fooi me. Ny faither lans uptown in a penthouse, and when I m with him, I have my own bedroom and my gen bettroom, and the tub ran't old and velices

Those are advantages surely but they al cost money People who can't afford such luxures must make do with what they can afford. What is the doorman's name?

How should I know the? He's only a

"It sounds like yours just as ruck when

"Heis usually too buty to talk with me

I didn't mean your father. I meant the dooman What do you talk about with

I don talk with the dooman!" Jone sed

"You should Doormen get very bored siting about in their uniforms, they d like

Pto on doormen and pool on elevators. tool I want to get out of here. Right now

Not until you apologiza

Josia who by now was genuinely diskaught began to stamp on the souffed indigum-ailed floor, but the alwaylor was not the streatable result of her temper san

in Even when Josle carried out her threat

It was then Jose made a most unwise lifew 6 with all the folce she pould muster corner of the cape, was the elevator's proudest possession. No other elevator (it behred), however superior in other raclisinction When it shallered the elevator and then with a tarrible roar began a wild the first foor without a slop, and abilit trons only alexabers know how to reach Down to the very floor of hell, where it

She didn't feelure that she d been taken the same as the ground-foor lobby of her looking pair as it had looked in the world above Jose cide 1 rolice that if was sweuse, for did afte notice when she went out upon the street. Frai all the cars were driven

Hell, you see is exactly like the world we all iss in the poly difference been pur everyone you meet there is completely in-

Losie made a most unwise decision. She taok off her left shop and three it with all the force she could muster at the elevator's many That minor was the elevator's providest possession 9

conaderate and rude. Judging by appear above, but they behave quite differently

futherware ever man emergency she must call him or go to his apertment, and ifter Her father land in another nonthrational Why cents, and she had spent her last change ksit at hour age to buy a Mounds.

She knew that it would be wrong and sharveful to ask passeraby to own her the money she needed, all the people on the attests of hell looked ptazy or hostie or dangerous

For a long time she just sat on the ourb, will often help you if you are driving. But that will in the world show in hel to one wast'l able to produce more than a be of

When looking fariors produced no resuits Jose decided she must ask a that overed the sidewalk and the street. As green to red, and she was nearly run over

language, however for she had ust but her

It would take much too long and be much too distressing to over a full account of all each one a little more meastable than the value a internace to leave her there so long tol Jose not warting to report her demother had locked her out of their anar-

Nationally when Mr Hardwinter called his ex arts on the phone and welled at her Josio's mother was gute angry with he job with a literinguiance company lifery as ocean to the island of local (yes, hell ever

Because of this Jobe never had note which had been subjet to a stranger. And you down to hell can take you up again ! cage

Although she knew that her life had raid

52 CMN





BY JAMES & MICHENER

A famed novelast decries the lack of a American space effort

PHOTOGRAPH BY

operate in the history of cyclopation. Itsal any nation can participate in the be in sensus insuble if not on the make remarkable contributions

had to decide whether they wanted grave draadvantages and never cauchtup England and France were made a sturring recovery. The latter am not primarily interested in

captains or the economic advanwhen it knew that the world consisted excellent examples of nations that respect the intellectual rewards of the cered. One might almost argue that onsat swing of crystation according provided darving sea captarts Engl These that provided nothing lost an

sulting from participation in a great lends for a respectable period. It its effort corners the rewards for a senaitie period and then knew the harm has been done. The ration has olitaried from their excess error about along And it surely will for the life of tory has been a record of how it con-

the great movements of its time if misses the foundations on which it

A nation that loses its forward thrust is in danger the way to retain it is via exploration ?

In the second se

Suppose that all have said to the which would be a minucle equal to those I ve been discussing. Where does that leave the United States in whether to its scale progrant? I am comparent to terminer I am only three of the appents leaving the

more teornical details to others.

Are there normality advantages to be spend from a spend program¹. The high technical requirements has spend rewards are almost ausenate. Radio televsion model assumetation menturtation watches new food processes commanications, hash advance, and merceneger in cohing are store of the commanications, hash advance, and merceneger in cohing are store of the merceneger in cohing are store of the merceneger in cohing are store of the common of the processes.

It one considers the larger from such as tratercontential communications askelles the mapping of weather patterns the analyear of tools and losses, the exploration for meaning - molating oil, the management of febrenes and the live the potential revends are multipleted memory trees.

I have followed our past space adventures about as carefully as an unentituded lighten could, and have a safter magnitive med. buil anticipated almost none of these significant by-products, and i doubt that any of us can predict where the next constitutions will be made

I have heard one impressive argument against what I am saying row A man of some probity and "I we had applied our scientific bragg to these problems, we could have somed them all all one tenth the cost. He is not Had Compare 20 versi



ago on latent a database ucoga i uno ago on latent a database ucoga i uno of per constant and and a provinci them with spaceous laborations and follower tomme in comparison and solutions and the spaceous and the spaceous and built being a comparison one. But netter Comgess and harmonic the same table to the same harmonic the spaceous and the same same harmonic the same same tables and come possible. As proyectly notel free of the bonness of call done would have matenational as part of a nacional affore with a same and some the table with the follower.

Are these military adventages to be gained hore, a gapae program? I would be terrified solar if only Pussian and Chinese vehicles were orbiting in space. Their mitary advantage would the so terrainfolds that we mg/t almost suffer as a ration a kind of psychialogical shock from which we mg/t never recover for we would certainly be all their mean.

I fear that polaritable of apace warfave trave yet to be impressed upon the Ameri dam public We do not inalize the overwhething advantage a nation would only a fit alone commandered polacio. If allone boald clinet: by natio beam within and where an object to its cargo ware to be through it deve to Earth Any nation that allowed its entrems such a supervisived. But if all natural head the copacity to utilize space detersively herr the part is demension and reasonable prnergements can be worked out But only finaugh panty can we taily succeed in this readment.

Therefore, the Unice States most have a sonskile space program, whether i vavits one or not To fail to keep up with new developments in this fail would be dealer hall administration that be repained up so thous to snow what the capabilit bes of space are, and we have get to relation by mohang duto relation by mo-

Are there spiritual advantages to be graned town a part opportunity the spiritual to the spiritual spiritual advantages applied to the spiritual spiritual spiritual spiritual spiritual opportunity of the spiritual spiritual spiritual opportunity of the spiritual spi

It is entremely difficult to keep a human life or the life of a nasion moving toward with enough energy and commitment to life it into the next cyclical expensions. My own life has been spent diversing the next and fail of human systems, and i am committed had we are all terricity unknowledge.

I do not for a moment believe that the pertural well-being of our notion depends perturally append as use within a trans said, model equivalents to even more outpet/times of any charantalite national experiment. I amissia we could, as a nation, sharin grace tambial respective from revolution outpeting and the standard said and the standard methods and the standard said approximation of the standard said for the original relationship out the standard said said the standard said for the standard or high styles. Space programs are styles in preventing outpeting and said said said



FICTION

Only three stood between the world and the threat of another nuclear holocaust

MEN LIKE US

BY DAVID DRAKE

The was a tool orushol against them at the hosed of the plate. Deadlers of cooling in the blue haze from the seat here bet in whiteed but incorrupable. It manimum, owen new that the haze was only a metrory. The three timeless squatted down babter the telement and stared backs at in the village can't be fits from

here "Smith said af last "Filigo down tomorrow" Sau-me strugged and argued, "Why waste time? We can all co

Very waste timer we contained down together" "Time we ve got," said Kozinski playing absently with his official to every the local. "A lot

that thesi use the eyeld the local it will of the storm we via basen hold came from growance. Itrum tog. There may be no more truth to this one than to many of the others' We true a cuty to the resolitority we'll wait for you

Smith chuckled wryly "What sort of men would these be in th world, "he skild, "if it weren't for men like us?" All three of them laughed,

ther old joke PAINTING BY CLIFFE McREYNOLDS

running from it mostly to the smelter at the nversible. A plante of vapor overhung its state roof

One of the pair of guards at the door of the power plant was monowly surveying the oppose satis of this organic forward of anything battar to do. He was the first to rokee Smith. His use chopped. This traveler waved to him. The guard blanted something to his companion and three a twitch basis the door.

Why happened than highland Smh as ha thought nothing in the world could highlen him again. An air raid ainst on the tool of the poace plant sounded, nong into a wail that shock echoes from the going Men and women detend mile the stitelist come of them armed buil Smh did not one the poople these people, and he idd not freet anything here could do be him.

Then the location strend was back in the backets of the location of the location of the end strend task in the location of the method of any and cosk that location of the locatio

That is also enough "suici the foremast of those executing the travellor The local ways a bag man with a pink region of shall thought the long waps of which has that he bounded concluly back over it. His special and tocumes we're d'wool, dyod blue so that they nearly matched the shart of an cent polyecter he work undernauth "where they are remained?"

"Just about avarywhere one time or another. Smith answend with an engaging gm. "Dubuque, organally but that was a long ame app.

"Den joby games with the chief "hissed a somewhat youngar man with a cruel face and a similar uniform. "Nou came over the mountains, and noticely comes from the Hot Lanck."

Chief of police. Smith marveled as he connected the life and the shifts now worn as regula. Aloud he caid. "When sithe last take anybody from here wellked over the mountains? Last?".

Bearded faces went hand. The traveler continued "A hundred years age, two hundred I was soch hat for you to go anywhere that side of the hills, built not have Maybe II inverse and chicken of my own, but I nexter needlad that. I needlod to see the world, and I have done that, banks."

"Sho hm The chief said flatly

child du to wait to the generation mentalizes fam Halshouged of the pack and handed it to the nearest of the guards amed with crossbase and hand-begad seads. He saat: Genty with it frend there's some of this straight, and there's to be based to rectmand based the has while the bases to unstrack his faither and

Se di hemen besiden hechel won tilve rommand probusi vertion surviv hele jäck eta They were al doke – not lean vertros like the cosobumen – but hely canned tereme. Frue of them taud Arbit rike. The andbaad risks of the cosobument by lage of dispert generation. The soft much had a dispertised owner. The soft much had a dispertised moder taunoher of more them before setting the following of the soft terms of them before setting helps – or a soft thom of them before to stems helps – or a soft thom of them of the soft terms of them of the soft thom of them before to stems helps – or a soft thom of them of the soft terms of them of the soft thom of the of the soft terms of them of the soft thom of the of the soft terms of them of the soft thom of the of the soft terms of the soft terms of them of the soft terms of the soft terms of them of the soft terms of the soft terms of the of terms of terms of terms of terms of the of terms of ter

"Just a boy from the Nikdweet. Smith contructed pressently pulling out the tarks of his wooken whet "I wanted to see New York City, can you believe that? But we I note of us be forever will we?

What happened then fightened Smith as he thought nothing in the world could fighten him again. An air raid sizen sounded, rising hito a wail that shock echoss from the gorge 9

He last the shert, folded from habit, on his well and bagan unligoing his boots of carabouleather. There is a crister therein and and the ausees soil glow blue if there is even an overcast to dim the sun. And your skin peoples. I

The traveler ginned "thu won't go from, and I wan't go there again, but I we reen it where the observation cause of the Word Prade "sawers was just about the observamontal man got to heaven with his feet of matrix excits."

"Warve heard the stories" the chief grunted. He canted a stantiess steel re-

"houses? Smth asked cooking an eyebrow at the women in dull-colored chooses

The chief nodded ourly "When is man comes from the Hot Lands: he has to secrets from us, he said "Bry of us

"Wail i mght do the same in your case the traveler agreed tagging boosthelaces closing the woolen thosars. "But I can lea you theres little enough tauth to the names of what waits the westerlands." He pulled the gamest down and stepped out of it

Smith a body wan why the muscles light

and thedry coveral by har if he was untimated and if was in that he had been excurredual—noinoger a commenced and the second second second second surgeons may that had been used for a surgeons may that here had on but comhave never clearly seen until that moment have never clearly seen until that moment been second and possible Chrons leveled their weapons, buczng as a twise does when a been rever in

Where conversion has been as bank as the basened of the proceed and inspection for the higher basened of the proceed and inspection for higher that been present in which as a moment of the been to been present in which as a moment of the basened the present of the basened of the source that and if in ever base to base of basened basened base basened and and and the close to base of the ever basened and the basened basened basened and and and the basened basened basened and the basened and complements the basened and and and the basened basened basened and the basened and the basened basened basened and the basened and the basened basened basened and the basened and the basened basened basened basened and the basened basened basened basened basened and the basened basened basened basened basened basened and the basened basened basened basened basened basened basened basened basened basened basened basened basened the basened base

Put it down the cheef said abruptly Then to the guard who was searching the pack. "Weapons?

'Drily this the guard and holding up a sting and a depen dense people's fitted to a learther pocket

There's a little folding knife in my parts pocket Smith solutioned Tuse it to skin the rabbits I take

"There put your clothes on the othel onormed and there ound is breach reveal. "You can stay all the inm sonce you we truckencogh to gay for it — he indeal forward the careful pile the guint had made of sends stading goods — "and particle service you can find girls on Front Streets service you can be well. There more of that ask of the any Met There more of that ask of the samptime girls through you lak to the and the boom on forwards if the streets.

The traveler nodded and began dressing without emberrassment

The police and then guards alcottode some binding along all files when fail allowed the source of the source of the binding the stray halding of halaws source in the digramshap watch to have hald before the Blast it was now the christ residence all well as the guards to be honored by shows and legited by large and watches in a strip owner playered painting had been canneling pressioned – despited for the short here in summary strip.

They were probing and businessite smith surveyed housing and businessite creat. Wespore: cashed? Lotted by twowers or rotted in heritevening operations. Food seports? A myth seeded businessite based and the second second businessite based and the second second businessite results be as well being as well businessite well be as any thromport casors the manufacture. And business metals were deline businessite instructions that businessite excellable as any targets a casors the manufacture. And business metals were deline businessite instructions that businessite technical-second to structure to the second the manufacture. And business metals were deline businessite instructure to the filters.

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No wonder over 85% of the rat sold in this country comes from Paerto Race

PUERTO RICAA RUMS

cause

For the Light Rumout Puerto Room version Puerto Room Rumo Drail 2013 1299 Avenue of the American NY INY 10011 pRVIII Commonwealth of Partic Room "All right, card the chief at last shating the handbeek of waved boards on which he had been making notes. The noon had become chilly about the time they had had to light the scoty nophtha lamp. If we find dimote during the right, we can ask in the morning. His rights marchaed. How long are you expecting to stary?"

Smith strugged. IA lew days I just I ke to wender I haily don't have any doars to do anything else. He raised his pack by the straps and acted. "Can one of you direct me to your in?"

Cancer the yeargest of the six policemen about He was a blocky man with black her and a pepper-and-sait beard Hehat conducted much of the overloan Hemet -11 black horn, he said Unlive her colleagues he canned a heavy lighting indie in addition to this automatic nite He haid the door come for Smith

The right key was patchy When the silver moon was clear there was more light outside than the bod of nighthal cast, when The pail of team above the power plant budged and waned like the martle of an oblapic Tilly zoure sparks traded the power lines across the bridge and clean into the smaller.

Smith thumbed at the plant. They made light from electricity you know? Below the Blast You ever try that?"

His guide looked at him sherply "Not like they did. Things glob but hey buin up when we can't keep all the air swely from on But you to be stratier not be advanted to the strategies of the set of the set issues here all this scorer than you planned. Nat to be unihendly but if you tak to up you'l lisk to be chosen the set of the set word spreading where is shouldn't

The polycernia turned through an open gate and up a gravited pathway Rosy Ight bailed around the shutters of a large buildng on the orige of the Assembly Sound and warm at bioomed into the right when the openad the door is the mid weadler the attempt of was open within

Carter¹ should a big man at the bir of the taproom "Just in time to buy us a round" Then he saw Smith and blinked and the dazen or so men of the company gree guarter than the hits of the fine

"Frends I don't title seid Smth with a smie "buil do drink and I willsteep II I can come to an agreement with our hest hare that is, he added bearing toward the bearing."

"Model's the name said the tail, knopjanted local Nether he nor the taket offeed to shake hands but he statmed the other's smile with a brefer professional one of he own "Let's see what you have to table

The men at the bar made norm as Smith ranged this small allock on the mathogany. First the traveler set out an UP record, still settied in plastic. Modell's layer mound a settied as the singer howand a mitimater above the bloc. "What is a "Cher 7" he Inolly asted The lady is name, said Smith, She pronounced if share. Knowing grunts from the men around him charused the explanation. You ve electricity have lose. Perhaps thems a chorocoraph?

New and the power's not trained enough yet anytice. Modell stad regartally this uses were full of the acket photocouple. It beats the emolitation and and

"Modell you're supposed to be tracking not running your mouth the policismian interrupted. "Get of with it

'Wall if not the second then- Smith

"I might make you an offer on the picture "one of the locals broke in

Twon tereparate stein I mahad, Smith reparad, Sand wan thava the record where it can I be used properly These may be more useful though I can I guarantee them after the time. They we been uting. And he tada a ret-and-green bas of 30-30 catidges on the wood.

The civil keeps all the guns in Mosoby beades these - said Carler, patting the plastic stock of his MTB - kill stay that way And there is a righteous plonty of ammune ton for them already.

Fine the said 5mth upptituded maching agains inclub pack. Heremoved plays box that whired until a thy green hand reached out of the mechanism location much as Smth is over valuation soats had The ravelet hought by hid the boy agains his pack before taking out has final tem, a Gi compass

It always shows north unless you remoclose to non-Smith said as he damanstrated. You can turn the basis to any number of degrees and take a sighting through the sket them, but III wait more than a math is locker of or c.

Gur tokens are good up and down the next: one of the locals suggisted morphy a small brass disk on the bar it had been struck with a complex pattern of lightning both on ossi aide and the further 50 on the other "fou can redeet em for iron ingets al doctiende he explained furthing to ward the mer." Course they discourt, em the faither owner you get

I don't follow rivers a great deal the vavider led with a smile. Let is say that light room and board—and all i care to climit for a week

The challeng was good natured and boats or - and hand Simth model to be boats or - and hand Simth model to be the second second second second second means the actuality strandom the unleage in address. Senth would have all the prove second be regardled for his pumper Model Tool backgain the whole more theread. The dematerial for maging of the charge potent been have been independent with the staud list strate have poind near this potent been second means and backgain the whole the staud staffer have poind near this potent been second means that potent been second means the state state is the state potent been second means the state state is the state of the

The dealing over Smith carried his mug

to one of the stocia before the fire. Says stope, their wegetables and a pair of lantamathang/inentine-tool gasts. Dave and ekantiens were pegged to the pine pareing fill around the moort, and about the mantielpicce glowered the skull of a still arger than a German therbed

I sender that a man take the courage to walk alone out there "suggested a heavy set local who temped his per with the ball other thumb "what with the mugas and all

Simil modeled beggen int bell and gesteed with the up gette retail. Use that you man? But that so it has gon that you man? But that so it has gon that seen netly even to solid but they writer Lang atomget that they also have been and that a color more again in some demined of a bittle but you can be into the har and the ones that with the into the har and the ones that with the into the har and the ones that with the into the har and the reads the 'He passed and strike. The side thermetismest enclude. Initial

Despte the two the other taces in the circle went pale. Smiths even regatived the relation while he continued to smile Now mavelets tell stores you have 'he soid, 'red theres an art to tellawing to them 'here's little strong to yoke about or the red. Soil there there.

He takes wert serious for a morrient and here actual, But I had you the auto serio to the table of a Weet I leads only and the intervention of the series of the table of the mouse semicary prevails. And werth I foldbad in out it was no barger han a mouse and align week black outduit it is could forge that sourcy the way in mouse it could forge that sourcy the way in mouse them - The tables in bard werth in the of the none— and another lead on a put bard none— and another lead on a put bard would have called me a law if it to be have called me a law if it to have bard bards to only so which into and bards bards to only so which into an an another bard to bards to only so which into a set in the set in the set in the set bards to bort so which into a set in the set in the set in the set in the set is bards to bort so the into the set is bort so the set in the set in the set in the set is the set in the set in the set in the set is the set in the set in the set is the set is the set in the set is the

He drark deep. The company buzzed at the worder and the pasy fellowship of the man who had seen it.

Sotte meet the hal-min didni you Sotte meet the hal-min didni you Sottaa? sad a buky man whose matache and the beerd frienging his mouth were dark with baar. He menod an extra haod with his clenched its! "Monsiers kile that in the Hot Lands.

Smith's head bobbed sagely against the obcrus of grin assert from the obser men "Sare I know shat you mean. He sard "Rouheaded men? Grifs with an extra pair of legs coming out of their belies?"

Sounds of horror and agreement

Yourge, the traveler want on the Black changed image but you know self as 1 do that it down in change from to be easier for more. There we always been children born as monstore, if you will Mayoo more born consulty, than There were befree the Black but they were both and its seen bools that were old at the Black that take of hem. And they don't live now, my hences. Like were years in band and those poor inscores retrind 16% of the constructions to RONRICO The taste that could start a gold rush.



RONRICO

PUERTO RIGAN



There are as many sexes as there are people

BY JOHN STOLTENBERG

Just for fun 1 Dr. John Money tells Ins standerfre at Johns Hopkins School of Masterne 1 ask yoursel. Would I take a pill that could change my sec? Task you that 1 he excloses

"I apply you that," the explores "because it's a device to force you to their about your own termal attribut, your own gender identity, and how you really feel about it."

Corring from Dr. Money, the question has usual import. A noted seudogui hexiclescion of the psychohemicrain inspanich with at Johns Hopkins, in Baltimore Hes also are of the nen responsible for the find sex-change approximative for the find sex-change approximative particular of the linear Masse Arches conversed that for many practical purposes on grander is a matter of change not of genetic change.

There are not two sexes. He declares "There is a continuum "foucan't die a head count. It duelant work that way "builden t even come up with there are fifty different ascess. It looks if we a spectrum".

When the POich advocates A wheeks Copeniase announced in 1543 that the san close not revolve and a classification in human of a classification in human revolved announced the san, but people had long believed the heverse subderly the notice same close the subderly the notice same close the note future whithing in Worsen Faksing A whithing in Worsen

PAINTING BY WOLFGANG HUTTER Radical Look at Sussiality in 1974 terminal Andrea Durykin commercial the Mony's research into the variability of human Souchast Impactment and the second second discretibility of eas sumilarity. That is not obtained budget of eas sumilarity. That is not to say that there is one souch but there are many Deviction parent that condition instances budget we clearly amplicated sources. If the associated

"Man' and 'woman' are fections cancatures, cultural constructs."

Make a note for the twenty first century

Developing reception reach active Monitory woll here in volve a social content a remove hermal as to allogate activity of remove hermal as to allogate activity and agence assistement hypotheses. He regisse publicly agence the "assist socially and her upges the establishment on intending dereporately investibility and monitories and activity investibility assist monitories and activity assistent activity and activity and her of the advectory line of interpreters on the presentation involves of the spacefuller

Money has been a poncer to towail roduine Incurptou the career He cleans to have been the test to use the phrase garater role (back in 1955, after which, the tays, the concept hook of tion withing) and he was largely responsible for the acceptance of transpendiem as a condition turbate for surgical medical and psychobocal treatment.

The trist sox-change operation in the

Unlead States was performed shealthy at Johns Hopkina Hopkina an eight in Fabuary 1965 funes John Money and surgeon Howard W Jones, Jr. who made the decision to go alwaid with the radical operation Money asys the bogsheat ethical decencer in his career have strong from the volatile dates of 178765eutility.

I dot itst of all, because lives propiely inferendia on the warflers of bransmur, on the second second second second second second linear that from each of the charges in marked a study heard pools with second marked second second second second second

Noney is still digently strang to make people take unlamber sexual concepts seriously

One writer evening I sat in on Money's class: Besocial Appetts of Human Stessiny' which he leaches for undergrifulates Re taly-eight he cats a disper figure it a tweddy addet and nary-base the electroble steril, and hiking boots. There is, perhaps: something of his part like at a schoolscather in New Zestand (where he was born and mand in the meal endo at



a mustache and his ware im apocs. Uncl accessive har ware har you har sicked down in straght stands, but now is in modelly curried. He speaks aleganely and aloguently, of the in lagrams torns in a grassively componed interner that he debenately curried and an extension of the server to an importance election, and he uses it almost all the one.

He clearly vehicle the abover occroses to been carefully while the abover outputs on them compared to a last the folds than the maked to ficked downtown - and the observably enjoys astronomy the second tool while the above the second tool while the above tool and the maked second part and the second tool while the second tool while the second tool while the second and the strength of the second and the strength of the maked second the second tool while the second

Now the morn no longer revelopment with coarse gaffues rather there was an edgy kind of curiceity in the class. A montage of slides flathed before the classbodies dressed and understeil, genetatis in class-cars, faces in similar, infants, childen, and there-boars

We see a person who got born with a perindry nominal isolant points but who had neo wares initial. Another porture of two batting optimit threads tabalotity content. "One of these battins is a genetic XI mail." Money says." Nou can thread with the genetic and the other one is a genetic XI mail." Money says." Nou can thread with a wheth." Another portune displays the a wheth." Another portune displays the an another. All and en all."

Then earns a peaker of a strapping, deem specific by white is now, we were tool memory years of age. He all heat to dimensioners mere ency old he to body and the west born with two owners. It have been decovered below he was a live days of a discovered below here years and the set discovered below here years and the set discovered below the set of the here to be an another the relative of the here to ward the west discovered with our way of concoursing and conceptulations.

This value range of genital formations," Money explains, occurs becaute workone a genitals develop prolability from the same ambryonic Bisloo Under the influence of the hormoere androgen. The shape of this genitals depends on how much androgen was present during their formation.

It's a macchospion he say, that these are "main homoto and "smaller homones and that men have one kind and something-black everycen is all off freem in countries attivant proportions densit that all he young then previous have enough estrogen in ther bodies to grow breates were it not that their androgen coopenies that all the all the all of the women have enough androgen in their bodiesto grow beards, but estrogen is anoendroperic and inhibita har growth.

Most pacels with some includege of basic periods believe that the to-called are chremesome determine our gender blier you are XX (female) or you are XX (make). Money ports, out, however, that also 'Ard this mound', 'he style, 'we can write a finite good classification inclinitically that there are X men and there are the ensy servy few. There, there are the ensy servy few. There, there are the states are an ensy that the set is the state includes the set of the set of the are X-area women, but there is no women.

That there are XXY men, and there are XYY men, and there are XXX women. And the mosaics There's XXYXX, some calls having one combination and other calls having bar other (can go or from hose unit) hallway across the room with all of there way rise mocasc that are valle, which have why wend constraintons of the X and the Y charametries.

There is an even rear set of conditions in which you have an X and a Y with breakages and crote-lineages and threakbors in them. An arm breaks off one other occurs and gets joined and enother and than that one replicates fault i can go all the way across the room with the known cases of that

Moneys is to I service to this goes on not on These as a the offerent leads of pernatal formand secal variation - a week between the command period. There is a second to the second of the ofference what heppens to a bady in the birth perlocite to use the intervent event development. These vacual can make your week boording of the bady to there is the boording of the bady to there is the boording of the bady to the moniter and the entry of the positival influence that get in And a the positival influence the second settings.

These is not determined on the basis of sign of its crime taken abare. There is no abare this constraint, there is a special transmission to the sign of the second second the second is used to second secon

Some people argue that all the anomales - the sodencally size cases of variation in chromosomal easi for instance or the babliss born with ambiguous goldais - are mently mosts and mutabox. They are the escaptors that prove the two sex use Anomales, i is paid, do

THE JOCKEY FASHION STATEMENT IS BOLD.

JIM PALMER, STAR PITCHER FOR THE BALTIMORE ORIOLES, WEARS ELANCE" BRIEFS.

The utilitatie biolet with European styling the maximum confloct and freedom, minimum content Solid colons in 107% combind cotton and participati in 50% KOOP polyretim 10% combind cotton bind Zhavin to the processor





not make human sekedness a continuur

Software controls the argument with a Software house as an accutate subset of rooted relations at Harvard, concertrating at cubury anthropology eccology and clinical psychology. He wrote his doctand dosertation on herraphrodities and intersolved party organs.

During his research he came upon one particularly uncasal case a person who had been considered to be aboyathin tiles althrugs he persons had been contracted auspeally het had had been contracted auspeally het boys disposes was abruptly nessed however when all agaitevers he began to however when all agaitevers he began to however when all agaitevers he began to how het althrugh het person. Diely then was it discovered that the boy' had twee primale banchman boards and a utana.

Moneya problem wasto make attantica, avrina auto a de incal condition thathe had soen orly ao maa and that had bean reported Mostelar, a mathematicar in the depart Mostelar, a mathematicar in the depart of the Animercan Association to the Advancement O Scenica The attance and list water of a cost and social that and here. The list was policies and the social here, the list was policies and the social department of social here and the social that all boophones insue to the second

The exception, in other words disproves the rule. The first step in the history of this science. Money continues, file to say its can happen once theratore no theory can isand op until it been treted against the ' Since noticity had ever seried in the pay choicegy and behavioral development of hermoshnotatise before it gave me is teld day to turn madminal belief upsich down That's the beginning of all now science ant c?' to say. We have to ask some new quadrots now."

Money is not the only sexologist who challinges traditional weeks. He is hot even the most radical

Dr. Anke Einhandt, Kannyls country on Dr. Anke Einhandt, Mannyls country on 4 Bioman. Bay & Garl, gew up in Germany and noowed her obstrates in the Unaverory of Dassidient' Actions Heplens, werk, marked Manya the studies children who had sciences higher think normal leasts of had sciences the pursued at the State University of Iwen Tark is Buffalo

Seen now many of the children she sees the minimal bit bit because of an observation of the because of an discription of the because of an 2m as display, concerned alout their an 2m as display, concerned alout their and thereas approve of the anoth shearmake and thereas approve the anoth shearmake and thereas approve the another shearmake and the approximation of the another printicely identification, as made or formate, the approximation and the another shear to the approximation and the another shear to tape. You'r spendra dentry concerned apphrash the shearmake there is contrast to when the another is the another



Dr. Ethihardt often recommende that children be buigtt a gender identify oppoten to that boological alex. If a child is born with XY chromosomal sex and possibly forte tastites but with only a intrinactule perce. Ehrhardt is apt for occimend that the child be repead as a nationation of an a box.

The reason for this sear tracegreenet is simple. She has searching is consequences when such interins the reased as beys. They usually go through an absolutely bratal childhood wotimized by their peers. All those imaxes, like being able to parent up to unnate, and of interable importance is childhood in our cubure.

These boys, the sing, growup fleat by and doubt and laking any hope of an ender malatanship an which there for this hight bai ding use to then, when when -ulther 10 or 12 oportations - they have a method as going to method - bain to having been removed at age ner or temters young example (a) your well in their sexual response pattern. Typically, they are regarm of

That such individual become worker with normal second response patterns raises some infiguring questions is theor make and market albanes for the differance we believe waste believen normal make and market believen from a inthe endopotential of so-called mon that warren? Perhaps I. The whole partners area has the potential to be organize."

She admits that her recommendation 1 that a generoally make infant with a morephalau be taxed as a grif feasin the face of conventional vectors. It touchas en the takeo that these two recess these two genders, are problemmed by the reposition the potential 11 you go agoing that you know you are an absolute mele!

She sees four very separate sees in what belogy mph Influence human see differences Three of them are fluid, or continuing, categorias, where no much ferrata schotomy evels. Div) one is an exterior gender schrift, our bia of that we belong to one sex or to the other. Privratal efforts have visually include that belong to an external addy interact fluid that belong is not an employed to any anatomical fact at all

Second is ask dimorphic behavior, such as tamperamient or anarys level. Enhances studies show that dong prevails indrogen preduces a high level of gross physical onegy in oblighted hits to such behavior is backgorily investisation nor will c reported and no matter what hisppres allow birth rather taxes behavior patterns will occur only of the environment performance.
women in any of these behavior areas " Entherd) sevs, "except in pander identity."

The prevention reveals. When a sector is an work of the terms relatively and such the reveal and general behavior and the reveals and reproduced variable renders with reproduced variable renders with reproduced variable renders and relative a set is a conversionally defined including approximation of the reveal relatively approximation of relative and the reveals of the reveal relatively approximation of relatively relativ

Where does here seese us? These is the analysis excitancy of main and formals, work with respect to chemistresson and analysis of carbony of the comparison of the sector of the sector of the sector of the indication of the sector of the sector of the large sector of the sec

So why are so few people interested in diversity though nature is?

"Oh is a easier to process your thoughts when you make them all come into focus or one thing. Money says it is like the good paramed "builknow one explanation covals eventteing."

More your available to the advancement what differences and service of the servic

Covering from someone who has declassed the ulternistivity of human gandait to seams an oddly orthodox vitw. One gets the feeling that John Money is a pathtimdee who will revear nearly live in the land he discovered.

Some ornise trave indexed suggested that bernehable associated from 10 bernehable of belongs, some to reinforce the false seanison between male and female – outrouting by promoting the "treatable interaction devices of the second interaction of the second second second metabolic second of the second second metabolic second second second second metabolic second second second second metabolic second second second second the University of Massachusetts in Amberts.

CONTINUED ON FROM 128



Si vis Dia gené constitutionaria and divoluta hi recordana agran practiva muse. Yakas in Apack conniens signes su check-capatili y and performance. We relieve moda a lo la constitución vel Massine Each TOX casaente has 250 componente, assembled with microaccopie persistore. These and VY check spots of the periodic signal and the performa infiliantly. Which is borndary and atook. It performs infiliantly. Which is who cach tOX packboar.

his a full lifetime warranty." As we discovered, Stevie has been using TDK casseties for years Long before we asked him. For a perfectionist, that says a lot.





Gients of eerospace are pathering to show us our future **GT 20000** BY KENNETH JON HOSE

The future average in at an accelerating paramage in a consisting paramage source and schoology booth wave y aspect everything they fouch advantuate place homenets or footprotes on the dualy surface and prosphetic or paramage subtional programmers in the more suppose the subtional programmers in the subresponse to and prosphetic or paramage subcomparison processing (Boungkeens sho processing) (Bo

Writely free percent of America's new lectrology will be developed for transportation, energy, space science, and celeman pedicas. Jury (Swy divideor of pathic policy for the American Institute of American State Americanstea (AMA). This perelayas asymptified angueen writely percents a "schema" percent of the patho year will be open to the patho year will be open to the patho

Global Technology 2000 as it siteen designated may be the most ambritous display of aerospace technology in U.S.

Lott Tendets dessentationes glass rifte Florida regit al Das Morkt reac United Thean Morkt reac United Thean Morkes/H sensity of Develo-Daring Florida United Tendets Manned Manasureng Unit Mended Manasureng Unit Mended Manasureng Unit Mended Manasureng United Mended Manasureng Mended Mended Me





Downtown air buses will land on top of buildings or enter through openings in the side 9

Instory thi general charmen, Laurence Adams president of Martin Maneta Aerospace, www.fite-industrial exhibition is nothing short of a meetione in the hatdward of motione lacknessory.

Technology a white the world's lidare lias, and GT 2000 will show what were doing about 1. In dictarse Exerything from glatering controls follow space shortles liases, companies and solar cold the display part of AMAs international annualmenting is being held Nay 8 to 11 at the new Convention Content in Baltitotein downtow meet-fatop and an annual convention Content in Baltitotein downtown

Museum, in Washington, D.C. The museum houses the largest perminent display of averagines technology in the world. Inside the fee new must use and mailing our own the packs and

Inside the five-acre structure-- and spring out onto the parks and



helps of the business hints they reporting in the they reporting in the they reporting in the they report of the they report in the they report in the they report in the they have the they report in the they report in the they have the they report in the helps in the they helps in the the helps in the they helps in the the helps in the helps in the thelps in the helps i



The important thing is that technology, no matter how good, how promising it is, takes time 9

harbon network—companies i Ne Generali Exertice BMV Visiona) double Augrina Auculti. Advantativa and a constraint and a constraint and there taxeds avects. From the local of a good fixed in the workship licensing/scale license and both on achieved harbon the strategies of the technologies all licenses and inclusions and and and and and metabolism beam one and inclusion of hydrogen i lack of datas when impermentally insureign presentant micro based in apprecision. BMS intervetant micrometable insure and another and the strate taxes the hybrid on based harbon taxes and the strategies and the strategies and the strate taxes and metabolism taxes and a more based using 10 manarm.

Arrang the glassing communications satisfies of Hughes Arranti and COMSAT the TRW company will exhibit everything from megalithic clicks analys to have a disponent which most accretions take analysis









Lat investigation (Lat investigation) Lat investigation (Lab investigation) and Propositions Labcatalog at Plasmanna Investigation (Lab investigation) Investigation (Lab investigation)

The world's future is technology, GT 2000 will show what we're doing about it 9





from the sea. "This is the public's opportunity," says Lawrence Craner, AIAAs director of displays, "to pisk into the future as it is perceived by the work's leading practicipers of research and development."

Communications, Burton Edulson at COMSAT predicts, will loom even larger as satellites increase in size and power output. Soon, perhaps before the century is out, receiving stations on Earth might be



Hejdi Gardinowski Gardinalski Gardinalski

By the turn of the century, 5 percent of the power used in the U.S.A. will be solar 9

Barban Persistellis per sected al Receival International's Colored's owner Far Int. Applied Solar Descy a advanced allow cul will be charper and sempler then be proposition calls in the technological and the charper and sempler then becan enter mate two rols. Solar owner for the Solaria calls in the







A bold new way of Me is outlined by this unorthodox economist who combines widely disparate disciplines into one coherent vision of the near future

INTERVIEW

HAZEL HENDERSON

Low-sensibility particles in the Councers 1. In right meet here backing way out, "Leads backshops can be added the participant investment and the backshops can be added to back the south meet provide incomence participant and strategies to backshops and backshops and added the south south the south south the backshops and the participant and the south south the south memory backshops and participant and the south south the south memory backshops and south the south south the south south and the south the constraints of the south south the south hard the south south the south south the south south the south south south the south south the south south the south south the hard the south south the south south the south south south the hard the south south the south south the south south south south the hard the south south the south south the south south south south the hard the south south the south south the south south south the south south as the south the heters of markshop south the south south the south the south the south the south south the south south the south the south south the south the south south the south south the south the south the south the south the south the south south the so

A native of England Herderson came to the Usefal Shate some 20 years aga, manned and begins tho as as a lamin New Yok CUP, A power plant factors the street prompted for first involvement with componential scales. She became a kunding methad of Charters visitions the source was inveginged and the street prompted for the source source was inveginged.

ter Gann Ar Lorer the weeked with Ratio Hudst and Cerrograp. Min to hang comment accountrativity to the larged activities Hundreton decided to foque her energies on accountre issues and began writing for publications including Artenued Bannas Review, Sabardst Review and the Postent Denied her Hudstrof, Carter Review, meade the Protection, New Jalassy writion they established the Processor Genere for Arten commentations, and here bene developed as a method and both Mink at the tool here.



 In the beginning OPEC was villified as this dreadful cartel. Now some of us reakze that it was the best thing that could have happened, and we are praying for them to hold their proces down Qress. For more than a decade you ve been warring that we are coming to the end of the cheap-energy era. What land of economy and technology do we need for that and so ome?

Herdeson, Ro need to shift be a renewable-resource accomp which modes a philt from suit angle-emided concentration on physica and engineering to an enginescar on the biocxences and ecosecrocity on goal situation be to develop processes, with greater thermodynamic efficiency and to align them will have a lot to learn about them.

Gess. What do you mean by thermodynemic and ecosystem efficiency?

Henderson: Our ourment machines and manufacturing processes gives it all centry-institucet way because we had cheps periodes mount because general ing systems for example, produce a lot of what are delined on weath head. To serve built cooling towards and of it That as denoting the server to get to of it. That as cheaps and thereare any period weath and cheaps and thereare period weath head cheaps and thereare period weath of the server and any of the server operation of the low preserve shares or hot weath the weath cools all of the weath of weath of the low preserve shares or hot weath the weath cools all of the weath of the server server shares or hot weath the server server shares or hot weath the weath cools all of the weath of the server the server server shares or hot weath the server server shares or hot weath the server server server shares or hot weath the server server server server server server the server server server server server the server server server the server server server the server server server the serv

Ecosystem efficiency combines the modynamic makara with baseveria it yours seeking coopstem efficiency you don't paie over a sit match - one of the most productive ecosystems on the planet - for an apport and meanwris keep adding of-based leature to hypethe broductive of your termined

Date: What should we look for in new technologies?

Hatelarisah Washaub be developing lota di small rather humble bechologue that will gave the spalar is to mark textific That's the texture of the evolution Success comes from encreasing addition della sentomics was being a un spala datapte della sentomics was being a unitabilità to the inter verso di begroduzione), whose base principiles are diversity and robandimon

Deter But aren't the renewable solution sector. Informing the Indeformal patient too? Server analysis of tools on the Interple, quants on make photomous to bring proos down, market autoches to bring proos down, market autoches to bring with so on

Henderson: There will be some of both We have to go beyond either/or logic if a going to be both/and. Much good new solence and technology are being subsidiated alment unertingly by the old system.

James Her, a researcher al Grumman, for ocample headwaichaid what builte du tornade wind machine, which extract energy hom a vertical spinil of healed ac Mycler could be installed instead of couling towars at power plants. Anyway while "this was developing the data, it don't little Grummarts, policies, and the corporate structure worked to react 6. There are many "human outry-men" in the depaysment improve workship for the provided depaysment improve workship for the provided and the provided and the provided and beginning to make should be the system as the shall all board. So their workship workship for the exception provided the should be accessed and the should be instanced and the should be an exception of the should be an exception of the accessed and the should be an exception of the should be instanced and the burdened be instanced and be under a should be accessed be accessed be and the should be accessed accessed

Oren: How do these "human enzymes" communicate with each other?

Hendemon By either/to logie, if a partiedue. The old domasu instruction have deweighted an incrediable high-technology a communication system, consulter netentary the set of the set of the oneseround detaileds and continuenting listerably thereings are some ways of the "committees of comescandence" has preaided the American Revolution

The same technology that makes it posastin for a multinational corporation, for example, to soil is potent modelines in many countries makes it possible for consumer groups to get in touch across national boundaries and say. "Bewere of this product, they may be about to during if on you

Offen: Can everyone be as adaptable as the "homan anzymes"? Isn't the stress of change going to be too much for a lot of people?

Handarsan ha I think most people have no particular stake in the cld system; this was difficulty is for the closure institutions that are ngethed anound old rechnologies and strategies of anergy and motional use that can't be sustained. Ifs those tectors, and the people employed them, who foal the stress.

Onver is the Chrysler bail-out an example of that?

Herdesson, Sici Thris its guite typical of what we can expect Weinholden Exel can the instauten and all the stockholders inwaters, and managers who enjoyed the ride up. They got her dividends and stock options, we don't have to underwrite their losses.

We should subside the tedgridymort of the working, who are farly bitmelets, mito networking-resource avoids of the economy. As the sist I can side in the economy as the sist I can side in the second second

Creater Do we need a create to knock us over the head?

Henderson: Obviously we don't need a systemic chass in which everything goes to pot all at once. In such a case people time ply freek, They cen't deal with it. But small pension built into them especially if we

Only Howhes our expension with OPEC been a lesson?

Henderson: I think it was the only shock ing with the rest of the world our energy could have happened to help us adapt side and there's petroleum sellino at forty OPTC provinchasse has been sknow an

Gross What are some of the # effects of

the Three Mile Island reactor With comen

Omm: Will paying these costs impovement other sectors of the economy?

Heoderson Was presmuch as they are these cases is to go for the "add-of they re no longer allowed to heat up the Geeni Should the costs be borne by the

Henderson: inevitably both are going to in the country to even quantifying social Batan for instance, where the taxpayor

Orme: What will those costs do to our na

Henderson. We should get economists to crochablesy arrand Traditionally they an productivity. The whole development of imamount of capital investment and energy

many other workers were shaken out of the

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system allogather, and their productivity tell bolow zero. They were on the welfare rolls, pushed onto the social-cost side of the secan

Eyou equate productivity with individual workners productivity and grane the sound costs, than it is no workler that averygene in Washington is styling. We must increase our productivity by adding more copilatios industrial productivity by adding more copilatios industrial productivity by must industrial productivity to macrophobilityity across the whole system Gravit. The demand too increased productivity is often accompanied by irrespace.

On Conceptance in the major connected internet applier that make given associal and environmengin coats, and thus not une legal harm no control free major. I and more harmows to cohnologies that don't require induce as itsue to don't be associated indices and the second second only polenging and water a storage. Local while local anting negativer, but there seen endo week to Weak terms.

Again you have to book almost to brenew the trade-offs, burgs/schoro for the anthresi lowered an farse, but what are the boost out? Of the locations, what are the boost and when left with idle bactitus, while are ports like Alfrance become bottleneods with overleaded traffic controls. There were now accelerates on small locations. There were howing out in all out and outerconded flying costs car Alfree new competition has about oversethed anthree trainisely.

Gives: Sources a storing cases for booking whend at the consequences of access during access. But stort if possible that too much large of an opportunity with engitheres. Herdenson: Of cases a start at the test sources of the source access and a stort book nearby possible are start at the end of the test of the source possible as all with the origing work? The commo ortises in time, the soler party possible also light plant we don't party photoalities between the test of the commo of the beenties of the lacehold guide in the herding of the lacehold guide in the lacehold guide in the herding of the lacehold guide in the lacehold guide in the herding of the lacehold guide in the lacehold guide in the herd

You can tell when yours exching a flow consil writerine's because your for yourcell point provide your consistent of the length and weng good and bad Way are mphonotons for our enrichment and your and drafter? The altery time we hough two costorpats are the time whough two costorpats are the time and and cost register and an antimemore. We hough cost-center analyses and talk as named world to served by holding a named world be served by holding a named world be served by holding a

In a period, lead this one however, all the technological debates become politicized, and poople become aware—my golly! so OMH that the basic level of politics is knowledge tool how we detrie problems, what consttates a problem what constitutes proof it is were basic stuff.

my class the comparison of the second y to be able to get down to discate on the leve? Henderson No. because these are the resides of moral choice that all of as deal with all the time. We know the tour activities with all the time. We know the tour activities will cartain costs on other people. If I do sometimg to kither my ends my historia hasto forge cometing to empit the to do sometime.

I think that in the Eightes were going to the more and more of what I can't the poltics of reconceptualization. Here going to be charged were and the failed of the because eliboration of subdisciplinenhe I secologist strang writing Merces back to twinnen substations (increase back to twinnen substations) (increase back to twinnen substations) (increase back to twinnen substations) and gold court is to me going analysis (in the substation of the second stranged to bits what

I think most people don't have a state in the old system. The real difficulty is institutions ngintifying around old technologies and strategies of energy use that cah't be sustaived ?

Owner That calls into question all the ments ascribed to expertise and objectivity doesn't it?

Henderson: Look at the uses of expenses in Weshington today, the interest groups tighting 'intornation wars,' himg intellectual mercenanes and building up their camputer freeover.

The guester of objective cat always determines success in interchaltery the work based on the parene fluc hones in the success successful and ecological system. No all data guests includent – a success surfaced on the successful and the successful method successful and the mapping work that and successful and method successful and successful success of their method hyportales or the success of their method hyportales or the successful and successful and successful successful and successful suc

Owner The Apolio photographs of the earth gave many people a strong sense of The plocal system, a resilicator that we are annual an indexed in it is the exclusion as the exclusion. Nacional is a social to the exclusion of the exclusion of the exclusion of the indexed mean frame to receive the beam which means is thing operiod. All the exclusion which means is thing operiod. The first exclusion of the exclusion of the exclusion of the first exclusion of the exclusion of the exclusion which means is thing operiod. The exclusion of the exclusion of the exclusion of the first exclusion of the exclusion of t

Monoser as here a verify cerebuilt and overaphilation discassibility prime in this save in the discassibility prime in the weather were and the potential for target them in real-time obtains in gear. We consider estimation against the term on these obtained adaptions that require ones and beginnerglation them with the kind of skiel these purples need to manage the offset of banges and become over the own.

We have everything we need utility with the everything we need utility and the everythic term of the everythic everythic term of the everythic term of the data of the everythic term of the everythic data. The term of the everythic term of the data of the term of the everythic term of the data of the term of the data of the term of the data of the term of the data of the term of the potent term of the term of the term of the potent term of the term of term of the term of the term of the term of the term of term of the term of the term of the term of term of term of the term of the term of the term of term of term of term of the term of the term of term of term of term of term of the term of term of

Other: Will we be able to change our costtemefit analyses accordingly? Can we include those biological cleas you ve spoken about?

Herdener: We have to Uhin a fer years again the bettern is in encource to the development of the series in an expression of these theopeducity and the unal proping the series of the

Hendescon We alread to the other a converingregated wow that the whole system is party to hell and we re party off the curve instead, we should look for what is new Computationment in

We already know the theory. all that's needed is some advanced engineering

HOW TO BUILD A TIME MACHINE

BY ROBERT L. FORWARD

eep in a subbasement of sloped away As he walked, he the Write House Presi thought about the astonistion scanner cup The wall swong peer into the future and speak raps down through the super away, and he entered an im- to the peed mense room burred 30 meters Greatman hunded the operthe autoferranean room was the warring-to the man he berrien decept for a 20-meter had been four weeks ago

waloway set at the sphere's inclusion, billed at a 45-checrine hall again his normal weight he slowly followed the platform north, seventy two degrees message he had just sent has around to the other side where west 12.54 GMT 22 Deceman contrator sat monitoring the ber 2023, she read, "Just as it controls She, loo, was stuck at said in the newspapers at the an angle to the side of the end of November I toured that sphere, but both she and the you wouldn't dare try to walkway seemed level to change it so i have the gam Greatman It was the room that manage laser all coded

then a spurt of power shot an his right eye against a last two years it had let him pulse of high-energy gamma

"Down t everyone?" the officino the fat foor lowerd the operator laughed, her gith command bunker Those was

blooming like a forwar in her. The east coast of the United Three-kilomater metwor tall

Impact at hirty-eight degrees. floating in 1-thanks to the

gravity mealstrom of the law below the Ellipse park Linker ator a message. He had re conter of the sphere The amthe park overhead which was canved it a month earlier and imp point was measured net in litered with spintered remains evacuated the entire Eastern angle or distance but in of the National Christmas Tise Sestioard Now he had loarend time - four weeks into the D.R.S "Thanks Janet." said "I suppose you already know Greatman "Keep an eye on d down the side of the tank and

Status to ovtraid that of length

the wrackage had no bodies

She made one last check,

the door shut behind him. blocking off the yow of the A time machine? Impossi ble Or so most people think

PAINTING BY GUY FERY

Ver mei mögil respicated and takket berrins of physics, Distainet Meetines of neneputate sime Although we cannot yee control the energies and masses required to make a sime machine we know the preopties behind the state. Each of these days involved of being mindless shares be crist on a parmy through the minute crist on a parmy through the minute.

For many people, the very dok grately and the nerves. The logical paradoxes that time towel conjunes up are alread manding. The first care with Einstein's spacial heavy of reading which card that a clock for human) traveling men the speed of light would operate (spe) more along than a clock (or twin) that started of

This affect is wall, not part theorescal Velodity does slow time. It has been measured by taking two identical groups of docks, terwing one set at home and taking the other scal accend the world in a git an liner. The stay-st-home clocks aged more than the moving clocks did.

Yes when the concept was tost decessed, many precise testand to believe such a ting posici happen All therp recocal expension included that time was an abauda measure, toking the same way for althrug The contact was compounded by misunderstanding the purcele of reintry time way there are example toys. I new york parallel and measurement posit, the way to people stated can the the same way for the other term on a method to parallel.

So one way to make a time machine is to find a way to move at velocities clone to built of light Unfortunately, the special relativity time machine works only one way four can go into the future mana slowly frain normal, but you consult no back is time.

Skill, this know of time machine has its uses if you wan seek and no cure eached to your alment a soporm in a relativistic recket thip could keep you from dyeguntil a oure could be circovered if you had a sort as 30 your 2006 percent this speed of light could for you enjoy your internance while your oblight patients. There are more immediate applications fowervar

F you had some hard to make element so exercises that it works decay below period/down makaze to classicity to be moving the element tom the generator to the measuring mechanes at near-light species would be you do the pto. This type of time motion is used to tagy in all abosizeres that study the elementary particles generated in tuge atom smarkers.

The processes that generate these parboles are so emergisch that the periodisis emerge at nearly the speed of light Namy of the peaky operated particular, closely than a bloomh of ascendent them; closely that is bloomh of ascendent them; closely make more than a few postmeres before decisying. Because of that high speed because the generator to the baseset they as solvey and survives the bases of metans toor the generator to the decision.

On account of the dataled scientific analyses of the "two coradox problem

We are only beginning to understand Emstein's theory of gravity, but we already have designs for several time machines. Given the mandate, the money, and the mass they will be built.

and the experiments that prove the effect is real: the two paradox is no longer a patiator Exclusifier a low who all of them the idea of an involuble unchanguable tem. Ihe human race had abouthed this unusual behavior of nature at high vector lies Notionly do while with the "one-way" their mitchine but we also use it.

But how do you build a "leaf" time machine—one mat goos bolt backward and browd in the What Einsteins back all or sither if we collect anough mass in one place, its granty field will distort the time and approximation of the comes place where time is confluend if becomes place where time is confluend if becomes place both and show were blanned to the place how to of they were blanned to the place with the excernes estate if the mass is never with the electrant charge.

We are only just beginning to understand all the initiations of the generalitioscy of relativity. Einstein: heavy of gravity but we attory heave initiative engineering designs for a number of time machines. Therefore, may complian that such devices would be unplated, and environmentations may be appaied as the resources that will be needed, but the gravitational regineering. the future will build the time machine it they are given the mandate. The money and the mass

Emisario theory allows many shapes to a line mechanic it seems that any object that produces an uthrapitoty, field can comissime-containing regions. There are some shapes, however that can produce regions that might be uzable by hommas. Just hew octain it is that a given time-machine design will wrick depend on those closely for classinger has been able to follow Emissions exactions.

One configuration has can be as there exists a solution in the last hole as to the last collapsing to form a flack hole as to the last collapsing to form a flack hole as to the last collapsing to form a flack hole as the last collapsing to the last hole as the last collapsing to the last hole as the collapsing to the last hole as the select theorem Fay. Ker was potably the collapsing the last hole flack the last collapsing of the last hole as the last hole as the last collapsing of the last hole as the last hole as the last collapsing of the last hole as the last hole as the last collapsing of the last hole as the last hole as the last collapsing of the last hole as thole as the last hole as the last hole as the last h

The Ker solution disactories the greattional field on the solution of a colopangsolating mass that is a proceeding tracket (activity) Large states and color granuses. New they collapse into income libracity these collegates into income libracity because of its solar that the probable great has an into an electrony backate of the solar that the probable great has an into an electrony probable great has an into an into the probable great has an into an

One such an object is formed ther filmments regulator indicates that the entropy region in the castor cast is a gatetime transmission of the castor cast is a gatetime transmission of the castor castor castor castor is a such that the castor of the castor castor castor is the castor of the castor castor castor castor matching the castor of the castor the castor castor

Even though Ker precisely followed Einsteins gravity equations in designing this time machine: there are mathematical theorets who say that the special conditions regiated by his time machine cannot hispen

Papers have been written to show that even infinitesimal davaidsmit from the specal symmetries of Kerns solution (such iss would be caused by an object hying to late the time machine) would chascally able the structured the Kern solution. They concontradic divide the

Warping the limits of time plumbs the deepest sources





All of us share the impulse to escape the of night and day merged into one con region of everyday life. The desire to important only hard only interged into the con-tectum of everyday life. The desire to important only hard the jorking out betravel through time reflects our unwilling came a streak of fire a brilliant arch, in ness to law with things as they are Time space manoe of the past and the mystery of the City' the time traveler has no check " future, to try to change our world

H G Wals invented the modern time travel theme in The Twe Machine Wells a other place. Paused now, only a few minhere undertakes his sourcey out of soven uses after the transfer he leaned agents! swith through her quarters from new to stars. Garring velocity the palphalion Townley (Toft) and Hare Union Ostrowalder

In Hartan Elison's "The Provier 11 the suddenly he was flooded with light the wall of the city and recalled the light "

Periphos by Richard Lon Cohen and Jon

BY ELLEN DATLOW





The David org provense unque risks What if you went back in time and killed your owngeneralisher? Crivited if you bond yoursel in the posson of Philip K. Dick's heroin 'A Little Something for US Sampunust?' . " Nen it time Weng in a closed wini loop we keepgoing through this again and again each time imagaing its the first time.

There are also bleesings An old doctor in C M Kornbluth's "The Little Block Bag" finds a unque madcail la tom the later "The block sonking not fuely other only the dead tassaid docting to alloct any system or organ except the one it watamed to, could you say?"

Pantings by Penale Mover (left) Hara-Ulinoh Ostorwalder





In this story, 'A Distant Thundar,' Hay Bradbury wans that a title entor head would multiply in safty million years, all title old propertion' changing the future And Multiple Montocott once a time traveler has visited the future he cannot entime 5the paid if he dot he poold after the course of the future.

Today time travel is a dream, tomorrow we may wake to find it a reality DO

Paintings by Eclischwise from above) John Harris, Poter Kother and Michael Bhahn





FICTION

In a society ruled by zealots, minor indiscretions can be crimes against the state

BY FRANÇOIS CAMOIN

I don't book kofore I across the aimed, built divinit market, Markstan is protyneory repty al case nonedays, except when an imperiate Reader operate Asso in the Motenagen or the Motorea paining in owners and book proparing al owners and book proparing al owners and book proyed back, we gather stand to being cured, these lastfow parse, and a morgia lowly. These in pro-sense morsing fast if you're not gather allow the prolevel host farded bookse, but ma

I were I coald afford alloyde, but I ma wijping che's, and on egity thousand dallara i woek fra glad to pay the next and out I min 4 faith in that globes to pay relative workers much, but a one-hended mans bleich and har men. I have a lat more to love all get caught again. Beworks low and a subsit in other was no adas, the path or subsit in other was no

On makings kas the, in take Apri, in take Apri, wilding and take the sky the times as blue as it was wan in the old stype when anybody with had a hundred floward belfur, outdot you can the wild have a strateging of the strateging of the work streets you can see to make. If other had nak to working machine or any of principal makingh, borther time a powe of principal makingh, borther time a final had the strateging of the Stde, where the Arabis have these strateging of the strateging of the final had the strateging of the final had the strateging of the strateging of the final had the strateging of the strateging of

SOME OF MY BEST FRIENDS ARE AMERICANS

> PAINTING BY ETIENNE SANDORFI



One of those class if m garagito age them books for my hinding they have incelle to the survey. New and then thek situations where it have that even labored the class and have it houses where down more and with all kinds of electric accolorances. But the border is closed sight the Resultation down't case have of the Windians are sourced of us. We're too hungry. There are gased of us with the too hungry. There are gased of us, while too hungry. There are gased to short American the tag, well-fed address tile of boot Americans what the op accesses.

I harmed along so I coald get gene Times Square balow the ascouldon if west announced on the moment basedcast by us goint was a way out-half can tailwestin extragators say out-half can tailwestin extragators say the algohing the distance from out outing the Calistons Transport Hely Cally of Brookyn, thus cheating the Law

Gon't reach like the multial with the bloat ages - there are some things a mon depart of -buil 1 don't like ince way or another about the like. All we are like and the work's the work's the twee is go along to get along --that a swaps been the Amercan Way 1 have graduated from seminetal registrates, and this sturp on the end of like lift are in the dolona.

A woman buuded against ne Her childro apport, langth lacks at her lace, and a tremendous social urge caugh new of guard. They say we can't corrid ouraeless and maybe here neglit. I want until 1d wake haf a book oway that I remembered that a hold been but homely and medic-legal that a perturuent social had a perturation of the social had a perturation of the social had a perturvation of the social had a perturbut the social had a perturweld been material a ware

To passed an American reling sendetering locates individual development a postage, and incidend to thim He audi lobe a high-school caves search revelopment an old maxwho makes a long height phirunday ones. I don't sue has suff, but I don't blame the people who do—pelor dans und blame the people who do—pelor dans und blame the people who do—pelor dans and blame the revelopment to file. Bein filthe lackord a suff-American

I have isser han I though, when I gott more times Source have were loading the Jaw up the segent if is even dark parts in dia were and of may, and his loader highlawed and wear and of may. In the loader highlawed and wear. The multima seek his arms and upstahed him down on his invest. The secondaries stood barries them, materialises weaks were happening, and i hoped highlighers weaks we happening, and hoped highlighers weaks were happening, and hoped highlighers weaks were happening and and popel souldy and clearly in ritheres. Beand me somework objective highlight of loads, be Load our departer of highlight of loads, be Load our departer of highlight.

licked around, but the faces were order hary American faces. I turned back just in time to see the sword carve out a proce of That very blue sky and start down. I closed my eyes, but I couldn't shut out the mest cleaser acount of the biger it achoed from the tail buildings, repeating toalf for a long time.

Mounted cops began to clear us cut, koking at anybody who didh'i move cackly encough. Note of them were hig, bedy othersful instmen: Our new matters leftus our native policy, it allows us to work off our hate and itualitation on one another It works—I hate them worse tran I do the Arabin

I ducked into a closiney to lit one go by, the bastard was enjoying this work. His club, cought a lindele egid min on the safe of the head and sort has staggering in a cooked line lowerd we I helped him to down. He was befor dhessed than most of us a togged business suit mended at the knees and too work of him in the wast.

"Tm obiged to you, levend," he said

"fourte going to have a nasty bump," I said. "How do you fee?"

6 I wish I could allord a bicycle, but on \$80,000 a week I'm lucky to pay the rent and eat. Par-Islam Trèding doesn't pay much, but a one-handied man is glad to find work 9

The main was white and sweating, but he gamied. The been hit harder. He reached up to feel the place and wholed. "I m Harry Landon." he said.

"Michael Steen," Laaid

He raised an eyebrow which made terr which again

"Tim not a Jaw" I stad "My greatgrandfather came here from Germany in 1979 to get away from the depression. He well a Lutheran "

"I didn't mean anything." Landon said "But it a an unusual name these days. "m sutcased you basen t chanced it."

"A man doesn't change his name be cluse some people don't like the sound d

No cheres ' Lancon raid He looked across the square. 'A temble fleng,' he caid on the platform the multishe watched while a red haired man scrubbed away the blood. The body had already been temoved. I shrupped.

"Don't you care?" Landon asked

"They own the wold." I stat. "Anyway until the of nurs out. Then it 8 be somebody elses turn. That's testers."

"People make history" Landen said.

"Sometimes." I sed. 'Reyhow look at the bright side. You can wolk anywhere in New York any time of right now. There aren't any muggers or drunks or pushers."

"No theves" Landon's eyes traveled to the end of my arm, he shut his mouth and looked embanassed

"That's okay" I said "I'm not selfconcours about of "Then of self-

There are also able to this in the old days we would have organized curveyers and labbaid in Witahington for special privileges. Mary-Americans et hts, didfibelive how effort the Law could be, we were used to largets and appeals and supported sontences. That was why they didk have mapping and specials in dispersived some mapping execution to be go about, and Bookh They use only house up with the bookh They use only house up with the bookh They use only house curvers.

"Doesn't timelike you mad?" London said "The thing is to survive." I told hem

"Wah," he sted

Are you all noht now?

Sure " he said "Thanks."

"Ansame"

Lives sure of never not no gan. The copy were goes and the nature wait living up with poople waking to work. Men notfeed along, in no huny to get awywhere Mart of them was the same suiter, hat along. This drags are suiter, hat subject that the same suiter, hat below-in an additional of same. The balange has entities of idmaganess, and balange has entities of idmaganess. And those has been the same to be to be through them and remember how the work und in blok.

But the printer used to be a chemist for the state Food and Drug Commission, which unews accrimitised hely man Heis the clearests man with its heads live ever known, and its has a title officient of the diagnand as part of the building hist-waare system. He makes a powerful moonthen out of whiterer ter can scruting up for time accriming the state. Pasking for time accriming the state of the building of the state of the building which is main diagnamic the state of the state of the main of the time.

The part to have the part to have helpody gave a damm II arruses the Arabe to see us live up to car reputation to gave all adhifesteress. "Textronov framework they live to say to us with a fixed Arestration coccert, and then they tags the holl. "So these to say on top of Arrencese every timals, they all one another which they pay They're large but hey're clear. That's here the pay when they ward.

There may comer at the back of the waterhours, with an old metal olds, stendibusines, and a computer terminal that when a market briefs of the hours at best when a market briefs of the metal best when a finger on Store Age SW and He may pass the staty much to consider, a market brief of the staty much to consider, and it my to make mark that he datas the path boxes on the next dock most of the there. He sinct a bad soft for an Arab.

East by way of California and I have to centered I don't see the little playtic peckages he slips into he pockets

And sometimes I send and receive little probably does more harm to the Republic in the men's rooms of various government buildings I wouldn't even call us a moveand landors and dichdiopets and street hundred of us in the whole country 1 don't

When I got home that right I turned on realist dramas about the glones of

Hehanded mea glass "This is about the

The next one should be better, he said

I picked up an old Newsweek and lealed through it carefully it was a January 1968 Grev promising to close down the last five him sitting cross-legged on his desk in the Interior She was stroking a organ Those was the days " Bob said

Ewan after San Onobe melled down, the only people who really inquied were the Laguna Beach

California I seed

Bob lookid at me It was never that Sure it was," I said

CMNI

"bu don't understand " I sed. "Or you they wanted at the supermarket they all had two or three cars the women walked uchappy?

was there 'Bob said

Armambers it right. The Mesocares we sale or television row and then when the availal

Two days later I saw Harry Landon again around with my bread and beans balanced

He looked across the square. "A temble thing." he said. On the platform the mullahs watched while a red-barred man scrubbed away the blood. The body hed been removed

He worked for a jewsity company actors a leather pouch I sing over my allouider Hell of a way to make a living, but it's

"What did you do before?" Lasked

Sidowreg," | xoad

We got into the habit of eating lanch to orther we are easily sat on the same beach the old class. Harry hed level in the San had made if to Mesaco before they d canoaled the American purity

They send me a little money some times," he said

it was a quief summer lightloknow Harry posty well. One of the trans-office hypercame by and caucht little Johnson silvep-

The trid awak at Sectorriber Jeruralers and the available announced a week of national regions. When I saw Harry at unch the next day he looked as it he'd been dankang all reght

as long as they did with nothing but what weepons" i saut "The avatulation mario a deal to let the survivors settle in Oklahoma

galled farms now They say the Jews are

"Have you ever falked to a Jew who's been those

"How could I?

"I have." Harry said

Two pops came by slowly on their horses Harrysaid

But you talk like a powboy. I said "You

Why tell me?

"I don't know " Harry said. "Would you like

"No. I said "I don't want to know any?" thing about it." I got up and walked away

I brought my jurigh to work the most day computer terminal i felt sale. It s not asil i c asked my pomon - it sn't that kind of Re

bound to be caught and transported or works, and anybody myolysid with her who is already lost one hand can't be taking was stepping up to the Booth

Ewasn't the pain-they re-not interestory time i thought about it I wanted to he down times lwake up at repht and I can feel every one of the missing fingers. I have to pump laft arm before I can convince myself

The only chance Im takens is with the out in Pan-Islam's crates. But it init an insky Arabs are terrific; is detectives, they reisologs. I cruid in this for a hundred years

Litle Johnson went around happy al week. "What did we over get from beining theminithe old days?" he said "Nathing ha

'Hunyup with your lunch, 'I said. 'We've got work to de

"Ahmed said they might give us a raise He snapped his funch bucket closed and went off to find the lockit

Stop that damp what inc." I start "You in

The next week I couldn't stand it any to him made the world a little more tolerable, like Bob's moonshine, anyhow he their dark clothes and their furniv way di

his beens and bread. The leather pouch throps in it was lying beside him, as secure as if it were in a valid. Notocly strain any

"How come they didn't get you in the first place? I asked "I thought they were

"Do you want to know? Harry said He made a place for me on the bench.

"No. You re right. Forget it: Let's talk

In late October the city is sometimes as looked a little bit happy

In California the weather was some trans like this for months on end. We could pick oranges right off the trees.

"Il must have been something." I said

"It sail to You puppl to see it

"R on'l as dany so it was before but if cars that, though I pestered him for a while Next see California crice. All in good time Harry said. "Maybe someday you'll get a

"Tell mo." I said. "Of all the things you remember from before, what do you mass

"The food," Harry said "I never have enough to eat how And even what we car is measable medble, im sick to death of

108 CMM

another hundred weers. Right now I'd crive never ent one again. What about you?

Ti don't know I was affil in pallece when peanut butter and vocurt answers

Look over there" Herry and "On the about food, and they ve got so much they

long it's been since I tasked an apple?" It was a little acrowny velowerh creen but lumpy and misshapen, but it made my mouth water So I had to keep swallowing

'Come on I said 'A lousy apple Those they lee like t What come to care?

6He was bound to be worse, and anybody involved with him would be in trouble with the Law too. A man who's already lost one hand can't take chances 9

and turned to onn at Harty he was gone

YouF the cop said His stick lapped me

been more \$15n twelve under the head-

"No." I said "With a metude "thu city t understand No.

The kid pointed to my left arm. "He is already a Trief!" he and

Theyals aren't crowcled Nobody stays m them very long. The Law was inverted by a and they weren't friendly. They tessled me as if I were stready a corpse.

The denote was belier than anything Id been able to afford in several years; there were actual churks of lamb in the stew I and a guard stood aside to lat Bob come in

"Harry called me," he said. "How re they

"Prity wel," I seed

it was a Mational Geographic with a cover photograph of Santa Barbara before the LNG tanker blew up in the channel. see in the picture was an extraordinate ground seemed to explode from the toos of ther trunks-a wonderlui clusty green 1 pages

Take it back." I said "Here" I wolded can't do me any good. Get out of here

They turned off the lamp in my cell so I halway, in the half-glow I found myosit studwing my right hand. What a clever pried than any machine. And in a few tours that masterwork of bone muscle was going to be lying at the boltom of a stantese-steel can chenched on nothing delicately shaped, subtly colored, no two

The Booth was in another part of the building. I knew in a chamber that opened of the courtroott so that the sentence the size of a photo machine and had the stood at front of a flat menal wall with one high. The multiph who stepped in with you helped you put your arm into it, up to the sits above the wrist, a cult sensed your found your sen and numbed it and there witten't any real pain. Only the sudden terr-

hand in my belly so they couldn't and it. I me tree if I desounced Harry as an slegal Jew Probably not, and anyway there are dams about the Jews, but Harry was a

up the arm. No real pain, I thought about The see DO

MEN LIKE US

CONTINUED/ROM FAGE 85

Blast and who would remember that?"

He looked around the norm. The eyes that methis dropped swiftly. There is been some boart here in Norsky haven tithere? Strich asked, his words thrusting like kinter blades and no doubt in them. Where are they now?.

The man they had called Scotte bit through the need stem of his pipe. He splut tened, and the front logs of his atoptictacked on the puncheon floor.

Say now Litt not here to pry: Smith controad swifty: "What you do is your own business. For my own part. Ld appropriate another mug of this excellent beer."

Datas sosped in aguerant as all the most stood stretched and moved to the ball Model cleve beer amountly change whyte ball diverse as cost the sosteast records deby Several of the contaget while the clevel of the contaget records deby Several of the contaget protects deby Several of the contaget protects component and the contaget and the Ther Section available of sol to Reporting? XII tight, what about the Changetprof.

Pardon? The traveler s eyes were friendly above the rm of his mag, but there was no comprehension in them "On comeon? The local said flushing in establishad the service of the service of the Orangelings Everybody data. The Buar made them They were not before but now they globe blue and change there shapes and welk around like skalaters at banes." Scriftle lowered his eyes and skupad his beer in the selence A last he reperted. Everybody inseed

Gently as if the suggestion did not appeter as absurd to him set it sudderly doll to everyone else in the hours. Stathward "Twe statin some of the Stinke Zones" (guess) we shall shall have a submittee the doll the distribution is sold; everything. It isn't Weyl hall affetting was careful by the River.

The Blag thranged thraps the can all lapse three, and Carter unspectadly peris fairable breaks the polycemen spetied at one conter of the hearth. Randper change: Carter continued to muse aloud. That!I gainedly mean destuction yes but they was a loc of poler in the contraand all of borris. So much power that who almost what they not have neveral.

Smith looked at the paloaman, He nod did ligalin. "Power yes, But the chance that the changes oil by oil alter by alter, acuid be not destructive. That sia billion to one pagents. Mr. Caster."

Well the books say there were billions of main in the world before the Blass the polyceman said spreading the fingers of the left hand pathin upward

the traveler is scarred left hand minute

The packgrown is 'to a wide world' here said, as you must know and is usely do " He drank, smiled again and said." You're familiar with bombs, it would said. "Source familiar with bombs, it would said." Source i where date with the source is the stockpile of bombs inn the imputting around here. Do we know that source?

Centre looked at Smith with an oppression that was lemittle in its salineer. "No off" he said in the selecta "Tis the di those another log on the time 'He poused the minisper sounded to bia detected "And its time. The policientian contraut he tails of ather things then the Blant When bials of ather things and the Blant When sort of game do you find in the Hot Lands for instance?"

"Well I share more than I knock on the head with my ding. Smith began easily and the room released a title

They taken and such that into the right, Smith tot digraph vector and to lishwang miles of tasis works and the lishwang solution. The totals replete which types of their farms in the met totations, managed fitter them by henging and the wealth they drew from shares in the smaller ap rofers frow of them scalably did any of the heavy, dargenous serviced sized production from dargenous serviced sized production from data with the scene chem in the local bids wealth the scene chem in the local

When Dariar finally left only Scotle and anather local remained in company with Simth and Model and the talk grew locaer Finally Scotle wheezed. They diff in here to Monetay up the river and down. You re-



under the chief and the police that is We

Model insched the are of Scotte's new home and for me to get to bed

alwak and, say a walk to settle my heard. If

ness. In the shadow of the house nearest

and weathered into irregularity enough for at the power plant. When he mached the bracion freedies he paused span breathant in a clump of heavy grass

after the Blast. The walls were dry slone using the natural lavering of kmestone and

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Answer selary's ewo "leaved "for lands als

the claratific or if wall's replies on pe

Salary Sin ... a sugarded "Bardening"

renderally begins to sweep arginment adors,

was _____ PL NOCOL Much more or icon washing out

Proven usin and effective

Perfect when you estimited

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cles-if eclific sugris impressed with the rawly

magnet Rection), pupe on every day of your lifethe part of the pa

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quote real without mortar. Ther weathered search mide it using for porteone of Smith a transpin and condition to mount the fine meters of binsk wall to the lighted sith put before. The meters was much as the traveler had expected it to be much as the traveler had expected it to be much as the had sconii before here and there across the finace of the weak.

Be hope domin motors were cause bear hom "Inny were berg auch as globalized, have by a cancel approximation of the second second second second second motors are second to be morest." When the motors were working in kit capacity and distribution of the second there are any second se

In the center of the north wall, built against the living rock of the mountainsada, whill the mactor

Its genese was extent for the black hulls of the fusion bortow ever carged along the partition wall to the east. Simithe froat manual in the name werdow licked his lips when he tays the bortosthay would no longer be weapers, the ph/onoun of ther fission cares would have accessed tays have compacted. But those cores taken from their opcound of lithum hydrob and the inner taste of deuterium cold of Net an access

The bitter was an upy mass of store tools overholdwork dy a manufake der rok. Steam from the nactor draw the parbere of a crude engine. Unkel here per Blux electric motors, the assum engine had been manufaked vision strong been manufaked vision strong been somal and oper gastellis but the power to create electric from water was visually edihabetite en nite scale regulated here.

Manufacturing skill and in the thereines knowledge that heyeworthy been the tradeon hormat programs. Leatence as lives could order the version could build an out of the transferred system could build an approximation of the transferred system could build and expendition the system that the system of the total could have bailed with the system could have bailed within the weapone could have bailed within the weapone could have bailed within the system could be approximated by the system could

It was what Smith had come to learn

There was a new sound in the right A score or more of men were Hudding acress the bindge to the power plant. Smith ducked his Head beneath the still of the window As he did so the silen on the root. hocked lensity Knowing that there was no except downward if the hackbeen seen, the there is sloped sciencys and began to clamber up between a par of the wedges as his ingers to ache of the inger of the states a voice from below shouled "There he of"

Sinch gathered hensel to save getto the grady staged not something apped its introduces Histocked up Thermazive/Chemain emisd over the sights "I save some thing block near the plant and the plant and the block monitor in the plant and the plant and block monitor in the plant and the plant and block monitor in the plant and block be adding the gateria for their hence the block monitor in the block monitor. Block monitor is the block monitor and the source writing a remain the block monitor work the coremany.

The pair of goards flanking Carter tect taxes is tenter as their cocked crossbows Smith shock his head ruefully and descended into the waiting manactes

The aren gave three long cries as the

There was a
 new sound in the night
 A score or more of
 men were thudding across
 the bridge to the
 "power plant. Smith ducked
 As he did so,
 the sirisn hooled ferally*

partic marched Smith back across the brage Otensis extend by the netal signal bogs walking out of their houses the men smooth tevenion bloak as gry satest lines which bears the strought plant across the lings shore of the orczers seethed by the bridge hore of the orczers seethed by the bridge hore of the orczers seethed by destination. They deaded in pass and new large goods shorth and his coton plassed arrong hem.

The check and the manuface polyanma to be a set of the strength of the set of the set of the strength of the set of th

"On up: Carter sind amiling He heasied Smiths manaclos toward the single. The guards were taking portion at the base of the altar facing out loward the Assembly Despite the series calls, three was no sign of kis or movement term the streler and its associated buildings. Then blank walls were more than a physical suminder of the grip the freeholdars of Maakby held on the moda and kies of those who would work in their village. The business longht was no business of a bargee or a factory hand.

Smith mounted the steps Two policement received him holding their rifes by the petol grips as if they were still functional weapons. Well, portuges they were

There were other improbable fixings in this place

The monitories was chadward by the firmsy walls. It gave only tests of the enclosed max the policient in the nagged uniforms two large vertical cylindes, the one mountaid screweite hyper than the other and, at the loss of the patrom a wooden block the heapth of a man's lyze.

woldon't want to be like Serrison, chaning you in the temple so you can bring it down on us hey?"

Techen and we'll get this own with ' the chief provied

Carter velocked the minacles and bound Smith's left wrise to another stagle "twise a good idea when they chooped musice here every week, he said. "If a good idea one 'The conversive minate us allifted to us agrined the verific and all of us together III lake the us of you kip."

Smith facing the panels could not see the exchange. The art licked his neck and cheek as something passed hron hand to hand between the men. "Drop the walls," the rhed velocid and turn on the light."

The pair looking together the corress of the heatings stipped out the panels acced down emittaneously in a runh of an und a collection sigh from the Accentry. The parents of an electric motion becoming under the patients, many and becoming under the patients, many and becoming because A to the best model thesis together mean was based on a suddee or access the sptement and the terms between access the sptement base.

Brith hesist he test if he polycene and in a line action the with of he pairform. Certer in hermiddle grapped the hast of line action with the disclosured by a line action of the second second second line action of the second second second second genesis action of a second second second genesis action of layers and the second genesis action of layers and second second second have been more firingly and line of howers power. The kane Graph line of howers power the kane Graph way of conversing electrony rolght to ECC we've cambed into one bomb casing. The statio discharges to the grounded casing were all the more spectacular for being insemitient.

You still have a chance to save your selves if you list the go " and Smith, shouing over the ripping area. "There is no pursishment loo temble for men who would use atomic power sigain, but you still have ane to the?"

Carter's amfe broadened his teeth tickengin light waterial onto his tace. He roared "We dodicate this victim to the power that prevenues us all?" and be raised his ax

You load "he toweler sad quarty He do not by a bid teach team the block revenue he watched a multiple discharge ambet the degre of the descending as the hungry street cough tem powerly showing like a begreed toweler to be which the hundres report of the black against the word. The scherd quarter is specified abut a higer a breach of the toweler is neck. He binked at Carter

The polecents rocked his blade free Static discharges azzled behind him at hiree-second starvals. Smith fait a line of warms as his Blast changed literh in tho Wrather anoth while the staal writerhow.

Sectemps, Carter stemmed the exclese or Intertweet altemps in the laded brindhe helve. Smith reached up with his right herd, sering the stopic hand the Roaring. He grapped the wood, and it spinneed as the bone that the stopic hand brind the herd text field hand the stopic hand the flowing together leve was in a match. He left west reformed as the namede liating out finduph it

Sprink like shrets of surlight cause Incega the high workses of the power place. Their guide of light case if the power place that guide of light case. The series agouding also the saret the three the larger coefficient of the caret the series works all worksers the borner compares which all worksers the borner compares which all the power place. The blace place from the backfirth and them.

Flee! Smith ched iffing to the creat the scared hand he had thrown up two centaries before to the fine of a hundred megator bomb. "File this abortmation before in devours you—as it surely will as it dot the verific before this world".

Carter screamed again and struck with ris rife but huring the Changeling off the platform. Sinth picked himself up. The guards backed sexy from him, their eyes wide, their cooked bows advanced as talismore and not threats.

The two ligures on the bridge threw back.

their closes. The lapping arcs played arrows the half of figurals in the plane and large that was halled both. The bars arguing palled within, and has one eye darted like a black geal. The Black had corretines presensed and had rounelines, destroad this more it had done both in new exaulty.

Silu-Mawould have mood our without the anthoral lighting. Sho had the larme ten, beautiving uncertain the grid she had been the right she saved not have the sky above (up Nar and save down blaze three hours early Naw Bak fights shows blaze briefs were than the spreading free that site privacy the wall of the space ablest behave the:

The croad was scattering toward homes and loward the river No one approached the platform except the two Changelings walking toward their tellow

The chief three up his revolver and mapped tiltnee times four and at the lith attampt an orange liash and the thump of a shot in the open air Five of the poloemen wire tribunitio their subtrimic weekens

 She screamed and pointed. Others leveled their weapons
 Ridges of gnarled firsh stood out as if
 they had been parallin refrazen a moment after being linuelited.

and lagging at the cocking process to spli method rounds on the plattum. But the old guiss coals rails for Shorts stagped and loss at the right in short bursts that puttiend over the fields of the Chargenings like sandrops on thick duat. And still they came while growth Smith and the platform

Incredibly, the antitativ toolet grand when the size boscenars toget of a when the size boscenars toget of a babe agreed his strategies like a context babe agreed his strategies. The actualization of the back-Haus burned away the mark's am and check in a ghadry tratacitation (scamars) a molecular. The strategies are as a strategies and the size basemas when the red black and a grandmat strate by a mail Semulaticous phatom sub-check grand black theodil phatom sub-check pour plantage.

Then exident in the sudden darkness the tims of Sourmas glowing protoplasm began to draw together like drugeter of mercury siding in the bawl of a spoon. Her head had not been damaged. The wrong ever smilled up at the darkness. Only Carter still stood before the casings He had thrust the muzzle of he M% into his mouth and was syving to he the weapon with his outstretched linger. The round and/of the hismane midmed

The power platf exploid again a goar of time that locerate the hilds obtenable and annual the second to hilds obtenable begins to bourn a pair emittain of what platforms and the second second the second and the hulls of the second second the Relativistic Tower with the own is continged matcher Blatt The creatneed and beind away as the rank frout is continged matcher Blatt The creatneed and beind away as the rank frouttion collisions allowed and it has own in motion matcher and beind away as the rank frouttion collisions allowed and it has own has devided a way be the bound what is a second beind and the bound of the bound beind and the bound what is a second beind and the bound what is a second beind and the bound of the bound bound bound bound and the bound of the bound bound bound bound bound and the bound of the bound bound bound bound bound bound bound bound bound of the bound of the bound bound

I hadn't celled you yet. Smith said, shouling over the turnuit as he clasped Koznairs hand with his own left hand. He extended his shift to the smithing Skulars

We heard the oren, the Ukranian and his vince itimige to coming toes a mouth that was hall bore—the half that had been tumed away from the Strike that vaporchad his infantly company he had once septemed.

"We could all tell they weren't burning could couldn't we? Sau-ma added

The three travelers began groung trough the right through the smoke and the screaming. I don't thrik we've ver checked whether the Oconee plant was still operable. Smith said. I'l dibe a good time to see.

Kozinski shrugged "We ought to get back to England some time it's been too long since we wore there

"No there stree for that. Smith argued histody, there is going to build a fission plant as long as there is one man left to bell what we did when we found the one at Hashwell

A part of burning buildings lighted they path assegned the ar clear with an angry updraft. Koamis squarted, then reached out has hand to half Sauma. Your birth mark, the add porting to the star shaped birthbanewith the prils left breast. "It used to be do the note adm.

She strugged 'The rocket just now I suppose

Kozinski frowned "Don't you see? If we can chenge at all, we can die someday.

Sure: Smith agreed "Twe got some white hairs on my temples. My hair was acid brown the when I went to New York."

Will live as long at the world needs us Starma start quirky touching each of the men and guiding then owned towed the that back through the mountains. The aream and the right wapped them, mulfied them Through I her words came. Nu find alwats act of men would free be in the world if it worms for men ke us?

And all three of them spoke the trial the of the joka, their vorces bright with remembered humor. "Men like us? OO FUTURE GENDERS

In ner 1979 book 7be Ransserver Eine per 17a Making of Me Ste Main. Dr. Reymond argued mit transserval surgers is rohning loss than an anteiocal activity hist prometes the worst support of parties rohd Socially by electranistign adaptation to the sex robot. "Becate transservations on amphasizes a charatery between women and men. It "constitutes a Societypati Be mode-

She angled out John Monry for huving contributed "a pasedometaphysics" in transsexulation defende – a new freey of the social instant of the ended defended that is just as instructule (and bischat) as offer biological instrum of the servers." Reynord: that is as an example Manaya way that gender idontify is inversibly free his the social defended them meether

Up to a part, Mony agent, "tou can't, gone the lact-dyace want to say it the way—that is suck society produces the tousiant, or any other seasal pocken. The agent, "beyou can't sengly are, "to hell with all those per suffering notweakable im going to clean up the society hest. You do both together our how and typo? The suffering would got liveg on hwating the suffering while at the same time you concloss the perpetution of the society that creates #

He does not intend, Money says to endoste the polyadration of that accests. "The whole suppose of polyng address the formasessatiem is to force accesty to change is entre athrate toward, for instances the sam education of its children and its athrate toward normal primate sessal scheared loss in retrace."

Children's result reheards play is a topic about which Many may be manzaalove than her is about any other subject. Projecting on the classroom bottom is play to a class of the subject and the subject of the classroom bottom is to a class and the projections in ormality in the workers about it is parallelinearial play is a classification projections in ormality in their play more download to be of the play of the play of the subject of the play of the subject of the subject of the play of the subject of the subject of the play of the subject of the subject of the play of the subject of the

There that we produce all the profice senal discriber all of the are offender depotents that get people fraven in give bootseas instauced encountryperphilters to dewelop install interesticated pilling that pilling central all These shippothesis that pilling central and the shippothesis that the pilling central and the shippothesis that the pilling central and the shippothesis that the shippothesis operation of the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis operation of the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the pilling central and the shippothesis that the shippothesis that the shippothesis that the pilling central and the shippothesis t

Money's emphasis on "copulatory sexualty" stands in sharp contrast to his run.



estimated associate of the sense of ensure sectors it acquires that live the sociely ensure them has accommendation manager theorem diversion between people, with the act of ootsus as the boldom the Unite accelly all step hasewore. Worky recognizes that more ut the apparent of themsons bereated the homed people and themsons the vision of the homed people and the social of the social Wavey has access any the presence of a parts large stocy for improvision of the period and stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for the period large stocy for improvision of the period large stocy for

So where db John Monry's tracette lead? What is the taken of humon operator identhy?" I wouldn't wonth to be dogmatic advanthy? I wouldn't wonth to be dogmatic advanstrangly suggests that if you have a society is wond there will a hangup about dhiderm sensal instead play you re going to cut down on the development all aller instead and gender-cliently disorters of even too?

Would a society that is less hung up on the separation between "male" and female have the same advantace?

"Well " he replies "I don't think that particular thing alone ---what do you want to call it" the androgyny factor -- necessarily has much to do with it Androgyly doern't do away with persee and subas does it"

Science, however, may at least as a fixed part of our lives

Johns Hopkins, the site of Money's fust ass-change operition, decided in this 1999 to utop performing the subgray in reasome to a study by peychathed Joh K Mayar Mayer Frauch that there are an approcessite difference in "adjustment" between patients given the operation and those who applied for a sex change tue never patione.

Even below the tower Monry asset 1 don't Tim's aver-assignment surgery with homore-bettermine will commute to be the minihoad of choce for threating transsequences of knowledge of how the terms assignment of knowledge of how the terms the othersetry of pathways that module the othersetry of pathways that module assignment and dentry—that thereis no limit boths assets of them things we will a state of the

In this class, the disactness that cleans that is apposed that can obtain point of exploductive sets. There will correr prime where backgrafts (game can be endown) and callular mechanisms without hist societaring backwise black. The predicts "Once the backgraft of the interactive backgraft of the backgraft of the backgraft of the backgraft of same and the predicts." Once the backgraft of same and the predicts. The backgraft of the same and the backgraft of the same and the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the backgraft of the same and the backgraft of the backgraft of the backgraft of the backgraft of the same and the backgraft of the

Will car multiaeved nature then find expression sensurity and scorenally? Inorostry Dr. John Money Pie man who revealed how astorishingly varied human sensatily is, carried see where his discovery leads DO

IT'S NOT TOO LATE TO BUY BACK SOME OF THE FUTUDE







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INTERVIEW

COMPLED MONIMULE

what's growing, and what has real polential Those can go on a new S curve but in a coupoletex different place.

Ome: Will we have a multieconomic phoenix rising from the ashes of Keynas and his theorem?

Headease. No. Limits The mark toop of taidstoril economic heavy and miles with quarthyre gifted car soog costs. But it will have to go and the second costs and the have to go and the second costs and the best second with was the monitoriated sector Economistal waste hypothizated by this best solution of an economy with these is maily no such thing as an economy as an econdemic

Ossel. How will problems affecting the in pushal rations affect the Third World?

Henderson The Third Hord has been capital in the support behaviour and the second second behaviour and the second second

Heotoson () this that it the encrution operated in the service had any country operated in the service had any country operated in the service and the service of the production of bogan as version and the production of the service and the service and production of the service of the service of the production of the service of the service of the production of the service of the service of the production of the service of the service of the production of the service of the service of the production of the service of the service of the production of the service of the service of the production of the service of the service of the the service of the service of the service of the the service of the service of the service of the production of the service of the service of the production of the service of the se

The Office of Technology Assessment is one of the law governmental agencies where that questioning and the recorrosptasizing have been mithalocalated. One of the ways that 1 their to open Office conceptual approach was to imself text per schis and gonzen in scorely allifected by viasus technological chores—but not necessarily benefiling from them—be included as representances on the advisory panels for such studies along with percess percessing the more fractional kinds of aspentes worth real results on on impacts requests a very real sort of expertise it is topical feedback or anticipatory social "See down?"

This featy warring creates abetter delinitian of the problem. I patietied tha incluation of papelle who don't have orthodos degrees, such as consumer and labol tepmaeritatives and enventmentalats. Their expension is visit to ecouring a delimition of the problems.

Oten: Will these people have lets of a sense of isolation from the people defining the problems?

Herderson hits You see what happens is the people from the triaditional decipities the physicals and the engineer's and the economists who normally have been inwhend have been assisted and have a same of univality of how these technological dees teally impact on human beings in mail situators.

Omst. Would it be mainly because they re not quantifying the things we've spoken of like beconductivity?

Henderson. Right: Those do discoptions where the preparation and do not include the second and think deter coreceptores the had a tendent problem when DIA who came in were just putting of a wint may include the second second second second main table of the second second second main table of the second second main table of the second second problem second second

It way unseemite to look it a problem and then prophic methodiogual acciulless and then prophical methodiogual acciultation of the prophical acciulation of the second second second second second second methods because that the threag that you behaviological tensority and the second second second second second second second tensority access and page. That second tensority access and page that the second second second second tensority access them there are the second sector problems when its technological tensority access the second second second tensority access when its technological tensority of problems when its technological tensority of problems when the used of the tensority access to problems.

This meet to synthesize the intrivers to the these qualities and whitely impacts here imple using toor the off-teent models and methods. That's one nation why the sectory general endod in the Sone will have a physics back some an intercomparise and some an economic on the source of the sector that the endod with the sector toop.



CONTRACE/ROM PACE 12

Cof of households of dollars in process all of which later ware denated to chastly and to instructiong the domas. Honosing the hamburglans' belliance, a deligited revail Burgor King available the instruct students a Sã 000 scholarshot for their school

Butthe providest momentum he halony of Celtrokery the most sublime of all student prains, is centrarily the Great Hose Bowl Hoax of 1961 pulled off-claring Pasademais most secred crisic event and withoesed by imflors on national balenease

The stant was conceived by bored staderts in Ltype House claim during Christmax nexes. The first stap called for a staderr, disguised as a high-sched reporter to conduct allengthy interview with the Natterd stabart director of hall time evenisition free University of Westington, a Pose Bow contract of that war

The divident quicted the unsupporting director on how the planned cent during weap analysis and later managed to make of weth one of the instructors thereas: Back at Californ the students working night and day motocolocally revending and countinleating all 2,300 indiraction cards. On New Ward & Su a continentia basine basis which the director's hatel noon and pulled the selection.

An tertime of the Rese Beer game, the convery Wearnington, and Leedon water to convery Wearnington, and Leedon water high Chine terth In-concentration of the high Chine terth In-concentration of the chinese structure of the lower later, which have converse the lower later. A high production of the lower later, which control is come out Selekur. The denote later is a structure of the Weaterport Has the remoted Lip properties are used as in the later of the rese later, which are a structure of the rese later, and and a structure of the weater area structure of the rese later of and the later of and and the later of the later

It's non-and reports are flood regin from the field that more senior stacks have joined the growing calculty rolls. Pykes room was broken into house ago, and a counterchark is already in process.

In another dom Anatolie the scale or graphy lowerd on a sing through the larroom into the room. The snake responds bisauffully and wages temeet according bog containing the key the sputied back through the insteam and another timeses stack bless the dust

The Blacker beer botis—laser stack, is declared our or opcar, while stroke file inother dom consider. While they attacked a heat opening tracker and An enhance to opphonore had pouvel hot was into the lock, uninternally aisting the to a pile of underweer on the other side of the door the opening the stroke of the door the opening the stroke of the side of the opening the side tensin twy wichulars a park the pool optimized calability is positive to an approximately obtained to a second second second second in the second second second second second biological second second second second optimized matter safety and the second optimized matter safety and the second optimized matter safety and the second s

Another faculty member, Harry 'The Horse: Gray is a belient chemist and bon victoritwho lisiquently enlinens his complex lactures by delivering them in vicual you believe a force suit.

How does sliths eccentrally sit with Caltech Preadert. Marvin L. Godberger? A respected physical, he possesses a day infed camage, a providincial and a manof which hair that would be the envy of any tenuor statosman. However, the good occtors well sweet for the biol facting the

 The FBI was called in when it was learned that Caltech students were tapping the professors' phones Actually,
 the undergrads had tapped the Strategic Air Command hot live ?

strange oblic of Califectri's students ha, lice, has that Wixaid of Oz species in his reg. The students sicogramed it smeach stely after his arrival last year from Princatin and they saturate them by toesnig him into the Phote Cosean Nat Is ba caldons by the informal welcome. Dr Goldbriger later make his own entry mo Califechiger d

To calabilities Endeen is hundered bickful day President Globbarger damaid andreg histot and polo helmet and insunghantly politited a santud aisphant along the same campos welds when the grade Endeen had wandened on the visits Later welding a saboet and with a samorar yell Galdborger experty stathed into a threetised birthdy calae

All are agreed that the master lacitly pleaters in the packah Nobelst Mamy Gel-Mann, the theosetal physical who bestowed the unitary name goals on ahasis landamentalium of matter from now into infinity, whenever solve physicalis galave to declass the second base physical file instance of the universe. They will be the gareed to make a sound not univer a lowarchicket By 4.00 PV, most of the stacks have been either broken micro or boken down looktad insist of tenzed undersissering are working tober the clock on the emaning puzzlek. Dataset Physic House the crop papel of a 22 Planis haad as wreps posad on an adjacent root, fire into an open win data attiving to thit the most cheming parts of another feathbase contestful besideng constant the will perrog the look

In an oldar dom three wrigs are locked in monal combet with a computer console batting an inlocete program that requires than to anter a senis of righted caves where they lace an electroric monitor named OK. Two wrigs can only watch have mainted been therement to Cok

An erech stack is like into the group in the state of the state is non-grown Access that a like is non-grown Access that a like a like

An impensibile web of frequencies of feel of string will great another roturning sensor while Cohn sensor class president will discover his new toormase – a 1.005 pound mok soulpture carried gleefully away horn is formal guiden.

Pylos is nom is hosaided with enough side to build an astrotic center and blocnaad with the inmontal words Catech students share with every other college students failer, Wenny Oncentratio, Pylaumi filto discover 400 caales of bother failor with exist Bithol Taxys to dil farough the wall and creat finologh a direster drawp to get in

No one is gate sure why Colloch deed open into such a den of instance. Some beinnes and Collomises instance and the such as the such as a subline bloch law is a work point of the site. In the sub-the sub-the part of the same sub-the sub-the part of the same sub-the sub-the sub-the mode combat. When they gatewate to bemode combat. When they gatewate to the subance the may be instant on the elders areas they may be instant on the elders areas they may be instant on the elders and the sub-the sub-the sub-the areas the sub-the sub-t

Dich Day is over and the young prodges are work from their merial workor, body out inhair from their again, and kreeby their indiracity through the machines they it build knew our nethoring goal socety afford. After all, anyone who can been who is complete freezes data can purpo solve amail problem keet the every prices. These Mida land or is taken band.

However they were slopped cold by a mouse DO



CONBINED PROM NUCE 58

breads coned to skip add euro bread-

Bút Jalao beleve that here are marretts in history when challenge occur of such a competing nature that to mes them is to miss the whole meaning of an epoch Space is such a challenge. It is the kind of challenge. William Shätespeere secred opply 400 years ago when he write the secret secret here here the secret secret below.

Thore is a tode in the affairs of man Which Jaken at the flood. Reads on to fair type

Omded, all the inspects of that Me is bound in sitialities and in moscies Do such a full see are we may allow And we must take the currant when it reason

Or lose our weekatst

We say great peel faval of the sperior of adventure for we canned protect how and in what seemingly uneelsed helds it will market table. A nation that leads its for word those weight belief in thrush to lead begreating passibilities. The series of application is in rimbility board up with furnan receive, and far a nation to believe the series of a nation to believe the leads of a nation to believe

Locate there is a warnah or a man who noneatly bakewal that the United Statem could ever fait force/warn as other nations that was an example Vel for using the fait of the tark was an example Vel for using the fait on any and the statement of the statement doorned bacause ther wirpower had bagen to follow and acon their ward and balance became existent to all Ethims do not detrem statements and the state and and balance them statements.

Therefore we check the most exercise about recently from the specific dual lenge of our age Wearback be eviduated to an our back upon the transmer of this oppont bigszers in adhesen that have do in whatter we gazgete with its or rull. But contor be notifiered to specific because the gazet about mouth of our intelligene bibliotrophilos and prevailed in the bibliotrophilos and prevailed in the prevailing a state in body of the specific and about mouth of our intelligene table. The the opponent of understated are called in the opponent being the specific and the opponent of the opponent

Lises not availy impressed when menakked uponthermon becklaudi kniew tho be out here at a spacific distance with appende characterisation and inspection the recessing machinery bog of a there and task Big when exerts management object hydrog with distant space. The characterisation could be a the men in tages canding bods capasis a characterisation before the characterisation of the ensurements before and the provide state of the ensurements bearing bods capasis when a capacity bodie to bearing the distance of the space of th chain of numbers' augmenting some of miniating officers so that the photographs became diverys cleaner and more delated. regized that we could accomplete almost anything out in the faithest reaches of scene.

We the changed completing on the dop in mar have Maxa photographs for the power copped on that messale My tex columnias that laxoponias that approximate the power to am the compress. And the power to account interpret maintee main an ever leaf and imposed and my addem in a mark leaf and single and my addem in a mark leaf and single and my addem in a mark leaf and single and my addem in a mark leaf and single and my addem in a mark leaf and single and my addem in a mark leaf and single and my addem in a mark leaf and single and my addem in a mark leaf and provide and my addem in a mark leaf and provide and my addem in a mark leaf and provide and my addem in a mark leaf and provide and my addem in a mark leaf and provide and my addem in a mark leaf and provide and p

Noone can predict what aspect of speciel will invitorate a criven individual and there such neue beenmilieren of Americana web of net eens teem Main Rub deen photographedis Bar ee do know hot in pervous papelds when prett explositions were way Daries and Shakspere mit Misjonopada of the events of their day South statis week upged to new decoveries. And name modified their processes in accordrespondent biomana.

At the thoughts of men are interfocked and success to not area products unbassegnituscessal inclines. It's for the nonsent that a notion like ours is clugated to parsue its adverture in space. I all not compared to say how much money should be spert I am not competent to advase on how the program should be advinished ball and commond it must be done DO parsy is adverture in the open to parsy is adverture.



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TIME MACHINE

CONTINUED PROM BAGE \$4

clude that raitse will not form such mass configurations, so they eatern thme machrines are impossible. Yet when you need the papers you find that hey use assumpform such as imalianc catipage. "memal matter, and "stable configurations loopholia large enough to build atme machine in

If there are many thirting in our world they are not in a weaked or innermall or "stabile state of nature. A transistor is an unnatural mrakde—ain utspure stoppon or yate. A ter of rigitablekem a purebiad poedia aliasar a geosynchronis communications stelto - d are unnatural oddhes lept atbile by ther human makes.

This is an uncomfortable attuation for theorists as a recent statement published by Dr. Frank Tipler makes clear

In 1974 Dr Tipter pointed out that general relatives suggests that if we construct a sufficiently large relating cylinder we create a time mechanic

Three years later he proved that you could not build a lame mechanic with "normal" mane---matter that did not vasies blick-hole densities Tipler concluded his second page-with the datasturely portcal assement..."The demonstration that nopossible combination of Known subtlances, known forms of machinery, and known forms of larce can be united in a practicable machine by which men shall (ravel back in time) seems to the writer as complete us if is possible for the denonstation of any phaseal fact to be

The guidagen is a high modification of a similar shakement published by Smoot Newcomb in 1906 at the contrakane of the classic paper demonstrating the supposebility of heave-the-ar typing machines. Newcomb had been prevent excited prior. One loads that typic has also answer the same had the his ablamment resched prior. One loads had typic has also answer had you had had the published with the harm of his combines.

It may be true that nature will not form as obligation of the second se

Bomephysicits device that the Kermagto Solician requests the result of the spinning ring formove at the velocity of light, and this can never be strained. Yet other solitions thus shown that the speed of addition for shows shown that the speed of addition soliton and shown that the speed of addition soliton and an electric charge.

But the dobate about the Karr time machine is not that important A spinning ring Is not the only shape for a time insoftnee The Kern metach has the theoretical advanlage of being a complete solution to the full Einstein equations. However, there are grantly their gorous solutions to Einstein's grantly their gorous solutions to Einstein's grantly their the offer us possible designs for a time imachine.

Another configuration to a time much we be regarding optimized documental by Tipler in 1874. The theoretical model for this time michine uses a multimenatic approximation on it is not as approximate to attack But any electrical indepres can attack the departments model. Theoret in electramagnetic theory is should work equally well in orientation theory.

Typice a tree machine is a long uttradinative transmission of the series the optical is inspected back series as of optical is inspected back series as of optical in the series of the series of the series of optical is an approximately series of the series optical is allowed and series as of optical in the series of the series of the series would and be well in time (appending the series of the serie

So we carried site cut the possibility of building a time machine based on our cutent understanding of physics. In fact, it asems quite likely that we will eventually build one

If we can travel back and forth in time, though while seem to be need participate area. We'll be spared one variant of the limits problem. According to bestern laws, time machines can take you backwash in the origin to the machine variant the memory the machine is usined only. A the memory the machine is usined only to the pack in time and back humail how to make the machine.

But this large of paradox takes other torms Ethering an old cishel. Why couldn'syou go back in the dark of which gandalithe back in the dark of which only manufacture back in the total work of the ultimothy. These paradoxes who would a stract inner ordered gause who would supplicit these should be as the order to the total of the should be as the supplicit these should be as the time total is intoosible, nothing main med be as it

Not we learned to accept the truth of Exstants special-relativity mathematics deagain its insplance that time was not the same for all but occid be stratched and compressed in the future way objects Einsteins general-relativity mathematics which says that time can also be made to na backward

I don't know the solution to the logical peradices presented by time travel I suppert that we shall be incred to conceder that time order is not absolute but can very according to our expensions with time veholds, suitable we with breacit to acceled that

122 C6490

CANADA

The match the boots which the second more than the demote all for prosperations in a space which we have traveling near this speed of light. Once a time reachine exerts. Then decasions mode at one point in the time line of an indexcual can affect not only the future but the post.

In pue example Pessent Georgian model the decore to send a message book interest Trait decore and that a sensing book interest Trait decore and that a sensitivity of the sensitivity of the trait ben to percent the sensitivity of the trait ben to percent the sensitivity of the decore result the example of the trait of a percent the sensitivity of the decore results of the decore the trait of the decore results of the trait of the decore results of the decore the decore

It may be tens or hundraid of Thossardo of years before the human too brass excluted to the point where we dan control odlaps on gates in order to make all the imaging bag analogh for a vehicle included with those analogh to a vehicle included and those we have been as the second bag of the tensor of the second bag of the measures encoded on pulsed of isser left to be sent backward and forward is the

If we took the mixed of an addroid account (5 billion matrix tooks and compressed it enough to unhange times in a small region, i would have the dimensions of an women nucleus—a superheavy, superdense nucleus. Strong electric medical to keep i levitated, elempting, and services at the occurs used.

The basic messagestream model and the second second

The gravitational field from a 15 billiontion mass at the initiation distance is about one Earth gravity if the time machine weak enclosed in a 30 maker sphere, there would be two Earth gravitatios on its top: zero gravsy underneath, and 1.434 gis—bland at 45 decrement—at the equator

These bras machines could east within (10) years if here such tasks to the such that understanding of elementary particles and indicates markets. Some of us, now lang may exercisely one can hear to the within any positive paratice production. After the will worket eable these markets philatophers who were so example philatophers who were so example to those "time marking paratices."



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CONTINUED FROM PAGE SP

Service of the earl of the service o

Begine everything that had happend to be it hill associate believed beins was a way things multiplied believed horses was a support of the second second to the second second second second second parts of the second second second second farther at the second second second second tables of the second second second second farther at the second second second second second be dependent everythings that had second because they and the abust the second because they are the abust the second second second second second second they are the second second second second the second s

This, is luct, is what had happened is bases indifier to loss First and had come down with infectious hegatis, then, while wert wrong reaches the had and the was able to ase withed is usually invisible device able to ase withed is usually invisible device per Josef at by these device the metal heat per Josef at by these device the same motion. Even in our world metal hospital motion are used and metal hospital is an even of the same world metal hospital to reache any metal world metal hospital to reache any metal world metal hospital is any metal world metal hospital is any metal world metal hospital is any metal metal metal world metal hospital is any metal metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal metal hospital is any metal hospital is any metal hospital hospital hospital is any metal hospital is any metal hospital hospital hospital is any metal hospital is any metal hospital hosp Index adjusts tray similar modulation with a methylicity of the second second

When Jake second her mother s posicase inveting her to vest her at the old address, her first reaction was simply to be funcul. The harve of her after turning away and leaving her with her old pair of a taand leaving her with her old pair of a ta-

She knew that her Me had become, all of a sudden drastically unhappier At school she was always made to sit in the front row Her leachers were boring, stupid, and either weepy or very mean

their Alter twenty years of almost unbooken offences (There had admitted) below Christmat cards for even in hell one is obliged to send Christmat cards) (Alter locking hencu of the spantment whou hen should (Jose had come to believe hencient ong-gop le-) to send a possized after all hegi. "It send her a percent, she thought alcod." See here she likes them applied

But there for Jone was loading a very foreighter help land Books af the all that a single visit could dorisohami. Her mother that a single visit could dorisohami. Her mother that the single visit could be all that has single visit was an end of the single visit a pursait containing a sping can of these to particular and among hereaft with a pursait containing a sping can of these (a standard purceation on her). Josse set officer the mother (2 but and among here hops.

The years had not been kind to the dd apartment balding ha stone doeway had been vandarzed, and is norrans were covered over with yalow formas, part of the decontor of the prorogaphy shop hat had moved in on the ground floor the buzzer system didhi work, and navide the lobby fail the mailboxes looked as if they d been broken into. The alumnum astroay had disappeared, and now the floor was litered with buts.

Braffit covered every surface with in relutable evidences of the hatwoll last and imbedity so prevalent in hell

Jose regarded the elevitor button doubtly unable to believe that in such a diselect buttom the elevitor might all be woring. But even in hell one hopes against hope. She presod the button and, is and befuld, here was a noting of chares and then a long, deep great, and the doors of the elevitor overed.

Suddenly it all came back to heroverything the elevator had said to her and how she had replied. Her rudeness, her craitly the tooket mimor

"Of, elevator" she criad out, talling to her kneet, and pressing her hands and them har lag to the souther, unswept time leum sites. "Elevator Deer elevator im sarry' im so soury Prisse, pelese tagse me' III replace the minor I broke. And III keep you clean And - And I promes naves never to do such a tempte tang again.

Without is world (being too moved to altempt a receipt and whord weathing for Jone ta preser 31, the elevator budged upwards up patch the bound about up in a ground four of the world about up in a might glad the where Jones mother integrated and operated to shorts and Jones plot of wethin assess initiational but more-theloss unchakable that her He had taken in turn for the better

And of eccesses that Juste found that the liked her mother botter than Just di over liked her betwee each though Miss. Housi within wait a life is supprison at first and indirect to believe her daughter wass in the many flar she could not be keep from conweiling with the elevator warriver after wass in it, di she eventually come nound to filling Justen in intern. Alter all floare yess in the internal hospital she was included to long longers. I bewed the kinder corts of orderfleas

They deaded to lave together there in the did apartment building which were it tom diden in the all, but was renormalin influcio dates the top the particle replaced the memor the diskers, and the poor did elevator was so overcome that it was study too four days on thriteen gut after the paremain came all differend with 11 it seemad as most as too.

Jeseni life, too, took e turn for the better With a bet of Ireanity bullying from her mother she got her weight down to a comtotable hundled hirty pounds. Nexas of all, she bound a gob that calch'l down her crazy with boedom and paid a decent weigh busides. (In fact she bocame a lencher but hall is another story)

All in all Jone could not complain or at least she proterted not to it this worr! heaven (elevators also, carnol co here) it was classify an improvement on hell CO



there are at least several hundred plant species that seem to offer immediate po

in reasong new insect pasts adapting to

When a modical prescription is filled at a per year Norprescription preparations. smiarly derived from wild creatures are

of California at Berkeley to undertake re-

All in all the value of foreign supplies of

deno occurred at only a rate of roughly one someway 1,000 years Dingsau

Loveyoy, of the World Wildkie Fund de clares There have occurred, during the unfatting of Mas story on Earth, the the eras of Ancient Life. Miciate Life, and one the Era of Life's Impowershment DO

CANADA



BON APPETIT

Great meals help make yout vacations Come sample car cusane, from traditional to international. You'll take home some delicions memorias





Designatures II Turn this page upside down

COMPETITION

By Soat Morns

We saw 120 variabore on the name Encoder (usually combining it with E-mot), 300 different Aumore, and 25 Offerent it was a delight opening thermal as the entries in Ome Competition/19 catment

We extend for designatives — can raime for the caling-piece workplay that in that design. That's spitalexe — and readers responded medicing latters into slapes of etuming symmetry. Last month we published published metions. All of the designatures on this page can be tumed upshished published internets. All of the designatives of these hold as surprise misro becames LAST. Data becomes Hintories.

We regent that space permits sofew of the 3 000 designatures received to be published if you like these watch for an expanded objection in a special Omybook we are now preparing. If you're inepired by these designatures to create most of your own, send them in

Congraturations and marries to a



THOMAS EDISON/ANNES/CARTER, by End Taskar Pittaburgh Pa



AGMOV by Dean Rusk Brookskille Fla



DESIGNATURE, by Frank H. DeJong, Humegon Beach Calif

GREGORY LEBOUT, signature by Gregory Leboll Chestortown, Md



John Laughin Pars Tenn

16342 JHF CH831

JESUSTHE CHRIST by Bill Dunham and Lezts Parkins Merced Calif



BRUNNLUMTER by Doug Busch Lateing



WFIV DOWPETTION By Carol Allen New York N.Y.



HAPPY SERDICHY, by Debble Parker Eugene, Ore



LOCH MESS/MOVERER, by Ray A Jorgenson Las Vegas, Nev

incoli

UNDERN by Bandra J. Zatek, Cambadge, Mass



RELATIVITY by B 7 Brame Euless Tex



FIRSTALIST by Doreen Michael Langley B.C. Conada



BLACKWHITE, by Clay C. Jones, Fort Worth Tex.



Cherumune, by Betty J. Bustry, Volos Linda, Calif DO



planned by NASA for the 1980s and 1990s. to open sometime during the 1980s after

ned the poesibility of retrieving Earth approtiching asteroids for space manufacwith charrieters orgater than 100 maters and teroids have nearly zero-gravity fields. So

Heval, combined with the apparent attract Earth, given a highly developed program mass-driver device), order the marthia atbody land in the ocean near potential pur-

mass driver emost of the mass cirver mass be turned into smaller growing areas as

A removal system would cost in the range of \$100 billion to \$200 billion spread over the next 20 to 30 veloce. They munit-

of the executed Given assonable productivity in self-supporting space origine The economical break bases of space OC

CANADA



SEE HOW IT'S DONE

The skills of generations show in our crafts ship and most folks are willing to share their ship and most folks are willing to share their stores, their exactions, and marke own a low Canada secrets its only perthiourly



for ToT that information and still believe indicate and out that



Tais is a confortable sportsman's billed ran Riark meth (ar ranied) and adard able to any size head, with an official 'lack Denid's Field Testur' patch of and start a lot of conversations. Wy \$5.25 price includes postage

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STRANCE FACTS

- 1 Mage: Staff Bakang audie
- 2 Franch Spread Marganne
- 3 Ren Inst Blood
- 4 Light Fentishic The playactra
- 5 Moving Easy: A man on a boycle.
 6 Hot or Cold December The sun is 3 million miles claim to the each in write fourth the Northern Hamsebase is critical.

then because the sun's rays strike all a more oblique angle

7 Commonpage Edipasis of the surial infore current but the area of the earth from which they can be seen is usually so small very few people over see one.

 Jewash State In Utah where gwithe means any non-Mormon.
 Auf True The bullwhip's 'crack' is a

9 Bolf True The bullwhip's 'crack' is a arral sonic boom

10 Son Royal California olves come in 12 toos the names of which were despnated officially by the Galicons General Assembly The three smallest sites are Small Medium and Large From therathey grow to Family-Stat, Extin Large Nem moth Gent King Armon Royal Octoseal, and Supercological

The Codelage The test tables on bailanced in the wangement given. Datad explains Chock the certifican is balanced, but can add some of test tables excelling as unchanged. The tables at 3, 7 and 15 or clock tables on the certificage as an equilited tables, the tables table to be anneed to before. While tables can be anneed to before. While tables can be anneed to of the castlese tables.

In other words despria its accentric ap prearing as the can run the central age with any runnber of self lubes other han 1 or 11



 The Spider and the Py limagine the room writicled like a since box so that the different routes can be laid flat. The deact vial. Owell.





Toor route A is 42 feet. The nutle across theRoor and one sciences. B is abit over 40 least. The third path G, across the foor one sciences? A 40 feet 41—exectly 40 feet.

2. Once while the first sectors concould line-up the family and the temperature that time and date -- 12 34, 5/6/78. This will full be possible again until the year 2019 3. Sprats Shade the operais to show that the one on the list on a contraurous loop, the one on the most of the accentrationer.



4 Lucky (2: There are 13 size allows the initial walk of integers on the brief, (3) waters and (3) integers on the brief, (3) waters and (3) on the water and taken. The parates the water and the taken at the ratios and the water and the taken at the ratios above the pyramid Areau Capais (Store) on the pyramid Areau Capais (Const Althe bases in the malks of the ratios above the pyramid Areau Capais (Const Althe bases) in the malk of the date (T78 is written in flattmen taxwes)s, and 7 pixel and 51 simple for the 33

5. Wang Care: Tauran's maddle rane was simply the latter & Since the letter doesn't abbreviate anything there shouldn't be a period after it Rabe and Mendwarks are both given names not indensmes Solitey should not have guidaton marks around them

6 Prot toor Money Doer B yith a same same same (i liceally sage here the bit is show able to the Stroke abaccience) as a listic layers to do stake these much but fallacy is provided by the same of use and our decouption within or full taken but fill amount in normal which are full taken but fill amount and to decouption by chance (ii) and and and of decouption by chance (iii) and a large strought, i full alter but if these is carrying the obtain amount and an at a carrying the obtain amount and an at a single provided as an observed on a single strong is stronging the obtain amount and an and a single strong the obtain amount and an and a single strong the obtain amount and an and a single strong the obtain amount and an and a single strong the obtain amount and an and a single strong the obtain amount and a single strong the and the receiver and an and a single strong the obtain amount and a single strong the obtain amount and a single strong the and the receiver and a single strong the obtain amount and a single strong the obtain amount and a single strong the obtain and a single strong the obtain amount and a single strong the obtain and the single strong the obtain amount and a single strong the obtain and the single strong the obtain amount and the single strong the obtain and the single strong the obtain amount and the single strong the obtain and the single strong the obtain amount and the single strong the obtain and the single strong the obtain amount and the single strong the obtain and the single strong the obtain amount and the single strong the single st run them through the bet, either person is as likely to win as to lose. However, the amount that would be won and the amount that would be lost in the long run would be interfaced.

7 The t2 Cons. Weighcarris 1 2 3, and 4 agents 5 6.7 and 8 the pairs bilance, got know here odd zon is 9 10 11 or 12 Weigh coins 9 and 10 against cons 11 and by 8 (ex how from the first weighing that 8 is 8 gotd con). If they believe, withow con 12 the only unweighed one is the odd one. The third weighing indicates whether is to heavy or ight.

It however, at the second weighing jaboni, cores Bant Diase heavier than 11 and 8, then you know that either (a) 8 as heavier to the their source of this heavy of (b) the source route and the second s

But what if the park don't tottere on the first weghing? Supports he sold with cores tot segring? Supports he sold with cores there is a heavy corn among 1 < 3, and 4 or that there is a light core among 5 & 3. and 8 To find out and the sector weghing between cores 1 2 and 5 against 3.6 and 9.1 They balance, it ensues has other 7 is other problem topen. Weght 7 against 8 to otherming the stream.

And what if the parts don't balance on the second weighting (1 2 and 5 va. 6, and 9)? Suppose the kill part gave down. Then either 1 is having of 2 is having valid by forward assessing determined that 5 is in our having and 5 rout (part). That having parting tagenetic 2. It measured the 3-b (parts the having other to a light one of a sineary By weighting 3 against any pood com the solution is adviced at Did 1700

PHOTO DREDITS

Bround appropriation predit on water in our march result. pregit 38, Lon Profession: pregit 50, Patri Turner' pregit 68, monimo Sociturale pregit 504, Loonard Spears

Territor structures in p. W., developed and designed by Garger Review Associates. New York

JACKIE SKYWALKER



By Dick Terest

acke Parker was born on the Fourth of July 1960 and Hexany al-Amencen grift wanted as a child to become an anime stewarders Later the times had changed, and she wanted to be an airline plot

Iodity the hair her plot a license but her ambient her seen even higher When NASA puts the space shuttle info ator later the year disjourney will be mentored by high contollers at the Johnson Space Center in Houston. And one of hore controlists, her very younged at age-metalean will be Johne Parker

Herubmate goal? To fly the shuttle

Partier is used to being the youngeal. "I entered college when I was fourteen, she takt us. "That swhen I decided I coald do anything I put my mind to And being an extromutives whet I wanted to do

While in college, she applied for a job as a space shutle astronaul and was promptly turned down. This didn't slop her

I want to Houston on my own, a year before I grackated, " the recalls, to find out what jobs wank open and how to get one A year later after graduating at seventeen.



Perker Superyouth puncles the space shatter

from the University of Dentral Flonda with a disgree in computer science (Well 1 was always printly good at math), she worked for NAGA as an intern. By summer of 1978 the had a full smelph as a dista processno notifiate

Parker describes her prezent go as Super, part super "She says she has no probleme, will her councies because of her age. And who know? Owen the debys caused by mating angues and hers tailing of the lusslage. Parker may and up bang the obtaint light controller by her imm the hult side ont of the proton

Scartrats always compliantity year taget epoph money for topic reachlargitimm programs with no immediate board of the start of the start of the construct the start of the start of the any cauget tau of guard. Law formerly money for start term programs and more money for start term programs and more money for start term programs with guide manufactures.

Soly-egit percent of the wash production this county comes from the manufacturing industry began the miswho had the eventh recently viar pliking the herit astronautic on thermoon "At today only a small fraction of air sesaichand development; effort joper trid manufacturing engineering. The basi people are not attracted to manufacturing eliked path. It is not exciting to them

So the got the shar Linder Law devices in PR has bounded the Center tor Marutalesting Productively. The schemeny devices a period a dools that we have use at the dools of the manudown the transport each product the assigned seat in the factually out the assigned seat in the beauty out to assigned use in the beauty out to assigned use in the beauty out to assigned worked in industry and the years. They and have the budget meet to budget and have the budget meet to budget and have the budget meet to budget and have the budget and the product and have the budget and the budget the bud

Among the problems selected so far to



LOW SKIELACKS WEREAS DOVERSMENT AUXAME

be solved are how to use computercontrolled robots to increase production on assembly lines and how to decrease inclusion because surfaces.

Of course all free properts need money The project organeser will be paid inflating-competitive sale res. In statement occurse credit Anal oddy recoupt, Los will accept no government hunding. The ultimate customer has to be outduity the mealed. This got to be paid to be the period who can had by our feel to the fees period who can had by our feel to the these bened and he is in induity.

So list. General Electric has taken Low up on his offer to the tune of \$500,000 General Motors is locking in \$250,000 Come next fail. RPI sixdents can look lowerd to having him feet held to the fire.

Flash news tern. They Johns Hopkins scientists have not discovered the secret of life, but they may have figured out how it duplicates tast! Denaid B. Doffer, Drew M. Parcial, and Berl Wapeletern. of the recently that DNA the master molecule of noht their decovery could lead to a desperunderstanding of hereday

untwining them into aspanite threads and



heads called replacement that characters reach of which is reeled through a

for his beliefs, he said. We we have

Searching for the Holy Grad Grown dited down in the woods.

The Nocett "Greisend above James Duke



style of course Onibanio is Righ Thomas a Water Rend Inchracian Bob Tale a meeting of entomologists. And for

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Compiler eathered or gawindeed or money refunded. Allow 4 weeks for fellows



NTRAKSHHOW AND C

New Whyes Tales

In your Games column (January 1988), you have number 10 of the Old Wrves Tales quiz marked as false, when it is actually true

The goods of ISB/c India Value Labor Labor and settimmer line water and the settimer of memory in water does not cause camping of the silvebil maddle. What does topport, however is that when simons were over vapoously gold able the case. I large mediates that of deplates as water the levels at mostless, where the blood is needed in large supply storemy muscle mediates that of deplates are stored in addied in large supply storemy muscle the store of the blood is invested in large supply storemy as soming. Dhe shull always net store to gettime theorem.

> Joel D. Schen Utca: N

John Laucinubba, walar tafuty specialish for the American Red Donsi yeles. If you have a couple of sandherber and a bowl obspland go for anonyong because threas more diager of cramping. Declares the your model anging on your special point. By your needs to summing. The only way a person used in summing. The only way a person used in summing. The only way a person will get orient on the sants. Strendsgring definer and then trust to break the world's automation.

I work to say tomething shoul question 8 di the Old Wreek I likes gair. You say that the table of children's block on involvable at time of its Immon to children's ward ben statutor of the moon to children's ward ben readly double normal is the time state part to be the full moon. There stated uses in Gen many Renda, wingma and Nave thick Co Nave topolitic service make mooth.

The largest skudy was done by Dr Walter Mensilier covering a furth million berths and was published in the 1869 Amenocan Jour nal of Obstetricer and Gynecology Dr Mensilier tound a higher huquency of births sround the time of the bill moon

The effects are biorgest in areas with fower lights but even in New Yolk City these was a definite lunit effect to before

> Gary Lockhart Seattle, Wash

George D. Accil: protessor of attranenty at UCLA, counting of the study we creat enplans. Cambidy conducted investigators do not find consistence based in lunar phases and the british source a 55-merch paned sito, showed completing registrer areas (Abel G., and Generapan, B. 3079: New Encland Jour of Medicine 300, 261

There are actually three (not one) New York studies such of which clients to mtechnia in full relative Service Two Host Sector 2014 (1996) (1997) (199

It myurigment, an effect so unexpected as the classred controlled to between brithsate and larve phase can only be risperted as established after is has been repeatedly inghosted by cantholy controlled investigetions by many interpendent and qualified researchers.

Inekable Receivers

Regarding James Delson's Arts column in Dmm's Jamaery 1980 issue. The words of Mr. Field Hopengarten to the contrary his Channel One steel/tereceiving system is appaarently rilegal.

The cycle from the January HBD base of the radio amends or gournel C2. The unitarity of the second second second second second second and the second second second second second second and a second B26 of the Communications and the Second B26 of the Communications and the Second B26 of the Communications and the Second B26 of the Communications interactions are associated as a second second and the Second B26 of the Communications and the Second B26 of th

To use a 'Channel One' type system is pally you merely need to procure a home setallite television earth terminal locates from the FGC it costs nothing and the forms are initiativity easy to corrupting

Den neue brag Asir tha 15 800 pose tage of Me (tagespression: Schern Case) tage of Me (tagespression: Schern Case) tage of Me (tagespression: Schern Case) Free is an MCS sation in your arbit here as now the analysis of the most cable 17 (including HDD) possignments (able 17 (including HD) poss

Cedar Rapids Iowa DO

THROUGH THE LOOKING GLASS

EXPLORATIONS

By David Saltman

only fairer in life you conti elseedy too late

spells on entire kingdoms, magic has

fooled Amateurs, professionals or antiply magic lovers are all welcome everywhere

Mercine compression at the Genety Street alte of the Magic Table, one of the

materialize there for kinch. Be prepared to



you might need an emergency supply of

There is probably a thriving mapic neightiorhood sports a magnificant clo

Ed Security the Mysterious M-Lives in

AN EVENING AT THE MAGIC CASTLE

will take you to a remarkable tomple of finamiturov called the Magic Caste

Enteron the Castle is like walking through the looking glass. You must sade up to an owl on a bookshell in the lobby

prenist that plays any tune on request You mulicipaer "Water from Dennis

marvels Boobytraps lurk everywhere from

of magic in the Catalie's autiforrum History is stant and uses chanographed moves Stenada (tobes cut like a stoke the torth clothes he looks like a Buddhe at a debuaccess from nowhere He continues to produce them until the whole stage to si-

recent incident at the Wizard masic shop

outdoor magic show a gala event in this locked Houdin-like in a stratlacket sus-

Butmy thoughts were not on margin. They were on a distant course of magic camThey seiden play of they am everyonthinks they challed, if they late everyone

As we strafied back to Sam's shop, with manile, a ked came up to up

Are you gave magicains? he asked

"Okay" he said "Read my mind

This is the sort of challence measures. more powerful than whilfle dust

"You have any money kid?" I asked

"Okay 11 readiyour mind for five bucks Look kid I said to him. When prove

Solf I could left you your name, wouldn't worth five dollars?" I'd need at least \$5 to

Well yeah " He looked suspiciously at himself to make sure he dish't have

magic shop

Quite frankly I had no sties how I would read the kid's mind But miprationor perhaps desperation-led to a plan

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Macacains namely use them, but Sam stocked are for the pseudo-occuit crowd. I dd rot know whether when I had in mind

touching, fingers Eghtly on the slights docars with the plastic window.

"Now I want you to concentrate on your name." I seed to the lod. He screwed up has mens Am you concentration? Lasked "Nas." he answered.

'On your name," I ingisted "Don't try to

began to move. It dirpled the board cicclease three times, howend and prosty stopped at the S. It began to circle again. I can tell you for sure. I wasn't moving it it stopped on the T. It began to circle again.

Th-that's right ' he admitted. The prowd then The spectators cheered, and Kent came up and threw his arms around me

"Sattin " he said "let's make us some money with that thick of yours " He outlined wonder-worker who had developed - after noolous practice with Tibetten lamas and various other serberers-a genuine, noany object of value, no matter where it was -

Using dd magic posters and press type to pass them out. By that right, talk belly hooing Dr. Vox and the Wizard were an

shop We were successful beyond out deates. Kent performed aclendady in htt and pricked with megical "reedles." He ht of all was, to my surprise." The Secret o

I was a rample adaptation of the Oxio shop, a spectator would come up and hale an object-a con a bracelet a watch whithour ... compations on the store. When to concentrate on the place where she had hidden the backet, invariably within about

Like the dingus going in circles, we would usually perambulate the stage unit after a minute or so. I would feel a definite pull in the direction of one quadrant or

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Talishuner, Fia. 32308 Please allow 6 weeks (or physics zoroad in on that part of the stage, and stroce lives usually (geting warm.) the tag would be outsimed by an inside of breach that, was as loud as a thunderclep to a miguae with holes in his pockets and a hyptation at stake.

In alterner at seconds or so as we welked assund the indicated quadrant, i would get another tag. Stopping dated in my tracks (would tarm to the newsot cup or candidatick and thit into the air (loss)? These would be the bracelet.

Beally this is only a heal-trick. I believe it works on the introduct that the subcernsecurativelys influences the so-called fave matchine. Even when one these mightly not to threat of elephants, oneis first matchine terms in the devotes of Africa. This phenomenon has mean bare studed by banomenon has mean bare studed by the harvors coentrations. Indict (was need even designed) flagmoof of the existence of an utilitying psychic because wen if the subject first to mislical you, his muscles will all give the insciritory top

Desnip there is a part of us that works the works to see hard here has the real mapp. The subconscoup much needably tricks our curning rainenail self into meeting to true moleces. As pool of hat kind, the india, and i, Dr. Nor will made out very handbonely We seewad an mpressue number of perfumed notes delivends backtage.

PLACES WHERE MAGIC DWELL

Chicago Magro, Mo. 5282 North Lincoln A dealer of hot tricks

Dakas it's Magic 5417 Greenville Avenue A club on Restaurant Row Stage and qual-

San Francisco Earthquake McBoots Magic Cellar, Clay and Montgomery strekts Parlomens of verying skill, some outstanding. The Arthur Munata the These of water form

New York Lou Romards, 1540 Braschway The world's largest maps shop

Clavaland Snyder's, 216 West Superior A relic of vsudeville days

Akron Ohio Ed Seguin, 4153 Meadowlark Trail Old-time tricks and routines

Las Vegas Caesara Palace, Bacchanal Room. The legendary Jimmy Grippo, magician in residiece

Westington, D.C. Als Magic Shop 1115 HStreet, N.W.The only tracks in Westington that are not dirty

Winston-Selem North Carolina NBK Distributors, 1240 Churton Street. Fist-growing, modern magic shop and jobbir

Minnespola Eagle Magic Steve, 708 Portand Averue Dif-tashioned low-kay Hollywood Caldorna The Magic Caste 7011 Facekin Avenue Though the club is philite, many Angelenos belong and wit provide job with a guat card The Magic Comer, 5338 Hollywood Bouleward Expellant magic shop

Colon, Michigan, Colon Magic Festival, aparaoned by Abboth's Magic Shop Held overy year, the third week in August CO



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OfBITMS EYES-Comparison may a solar-could display, ling traditional solar solar processing of the solar display and provide solar solar ing with working binlegraphy to mean the earth. Nex to deposite rewardship obtains include the solar working and the solar bit base that UAR could be appreciated to be an earth of the solar bit base that UAR Satelling Corporation in during Charles Berlingh and an earth of the solar observation of the solar could be solar bit base the shough a gatary and one working the store to non-could be bit base to shough a gatary

SOENCE FICTONE-Next month Crim pressins a translating prevent of it genrowed by Europe Townord science-Ficana wells "Bannaise Lines An agenblack on Earth after 12" years. Index stations between the dense have of the monthly Chin for did the history with (An Akyan O Donnel's solid). Watchail will go bu kny length to pleave the marker Dan't mask tes littlinute story wells.

COMMUNIC/ATIONS

CONTINUES/FROM NASE KO

eril pass near Earth overy several thousand

Such a system vould allow tor body inlagety through the ears with the possibility of fourse retrieval and revival—a sight change exists of possibility revival—by andher relationation allocations for system—tendor, but a possibility definetely worth considering

Chester Twatog Aurora Colo

Slight Miscalculation

Tour anticle Infinite Koyager (Petruary 1985) by EC Durint & Il proporty on phrasees the meticulous clime Chelling damage of our streamers Konoring Mr Bonetel reputation Innust conclude that the emic on page 12 a sports Mori additional for the parting 7/m Miny May states that in a wave of our guidany final a tabitine of 250 000 miles Hardy Teo hundred THy recome adjuncter on a batter mount of the page of the anti-

Nonetheless a fine sampling of Mr Bonrestell's work

Gathersburg Md

Gorapologies ille ware of course in ever The distance should have read 250,000 light-years — Ed

The Life of John

I parread The Life of Alie (Laruary 1990) Thanks Mr Sane You ve described the future just the way I always hoped and desarred it would and should be

Marri, Fia

Dear Ber

As an did friend and wader of yours. I ap prove of your views of the world, and I like the way you write

Nevertheless. I was not prepared for the ulter joy and excilement with which I read your actional in the Fabruary 1980 Drive

It was well written and well thought cut, yes, but its elegance and aerae had me cheering as I read

And also bising myles. How I would love to have written that assay myself if I had only been smart enough to think of it Inst laac Asmov

New York NY

Ganadian Cow Elap

After reading Herry Lebelson's anticle Death on the Parger (JPO Lipidae Jaruary 1982) happe mon-light will be cast on these unexplanable castle multivation of a point Mr. Libabano cavirolaid wais that these multivans were not confined to the Unteg Statistis They have also occurred in increasing numbers in Alberta. Canado Rod Read

Cranbrook, B.C., Canada CO

STARS

By Mark R. Chartrand III

X ties, balted ust discovered would fixers in precision metal castings, and to

Then in 1949 a rocket-borne x ray detector more like a Gender pounter than a Deptart

There is an element of sevendarity in

rocket flicht in 1962 metaled that these rays emanated from the cartar of the Miles over a distance of 30,000 light-spars. What makes stars that we think we understand



Einstein s birth This telescope is destried approach study the sky where previous

known as "hard. X rays. The energy of quita low ranging from tens to several so that they will tom an image. They are shallow grazing angles will they willed

There are now more observations than

pupers presented last Jenuary orves a test Program for Serendipitous Einstein X Bay

X-ray astronomy may be the most decide Startuned DO



PHENOMENA

Contract the relation of the relation of the second second

The heart of a rose, strange facts and polluck puzzles

GAMES

By Scot Morns

"It's mana fun to armie at a conclusion their In sustituit "

> Malcolin Forbes The Sayings of Chairman Malcolin (Harper & Row)

That serviment echoes our thoughts. It's the final on playing, not the logistics, that indices genes worthwhite. Knowing that all the reactins who follow this column are in at lor fue, this month we present some playful passimes.

Our first differing is an induction game called Petals Accurd the Rose Traiplayed with the doae Cheperican rolls the doe looks at the outcome and then announces a manber. The thoewer is Potentiate of the Rose and knows the second. Others try to calcernite the formula by which the Petenciae dense in a number.

The name of the game is significant. The amounced number is always own and is indeed a true function of the five faces.

- ' 00000 **
- ° 00000 "
- 00000
- 100000

Those who are in on the secret casily agree on the number that applies to each throw For every set of faces there is only one number, though different sets of faces may at times have the same number.

Peak Acquirit the Hoak was called to car lakelino by Matrin Escher The game high mode its appearance about four yeals ago in excrupant circles and has become increasingly popular with the general group with one person with knows the Societ and several of thes guessing what the surversical asswer regist be. We can the the several call asswer regist be. We can only approximate that have. We have reproduced a series of 12 throws, with the correct responses (in page (heave)) that

- 00000 "
- * 00000 "
- ' 0000 "
 - 02000 "
- " 00000 "
- * 00000 °

the Potentase of the Rose should gave tar each Can you'ligure out what simple system is used to came up with each answer?

STRANGE FACTS

The following demaissie excerpted from my Doubleday/Dobhin pilopetakok The Book of Strange Facts and Useless (vformation (1979))

1 MARCE STUFF locan help clear up your acres clean your teach soften your bead, deedona your boah your of your refreenter calm your cases atomach, leapend your Onsensa toe can your cards of the blast and make your chackers prodispession act wellower while it a woman. douches with it after interceutes, it encourages the production of a material baby What is the magic outbance? 2 FRENCHSPREAD it was invented in Prance in table and was the first antiforal focal aver created in inneisy contested of bed ough vernmink and sheep sidenaid levers. What is if?

b) a VACE TERM is the most instructure language to the second second second second second and the second second second second second and the second secon

6 HOT OR COLD When is the sun closer to the earth—in June or December? 7 COMMONPLACE Which is more common, an eclose of the sun or an eninge of the stoor?

8 JEWISH STATE Where is a Jawa contails?

9 BULL Ahyperbolic matador once text that the tip of a buflieltip travels ao faild it breaks the sound barner True or failse? O SIZE Which olive is barget – Large Royal, King Jumbo, or Mammoth?

Here is cursoly of indiversable its and harm many real alob Dhitpon pasatrue could not understand mitighization. They caud, however, have and catalais numbers with ocuming packass (anding a number of pebbles not avorgas) parts to find hall of the unitide autophating a pile of pebbles to double the number). From huspitmike genring Ting (avdipped an ingonitosi "matighization system" which tailities matighization system" which tailities matighization system. Suppose a metchant wurdet to buy this gotto at, ory 18 aproce We could calculate the price hind pay by emptie multiplication (\$95), but to sue how the Ethopsen would find it, set the numbers 19 and 19 in two columns, isoaired that and Double. Ether number cauge is withing column, but for the sale of this studention and them up the this.

Now halve the 13 to get 6% lignore the % Ethiopians don't understand fractions Theo idouble the 15

Cantinue haiving and doubling pains of numbers, discerding all fractions unfilther Mat options reaches 1



At this point, legend says, Ethiopens mycked an ancient superinthic in they contractered that any per of numbers with an even mumber in the MeV outcomes will and take to be destroyed. In this example, sortach out the 6 and the 30

the Double column and there's your



it works!

By the system with any pair of numbers large or small takings white Mothernatioeans say that if we were more would had the benery schedule applicit we would had the procedule instatively obviece. But most of use accustments through a desmail numbers, find Employed environment and the high programmers and a high programm

READER OPIGINAL \$25

THE CENTREFUGE L. A Deard of straple, Trans, when "Truckins many a successful y and have a public concerning para common preced follo requirement the top be precised on the public straple of the start have been may be placed and store which such uses may be placed and store which such uses are balanced. How many other numbers of poul weight less tubes may we append a most and have balanced commission?



Dilace eliminates the easy answers this One cainct approach on automatic balance without sothing the centriluge off balance. In or can one balance 11 student, for the vacant space will throw the machine out of sitter it is just as obvious that any even number of holes can be amonged to balance out. By placing them in the centriluge by pails

What if three as litree, twe, seven or yone test subcer? Three can be handled ossly by placing them at the 12, 4, and 8 o clock positions (sbow, satisf), As the other numbers possible? A kingth for scample us a possible Analysis for socially or make is exclude?



 THE SPIDER AND THE PLY This puzzle, concocted by Henry Emest Dudeny maches a closed 12 × 30-bail room that has a 12-fect-high ceiring. In the middle of one and well, allost above the floor is a special The special work to be over the fly oscipht in its web inthe mobile of the opposite and well, one floot babbe the option out side to satch the fly? 2. ONDE INA LIFETIME Something very unusual happened on May 6, 1978, wi 12.54 Wait was fl?

3 SPIRALS What is the difference between these two designs?



4 LUCKY 15 Look at the green side of a deliar bill, on which are reproduced the two faces of the Great Scel of the Unced States. The surface 12 is represented in at least nine ways on this side of the bill Find hey of them.

5 WHONG DRES What is wrong with the following names?

- Matry S Trutters
- "Meadowlark" Lemon
- "Rebell Dathieson Zahare

 PUT YOUR MONEY DOWN. Here's the bat, III bet you all the money in my pocket at this moment that I have less money than you have in your bocket.

"Biologing status hits wet Consolver Bierer all an casable carrying any starcensate and anounced introney size has hit has been allowed by the start of the start bier and the start of the start of the start the annual of the start of the start of the starts to be any start of the start of starts to be introduced and the start starts to be introduced and the start starts to be introduced and the start bialance starts have been start of the starts to be introduced and the start bialance starts have been start to be starts to be any start start to be starts to be any start start of a start of the start of the start of a start of the start of the start of a start of the start of the start of a start of the start

SCIENCE-ECTION SURVIVAL KT

LAST WORD

By Ren Boya

Here was a shipload of officers and crew scared to death because they had ation creature aboard their vessel, and

the Natches! the science-scion readers among the audience should

advice Until the very end of the film, of crautee when the last somarring freember

a couple of hours of chills and lights for

out there among the stars, and you meet it's not eveny day that you make contact.

world is

The abore may seem fandly disposed. them? Perfugs they re apprease ensizer us use us for pel food, or steal all when a highly superior extratementral race

bayond the solar system they have out

more years for these Judge-cost complacent. We do pare about our

No matter whore you travel you realls possibility in actuality



mindraton-mzed -- am airm Than upon us

Alienmicrobes can't And won't Sure policy And Michael Crichton pot rich and readers were bored with both NASA and

However human bootemstry is extratemestral resorts, don't chink the might prove fatal to the altern The chemicals that make us strong and

There are seemingly enclose implications here for extratemential sex, but these are clearly without usual

You will never she of longingss in space for waits Just read the kterature Even

this in most movies, scientists are is, virtually none of either quality) This is

Therefore we have very little to fear from . to feer from movie producers, DC