ARTHUR C. CLARKE'S "2010" THE FILM AND BEYOND





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FIRST

By Senator Spark M. Matsunaga

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Similarly we relied to ask, Speet this new iden to the nacc? Is if what our newbert Space Apt neoures? If the answer is yes, then we should have the courage to take the persistence indicates on the contract or way as

An international Union manageri would interest it to bath of a new characteriation age Mankand's Highest aspirations many solarios, and magon would be ingar realized. This particul disturbusions explain to secondry calged as humanity begins in purring into its accenter, unring at signs DD

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CONTRIBUTORS omnieus











Swallowed by the mystericus monolith of remained ported by the starifyperce of

the Discovery, whose orbit is decreved. The

Benging 2010 Odyssey Two to fruthan was an ortyssey in itself according to Ref Mosolg/3 report (Arts/Film, cere 200 and plot. With audiences accustomed to director Peter Hyans a taking no chences that 2010 is not only melistic but plausible

religion resulted in a film that is both

season and those of faith have long been in and influenced-blessing. Given the kind of openness and chalogue between the

metans, other promotes are planning new foreva into apape Travest O Toole, space The elefoscence inclusion, NASA, and the to talk. O'Toole seve. To my surprise however, the hard part was getting them to stop taking "Their responses are the breas of NASAS Master Plan (cesse 70) a whit be view chierclar prediction the According to O Tople there were "no major

Future space optimization may greatly manta in the Antarchic Argentine and two year strits on the frozen contanent face

We other three science fiction stores the month in Trough Horse on page 88 a hard-scance revelatio about an audio cup 1965 by Ace

Ange Plack is a contemporary within creations in The Semand Edge (page successful woman haunted by a rightmare

In Robert Sheckley's "Robotor ormos" his present circumstances leaves his family Holt, Fershart and Wroton has a pt anaded is That What People Do?00

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COMMUNIC/ATIONS

Economical Diring

Wensk Lowinet's economic theorem (Norward July 1964) sound plausible enough (They as sensitived guids) without fissight, the way a Midwenferner might eat the first saw cyster bit the mean one looks of either may option of theorem in Looksta pair. Subsciences the loss appeteng both thind to become

It seems to me fast many economists supacity the scatterns types the in avort of their cen where ran doeint fail on protect and where people always do what they should and never do what they should not

The sten of a shortened work week has popped up benotecially enter the Depression Among other practical problem inty manager who suggreds taking worked hours whou's outing their pay will quality hird himself being ted away by large men in while packets.

Cur rideo has a piethosa of information What we seem to tack is the will the ability and the organizat abend interfaces to sure this information effectively. For years Daroit automation effectively For years Daroit automation effectively For years Daroit automation of the provide as used to be informed fragmant directively for provide a constructive machine from them

As for Congress, it would be a minade to get a bill for new free extraguences passed without final satting alive most of the costsets in both houses

I em sum Leerthyt is a brilliget scholar and it is head to disagnee with his comparits about the way things are or this perception of the problekie impact of increasing inclinelingy on aur scoarty but we mast watk to connect some of the causes of our national makings before any schiftons can be connected.

> James Caldwell Aurona, CC

Bedeveled Public

I am writing in response to the lister: Demon Rock and Roll (Commonsetions: August 1994) in which Anshwe Kinda soche at the idea that rock music is an inspiration of the devia and a sic opporter tool of imase debiase. Rehurp I can an inglighter this

In new of the present attractions on music-

Websitelevelon, one carry wordshifted in made Admitted, here are to lever random groups Admitted, here are to lever random groups of considerabilitations to utilitate to an elmotion of the second second second second available and to render out to the meding suggestive messages of second second sudgestive messages of second to here suggestive messages of second to here suggestive messages of second to here suggestive messages of here suggestive messagestive here suggestive messagestive here suggestive her

Are corporations unlessing this devil approved the technique and the public is being offeed the opportunity in issuape such real and present threats as Soviet expansionment the Modessi create simply by suring in to musical fernagyland Julia Caspor

Briten Rouge LA

Crusie Carloon?

or bor carried and the second you published a carbon depicting the manage of a resident of These Mile bland. New York: The individuals featured were anything but normal

While our group residues high the wee a spoot we are chicked by its publication. We are conserved with the heads problems are all promotematic pollution and we can where that the harmful effects of pollution are neal percess and personed it is not a humosus subject, nor should it ever be departed as such

Picture a child who lives in one of these contructed seeing the carbon and asseg his percets "Because we live here will I look live the when I proving?"

Franklin A. Fud. Jr Citizens and Laborest for Environmental Action Nae. Inc. Lock Haven FA.

Humon Ecklon Bill Lee responds i As antata and writer, we spond the good nexes and the bird. The bad reners in this case is that the so-called createry works is downing with own installated sealers works is a downing with own installated sealer of the table attention. Intervented or not I we get in it attention can be and it this indiged over ones unmentered.



FORUM

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God and Science

Once again 1 setular Once for its willingness to publish vaned opmone II requires some desing to publish religious opmen in a sciance megazine.

Trefer to an angry and self-centered distributions and by Jeffrey Governation the lefter Religion Futor (Forum September 1994) Religion is a bar to progress? I suggest that Governie's a matomatanger is more of a bar

The pipeus d'Amri for the publication of third pipeus d'Amri for the publication of the third is on the Convertable scheme scheme the magnetize the pipeus description of the pipeus description of the Convertable scheme the magnetize of the Convertable and the pipeus description of the Convertable and the pipeus description of the Convertable and the the scheme distribution of the Convertable the scheme distribution of the scheme

Keep if up Offers As a future who also happens to be a Dhreden Lappland any fast to belience the pooles. If a comforting to know that them are some responsible specific minds who do believe in God After all who gave us science?

Dalla

I was greatly annoyed by the letter "Respous Furce: in which Governale insulated that "Intricks of everysdam to kept out of publications" "decloaded to progreas" Boernit, self-inghteous attress are an used to Thinking then werywhere Students of history know that such at heads, taking en regimes as the Soviet Union and Nazi Garnardy have been the cause of torsee musted and the generation of entropical mental and mean capate Students of history lives with the mission Atalis took the science of the ancest Garoba Atalis took the science of the ancest Garoba added burge Wive this not so the Rensasance misht new have counted.

Governale quotes the philotophic David Harre to prove that all indicate arguments for God's costervice trave been destroyed. If that we's a railored exporter for the existance of God then God would clearned our workspillen to their would be no choos in the matter. As it is we are true to b choose the matter. As it is we are the to b choose Savees Martin Conservation Savees Martin

Individuals who controle to set upon the realizing of use photophete seem obvious to the fact that those rather naws follows dath the interage of nuclear weapony. Heat David Hume whosesest the emittailor of Hrostima and Nagasaki to match two samp a different sure.



Governoles harmque agensi selgon seems (youd) of those who coing to outsided philosophies. The lage of sealor' will arrive when men doolde to socutivize all boots of any given issue and when it is recognized that many if not most abustions annie from a wively of assures.

Hesgon has done to share of kiting, but this killed no more than socularistic have Unfortunately societies by producing weapons, has also done is own killing Wymsi and Lonro Gien Knewnie. Th

Beligion has no more "caused more brutal fortune muscler emotional typarry, and mercial studied and them money has been the road of all will bent throw the body out with the badrwater. All it is the misuae of release and the love of money that has caused the will you describe

North Brunewick, NJ

I with I know a particit way to refuse Governavia when Burtall can say a that I believe in God and his promise of salvation. My interest in science has only proved to me the globy of crisistics. I railonieity wans the only thing humaniand poedad, we would be more hierare beings.

I'm glad that Drive is open-minded enough to let looth believers and athelets explains their opmone. Thet is just the kind of work! that God wanted for an

Pretovish

This www.inspressed by Gavernale are abbrown to me Ha nave network inforcements are supportations as the most biggrade alignments. While is the short hat some religions have represend the area it is require that many eligions have potenticed that for centrums. This same biggrap for such that molvases the bast isometalia alignments religions to ac-

Finally, the synchronicities between religion and science suggest that the two disciplines are not as incompatible as Governele suggests.

> Alexander Duncan Torprote

ARMADILLO LEPERS



By Bill Lawren

Wer since the was rine years old, the tight "string--like most Tasas has tight and the string of the string task in tight school to the string of the task is need approach to purchase the armal Gal Coast taxes, where he chased and claught the mode-based armoldes that level there. Deno connect, the small worth yo paperents for flacks astricture was worthy opponents for flacks astricture was worther paperents.

In early 1985, when he was seventices. Rick noticed that soil wills were enging at over his thock 1985 by his doctor incloaded that he had developed a type of leptopy colled Hameri's dicease, a slagmous confermed by the National Ferrors Disease Control. In Quillo, Locateria.

Beck's was inticipated of tax cases reported to Lee Lumpian, a domissioget then working at Report Catalog of Weddene In Houston He found the tilt had three things in common Thing all west whole go meet the Girl Coest of Toxins, they all had what Lumpian cashe. Therefore and eservice contact with annualities. and they at

There are 400 benergy releases in the Unrel Silow with a high precompany. Unrel Silow with a high precompany of her disparsus ensets for proposed to those longith with a locarrwy by many and consent silo. If is doneling, and the Guil Sulf Rescale Institute, in the Bank Locaresh Locare and a wird areas of the Guil Sulf Rescale Institute, in the Bank Locaresh Locare and a wird areas of the Bank Locaresh Locare and Bank Locaresh Bank Locare and Bank Locaresh Bank Locare and Bank Locaresh Bank Locaresh Bank Martington EG, here example Silow Bank Locaresh bank and Dal Locaresh methods and bank and and a Phenology. In the Bank Locare and the Bank methods and bank and and and the methods and bank and and the methods and bank and the methods and bank and the methods and bank and the silo silow the methods and bank and the silow the methods and bank and the silow the methods and the silow the methods and the silow th

More evidence for an armsdillo-human connection is officied by the Armed Porceo Instituto. The arres with the highest number of leptony cases—Lousans and southeastern Plass—were also the othes of the highest incidence of leptony relectas in with armsdilles." septiane Wayne Wayees, of the institute The contribution however decored calculated defined of the large can be intermediated transport to calculate out on the large calculated transport to calculate out on the large calculated transport to calculate out on the large calculated compared with the intervent large of the large calculated compared with the intervent large of the large calculated compared with the intervent large of the large calculated compared with the intervent large of the large calculated the large calculated large calculated with and the large calculated and particulated and the large calculated and the large and t

Researchers are also trying to figure cut how the armables contineted leproy in the first piece Some metaligation triak Microbiochnum lepron, which cause the discose, may be carried by maeter. Others performer theor with heve studied the



The arrestillo sate and contagrous

disease in Nervey and Germany, for Hitz the hostohic can be and hitwo of hitse men in largely and . A more spottacian the hostohic can be direct in a season the hostohic can be direct in a season hostohic with the annealistic hase been involved the season in a lideoscale histohic with the search of the been hostohic with the search of the season hostohic been of hostohic has a season his direct armsofile in locations. Meyers the direct host of the season has the season histohic armsofile and locations. Meyers and the been armsofile and locations where armsofile and the season of the Appear findobal as they are season for the and location has the indication has the armsofile and the season of the Appear minimal locations. The and a season has the indication has the armsofile and the transfer of the transfe

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Shapard agress We've been saying for a long time that people should avoid contact with armsdillos "DO

STAR BLAZERS



By Ben Bova

Product physical General K. O'Neal protocity Flat by the missical of leal tworty-lens century through rock of lamities with be invarient paper. Certain provisione must be made for zero graving and the christen in the bearry with inven to be contreled built by end large. The provision of lead by any large. The provision will conduct three must be the physical on this planet. Coothie will be "their" enclose ited to we and agen The when alcon coothies in them.

But whill about contractor efforts that where beyond the contract of our scar system? Is there is way for us to seed the store, to people palaxies that are ages away from our own?

A recent advance in medical technolcopy—freeting fummer embryce in a mitogen bibliot ter matinitie periode—may allow us to bend forth a genanation of proneers who are concered on Lattrib foom in speaks, and massed on steers theil are light-years from our own placet.

Detence is e primary obstacle to reaching the stars. On a map where the 90 millionmile gap between Earth and the sun a shrunker to one rich, the nearest size, Alpha. Centeur, is situated four and one third miles from the sun.

Turnishie has detector to trank NASA isonable the Andrese 15 spaceaset on March 31 (1972) Ellivery yata lass, consect to actual of Nasarian to become to furit and a consist and the second second second lass and a second second second second Nasarian option in 1973 and with norman have the second second second second second Nasarian option in 1973 and with norman have the second second second second second the second second second second second second the second second second second second second the second second second second second the second second second second second second the second second second second second second second second the second second second second second second second second second the second sec

Some years rags the Binkin Herpisensen, Bonky published Project Declarate a study of releasant and the transposition from an unmersel, once way publish to Barnards Barn and get years way A hydrogen Hasse, once way published by SH 2004 on speecest which would be a hydrogen State Share based by the Apolo program. Scientish have based by the a node is up of the Sharem bedfore for announ



constructed eventually, it would still take the ship approximately 50 years to reach its destination

Part of the problem is that nothing in the universe towels faster durin lights titl(comilini per record by thewaiting at 80 percent the speed of light of batter, however, you can "slow down" time and make trips of a thousand bight-years in what will appear to be only a low years

Unitoriumetels; cluring these few years in space, thissands of years will have relapsed on Earth. The explorem or exch puttings oen never go home again to the workd as they inner it. Most lively user younges will be one-away lippa.

On these mesons it would be impossible to tend should papeline to populate a meet would And colonization is a naivy builtings, as history has shown us. The Dommer party accountible to cold and stravelation, the octoriset all Jamesizan stravelations are octorised at Jamesizan why make the colonization and the new aet of driving at meas.

Che BOLIZO: Lisseffe, also tercis a terc construction of the second second second second terms of the second second second second second terms of the second second second second second terms of the second second second second second second terms of the second second second second second second second terms of the second sec

A plaket wide obtactiven, natural or manmode, could dealing the entire human more Gui posselight allows us to detach the files of the human more from the tabo of this planet. Sail right masses that we can escape the boundance of the solar system of the planet Sail rights masses, the wear some on endure regardless of any desetters that may to ear on Parch DO



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SAFER ATOMIC POWER

BREAKTHROUGHS

By Dick Yost

source of the index of the inde

Unit 1974, when Maglich and six patiesques formed United Bosincos, in Princeton New James analysistic to energy read been on the back burner of acress reasand's Auditer scientists, epured by midary incident wagons insearch, had consectised on the outside promises of chasts and energy from teach and for

Maplich decided to experiment with something besides the resiston chain reaction of usarisam and begin using traditively oberged protons to split lifecim. the lighted result. To create an encourse reaction, Magnith and Station Link are well encounding that are set of the set of the patient are to patiently dreams the set of the mean of the set of the set of the set of the mean of the set of the set of the set of the mean of the set of the set of the set of the mean of the set of the set of the set of the mean of the set of the set of the set of the mean of the set of the set of the set of the the set of the se

Anoutions enough has a number of important advantages over convertional types of nubular power Maryre cells are enough relay to mass-produce and inappenent the law cell would allow communities or even small nousing units to become independent of large power golds. The use



Intras degrants show the basic design for the production of nonadioactive nacius/ power It. DMVI of anoutromic energy could also reduce the spread of nuclear arms, since reigma cells are incacable of procloong weeponsgrade meteral. And the process produces to nuclear vestor.

Therefore out the new trail and, or reversely to mentions have an and taken to mentions have an and taken of the Annual of Station Energy way. The Station Foreign such as the To Lucomotion for the Annual of Station Energy, way, The Station Foreign such as the To Lucomotion for the Annual of Station Energy, way, the Station of The Station Stations and the Station Energy in a substation of non-as at all A macket based on these lates would be for prefere to the Station of Stations and the Stations and Stations and the Stations and the Stations and Stations and Stations and the Stations and Stations and and the Stations and Stations a

Magich is sure and/utonic power can meet the good. We are starting on the final days of the imgene program, which we think will demonstrate by the and of 1887 that has interesting entropy ayatem, Magicia ways. "It the successda, and I have no doubt a well answhere entropy will be commencially wallable by 1991."

NEW PRODUCTS

Some high tech help is on the way for bialball aligner who an always transing into the outlets! force: The Wall Someon is a high-pathos alient whorewers a player open a high-pathos alient whorewers a player open help faithing skills, lift oortsin k out down help faithing skills, lift oortsin k out down means of composition of the same of the faith share alient who alient of the faith share alient of the same of the Maximo Composition of Solarise charges and Maximo Composition of Solarise charges and the same of the same of the same of the faith share alient share alient of the same of the faith share alient share alient of the same of

Now computer owners can get ther revenge with the BL Bangar, a Norm-revene meter designed as a strates reducent root for other finatestors. If you can t get your machine too what you want get a size strate tops and welch the bytes fail into place (Awakaine for \$43.55 km Bits & PC %, 1850 Union Street, number 480, San Prancise, CA 41123, JOD

THE ARTS

By Bil Moseley

The T-C Clove rower encoded to there are accessed to 2007. All Sciences or the scienciary to conditioner with Service Facharia in the local and there are Service Facharia in the local and there there facharia in the local and there there facharia in the local and there there are the service service and there there is a service with all there means are an analysis of the based. Allows means are the with all there means are an analysis of the based. Allows are there in the service and there is a service which is the service in the local there is the local there is the local there the local there are the local there is there is the local there is the local there is the

What can we expect of 2010 Colyssey net, the tim? Hyans eavy. This net a think move in the traditional series its variage point is viscostal. If is a very emotional story, toid emotionally it is a hot invove reopposed to a cool movie. For the 1 km to succeed it has to work for those who have no a priori knowledge of 2007. If it doesn't work on that level, it won't succeed

The present is non-vertilisation of the doced and collecting of colling of the doced and intert coperer is coll in collecting. In encoding the coperer is coll in collecting of the intertiliation of the collecting and the collecting of the collect

That is not to say, however, the 2010 will have nothing in common with its predeces or Johann Stausso Also Sprach Zarathuste Willords spain lend its majority to the opening and final sequences. Ken Dales will receive the index aben that fait



The elevelist spaceship Discovery spins end over end in a decaying crist around Japater os. casta Integrotally—in helpinghine tom—air meson comments band Beards and the Douglas Hain returns as the vote of the heurissically programmed appreciation computer, HellBOD Jonng Item are Reg-Scheder, and Hewwood Right and Boo Baldbarn as Dr. Chandro, Infall created Baldbarn as Dr. Chandro, Infall created Baldbarn as Dr. Chandro, Infall created Baldbarn, angers eff, who needed no work on their locenties

The story line of 20X1 poles up me pairs after Bowney werzums lock them the Decovery, a swallweed by the moviet Decovery, a swallweed by the moviet men space, and energies in which appears to be a total suite. There is swarms being a polestit by an abunch the same which is the part of the same three allowers in the the standard y material pole and same. Considentig the speed with which those events abunchment Bownen herm tumers to Ubbanket, one yasan right same as simple Ubbanket, one yasan might same as bunch unserved to an useful volves to Justime

Attragent regime included to record the concerned to the other than the mean matching Armenican are incapated in a mass to metalticate and the second the second second attraction and the second second second about the might take and second the the second about the might take and second the the second about the might take and second the second prevents the commons is fund beating prevents the commons is fund beating and the second second second whether the second second second prevents the commons is fund beating prevents the commons is fund beating whether the commons is fund beating whether the commons is fund beating to the bissame. Deterring the commons is to the bissame. Deterring the second the bissame. Deterring the second the bissame. Deterring the second bissame the second second previous the second bissame. Deterring the second bissame th

While some scores were station inclutor. BD percent of 2510 was filmed in two halfong oursed stages on the MGMULA for in Culver Dix, California, Stage 15 the largest sound stage in the Western world (the Russians apparently have a bager on), housed match of the interest of the Lawrow, advenues of the Discovery, so well as the Learny's pod bay The menors of Dolphin complete with dolphinal were constructed over a 285 525 gallon tank used previously camera ports to protect his animals and

The lost there that abuck the main i walked Some clew members I was told, developed ordered the voocioo juice to suggest a

in conjunction with Syd Mead of Blade space capaxies, Dearwar Isstocent the

pellets The vacuum-formed plastic wolfs paper-lowel dispenser lide auto bartery read in English in the red user above thes FRANKLIS ON THE TOURT IS IN LIFE WHEN THE Incredibly enough: nearly all of the models sketches and basering used in the means film was completed at MGM's London studios. Thus, most of the elements of the frames of 2001, which were distorted by Kubrick's web-schem lons no

scientifically accurate as possible except movernaking. The models of Io: Europe cholographs taken by the Vavager space heiving to wreatle with the most demanding problem of the production, weightheaments

OMV

showing a moon shuble light atlendant laboring up the ship's assie in gapper shoes

taking no changes with an authinge 14 years astronauts lifelings to counteract the make the bridge extending from the Leonov

61 demand every element must have a Polaroid taken of it They were arron a set of plans and act deviate one milimetor

were mere child's play compared to the

by means of a cable attached to he back same nerve center. The prop builders gving him the appearance is he dangled wigon was then roled forward menting the

easert Balt Harmon whose crecks include Ind Superman movies. Alien and the vine

stast frame car pulled by writches along a The cars stearing wheel controlled the

nately the better we get at what we do percent. Thus spake Oscar-winning.

Chici as perfecting the mechanisms

Relations between the special-effects i must look at those photos and check the lighting Every model that were built for given a set of plans and told that they could Hyams points out, however, that in the hands Edited dowrplays the tensions effects trade in the Hollywood hierarchy powers collaborate or collide asks Hvama have be strong horses DO



THE ARTS

By Ben Bova

his has been a barner yeer for books aboxt sevence and semistra There are good books for every table and interact, and lope on any gift to are two incolucit potato books that bring the worders and beaute of space to overy entiticate

Entering space An Astonian's Coyledey, by Joseph P. Alken with Research Martin (Enteret), Tabori & Chang), contains 200 hill-color plates that take one's breath away Astronaut Alken who made his first. Tablet Columbia, table is examined as place indete Columbia, table is examined by starting trademarks. The second second by starting trademarks.

Seeing our world from space, watching astronauts working against the backdrop of our lovely blue and write-clouded plane, can reval the plasause of boking at some of the work's times parange.

Spacehols by Timolry Ferris (Partheol Books), takes our delighted eyes much latther into the register cus, meanwaiting universe. Whereas Entering Space cleas manity with the work that astronauts have done near the earth. Spacehols gool much deeper, roaming through our solar system, our Milky Way galaxy, and even peering at distant provineel galaxies of stars

Welearnows on enother works, holds of stats scattered across the taken word or of space as theirly as grans of sand on a baaket the wetwordneys and multicological boauty of Aption and Searn the recode boauty of Aption and Searn the recode solverk of the Anstroneol golaxy's agrand arms—ina all there to bahead in Ferrips kinet madarooch.

Meanwhile back on Earth, the human race is becoming increasingly worred about nuclear war—and justy so Two very different books deal with two very different aspects of the tensor

The Cold and the Dark. The World After Ansies We volve 1 Birthol, Cell Bagen, Donald Kennedy and Weter On-Boberts (W. W. Honhoy, depositions the nuclear weiter that may will all the op Berth Donard Net Weter and The Answer of the Donard Net Weter and Net and Sector of the plannowski such allower and the Answer periodialary that which such that is the data and abot theod from the explore and the resultion uses much their of the

34 CMM

sun for months and bring global temperahans below freezing. Crops would freeze and all animal species—including men---could die out before the sun shi has on Darthis surface again.

Weapord and Plape, by Telestree Dyson (Herper & Row) others a more encouraging view Dyson is profession of physics with Instauts for Advanced Bacty in Princeton. New Jersey, believes the human race well survive the thereid on ackeer annihistor.

Thapedry is not cur business in Dyson loss, Africe consuming the arms size, the or folial thic-missile problem, and the possibilities of a state-wave hype of logical based deforms against nucleur missiles he concludies. This real future is wave wise, we proceedly to consultance, before the concludies of the consultance deformatical destrones. Twe are universe the technoid federe future as there, subting to us to seminor with it.

But enough about the possible and at the world

The Coastainton of Climate and Link, by Septem H. Schnecks and Panol Linnier (Sama Club Boole) is a gen that make a point we often line to evaluation. The sewe broathe has helped to shape the creatures were known ben that living creatures were hold to create the earth atmosphere changing it unvit the earth from a neasour motion of certain descrete from a neasour motion of certain descrete and immoore to libidary downer with air

But living creatures—particularly we human cross—are loading the air with chemicals and polutants that are decidedly harmful to life on this placed.

The Convolution of Christen and Life, however, is more than a fingler pounting initial convolution of Converties and Londer have written a meany lacchailing book shout the interretexion has between those of us who breaths and the stuff that we are breathing.

And then there are computer books. Thosainatio of howto computer books are now flooding the market, and 1985 will undoubtedly be the year of the greet felout among such these But the year has produced a tro of books about computes that beer amount readro.

The Second Self. Computers and the control is on mole we

'Tis the Season to be Jolly.



You'd better not pout. You'd better not cry. Because Rodaccolor VR films can tarn even touching little moments fike these into merry Christmas memories. They're the sharpest.

brightest, most dazzling color print films Kodak has ever made For Christmas magic that lasts all year long. Because time goes by.





SNAKES AND PSYCHE

EXPLORATIONS

By Edward O. Wilson

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Center peoulatities in the environment encouraged the addekated freeway the part of the country had been covered. four generations back by a wilderness as bimbable in some nappeds with a Amazon The Guit Geet has a greeter variety and a demore peoulation of aniety show then atmost any other place in the world, and they are those and they

Of occurse length to the absundence and diversity cost. Bocauce smakes tood on inge, more, teh and other animals of pentile specifies are bocassarily science than their pray You can I just go out on a sholl and point to one trake other another But I can hastly from personal expension but on any given day you are lan times more likely to meet a snake in Florida than in Brazil or haw Games.

Chard my segret on a tit 4 July morning of the segret of the segret of the second segret of the segret of the segret on the second segret of the second segret of the second segret of the second segret of the second seco



Takes the basis of a time, it was the segme reads the basis of a time, it was the segme to approximate of the basis will name the published are incored for the transition. The service cores of public time to haldbox, so the water along the fragment weeks in the basis point along the fragment weeks in the basis point basis of an another and pick and the time along the fragment weeks in the basis point along the fragment weeks in the basis point of the lange table going until they are analysis. Along in the another of the particumatic sector the sector weeks point and a sector there along the time and the participant made them sector involving, of they are

These of Triggs has also also tracked to the provide the second second

I sait down and let the advantation encomy heart and bring transmis to my hand. How could I have been so dupo? Whet is there in sinaksis artweay that makes them so repellent and tascinating? The answer in introspect is disoptively simple. Then biblity to intriam hidden, the power in their services indexed by bodies, and the free tars wrone special by podermically (though service) to be researched in strategies and to inspect a moderately to their generated to inspect a moderately to their generated to inspect a moderately to their generated that of a largering basis to Become shart generation covershare that an another generation covershare that an another in order to begin and the second second or order to begin and the second second or order to begin and

Other primates have excluded similar tasks: When guaronse and varies this the common more large and the set of the significant costs or guid adder they and a datafolike straillang cost that rouses the manufacts in the carso. The importance of the manufacts in the carso the monkings in effect boosticals a datagetous strake additional to boostical a datagetous strake additional to boostical a datagetous strake additional to boostical a datagetous to the recountered the dataget. The most rouses additional strateget the single datament and card team them.

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Another line of evidence comes lose addes of the contrastrove a species thought to have shaked a contract incester with perturners as secondly, as 5 million years ago. Chinese lines that in the listopation of parkets, even if they here had no persons of balance and balance had not a person of them on and balance had had a second attem and balance had had a second a state when intering companions with the response becomes gradually more marked chines and balance here.

The last quality is objectedly interesting because human beings pass through approximately the surre developmental required the surre developmental region concern Division uncler two years of ager feel no special aniwely over stations but laber this grow increasingly wery, just one

Throwing its heavy body into convulsions, the snake twisted its head and nock through my gropped fingers and stretched its mouth wide open to unfold the deedy inch-long fangs ?

or who might tools experiences ackhaia a positivi rative simulation gave, it is in the simulation of the gave, it is in the simulation of the simulation

At a campelle in Alabama, on a Sunday alfornoon, a fourfoot-iong black most gliede but from the woods, across the clearing, and headed for the high goes along a neerby stream. Chicken should and pointed A middle exped woman screamed and collapsed to the ground tobbing. Her hubbend dathed to his polup incide to get a teleption. But black reserve are arroug the faalled scalaws in the world, and this one made it safely to cover. The criciclates probably did not know that the species is harmlass to any creature larger than a cohormal

Tables yound the work at the volge of bibliographic provides the source of the bibliographic provides the source of the path, Whot I caught up with meeting about the source of the source of the the horizontal of the source of the the horizontal of the path the bibliographic source of the source of the horizontal of the source of the provides the source of the source of the horizontal of the source of the the horizontal of the source of the provides of the source of the source of the horizontal of the source of the provides of the source of the source of the horizontal of the source of the provides of the source of the source of the horizontal of the source of the provides of the source of the source of the horizontal of the source of the provides of the source of the source of the horizontal of the source of the provides of the source of the horizontal of the horizontal of the source of the provides of the horizontal of the source of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal of the horizontal of the provides of the horizontal o

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QUASAR'S ENGINES

STARS

By Terence Dickinson

Since her decovery n 1903, guesse have remained one of statusts have remained one of the most balling of all their characteristics while a typical questin statustics and for a compact region large encount for only a few docen status, yet a typical quasies generates the energies of tens or even functions of guessions.

The queener is a startike object—ts name is a conharchon of gover steller—but its produces energy output places it in a chees all its own. Now new evidence storagly outputs the engine that drives these tenne fourties of racharce may be instruction utmeake force the black hole.

Black holes are gravity whirtpools that own wellow a beam of light stop time and ourse space. An object thes take inter is a black hole is forever removed from our universe. The hole absorbs any structer and adds the infruden's makes to its own.

Close to the "edge" of a black hole, the gravitational force would be so strong that it would be roughly equivalent to that aspenenced by someone hanging from a bridge with half the production of Canada swinding fines his ackley

For all their power, though, black holes are relatively small compared with other coame aback hole. It has earth were concloned to a black hole. It would be approximately the serie of a bacehold.

So get a transmission of the second s

Long before marker sucked into the hole reaches the point of he relative suggests Rest: The monitous gravitational field accelerations into reachy the speed of light generating an entransity released as tabletion before the doorned mailer reaches the may of the black hale

Feeding is gaint black hole one star-or its equivalent in dust and gain-every year would form a blazing, doughnubko whitpool around the hole that bould churn out enough energy to equal that of a



quasar Consuming matter of this rate would eventually inflate the mass of the tack hole to millions — and possibly before — of times that of the sun According to Receiv concludence, a one billion -solarmain black hole would be small, about the deameter of Phurds orbit.

This is a terminologic particular today a addressmen novembrate here are well over 600 of these mystemas, superright laky operations, superdryscolin have supported for more than belowers, the model services paraticises the gaves in the basis of services paraticises here gas the collection error of the upper today of the services paraticises in the paraticity of the service today of the services today of the services today of the services of the services today of the services of

One of the most important poses of evolution apportung lakes a conservation been gathered by astronomic Juan Harder stage, of the Desirience Adeleging-posed Disservatory, in Vectoria, Birtish Countries Upon presents Marian Kao Chornatory an reternisonal Wathy Hubrings hes closely evolutions that the Hubrings hes closely hed been seen as mere dimmerrary class Hough most of their Melascook

The offers an abave the survivor of Maxima film has abave Hashbarg to obter guidh the zone writedward in the guess from the light of the guarant set. Concenhabita abared the heart of the guesses Hackfring has bound with no obta luzz. I this discount exemination the stroken that the Zz is the light to fathers of states settler to those found in notinits guideos. The the make is consistent the fathers.

In recent months, Hustenge's research his reveals of the same pauses are formed from two collicing galaxies. The gas form dies is dringsed away and functed to months. Hustenge speculiums that during sphot collisions againsy can become a quote And ence estionnames are almost arther collision. Nake holes at their content, Nake collisions could be the state of the second second second at the content, Nake collisions could be the second second second second and the second second second second the second second second second second the second seco



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SEX ON THE COUNTER

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Centerios Perl, e neurophermecologiel (a cherl of the section politism bechemelty at the Rebonal Institute of Mercel Health in Getherda Mercient Die avenders here however in an uncefficiel conserv-



CONTINUUM

ROBOT HEALTH INSURANCE

A core signification Age of Automation is advancing Port the first time, owners of induities induities consist on induities induities induities can insure the brain as well as the torsen of the induities induities Control computer or Turcan¹⁷ of the induities provide the control computer or Turcan¹⁷ of the induities provide the control computer or torset induities the control computer or the induities the control computer or the induities the control computer or the the induities the control control of the tobal advanced tobal advanced tobal advanced tobal advanced the tobal advanced tobal advanced the tobal

"It's a little bit live health maximos i explains Foreaut Paddock, bailer and mechan ery underwriting official for the Kempor Geoup, of Long Grove. "We replace the sola parts."

Owners of personal robots have also faced difficulties in obtaining insurance, which demonstrates robots in shopping mails. Write located in Hartland, Connectauto and Connectconnectconnectauto and Connectauto and Connectconne anda industry and we caulid 1 get fail coverage." Tally solved the problem by forming a subscharpto insurance Group which, in coordination with served insurance companies, new inderweites policies for personal robots.

What should have been and the second should be an advantage of the second should be advantage been manufactured to be advantage of the second be advantage o



Sick robot: Unit recently, it was introvenable for the avoinge inclusion robot! So oblave insurance for his brain as well as his brown



Dwarfam in believed is by caused by a delective collagen gave iffortia are anoter way to develop a constal feat for the constellers

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unicalestal file submicro scapic gane muzicon e gonstre lor actoratoplasa, the mac common form of duantram Researchers Diastes Strom and Welam Uphot: of the University of Chocogo Medical Conter actually engineered the disponent

Additional couples and an enternative sector of the couples of the

clone remained unbound thus proving the dwart s gene to be mutated, with a large part of it missing

We will now try to donebup a periodial level to diagnose a lethal form of this doal acc between asys, which offers entry and the second second entry and the second second be implained with heat the type if collegen games have gaunge moment provide the second provide the between the second second second between the second second between the second second

"Without lies humanity would perish of despair and bore-

-Anatole France

"Dragging out Me to the helt possible second isn't living to the best reliect "

-H G Was

"Where the talescope ends, the microscope begins which at the two has the prander way?

NEW BEAR

Densel Taylor-da, director of the Wischlands Institute in Spruce Ando West Virginis, will apond his writer in Napals remote Banun Valloy, hving to gather conclusive proof that he has indeed discovered a branch new appose of base

His sty quarry is an obain little felow hat builds deicals name from these to 50 teol up in the cales that yow in the Makaki Apothilis 20 metes assat of Kathmanda. The new beact is such it is, wright is bound 150 pounds and is tormally called Linsus receivers

For years, editives in the Hindinyan villoges of Shakshik and Hete have complained to Taylor-Net and the work that they amoent muzzlekadem cosidmit Neep marauching bands of these this bears out of their comfetcial They even furnished skulls and pages to prove if

Harters troin the royal palace at Kathmandu have elso bagged a few aays Taylor-Ide the son of medica missionanes in India. Taylor-Ido will be paned on his expedition by John Craigheod orgaably the work's kading beer expert

Tray as convected that bers is a new bear, not just interpret of Innality in Batter bergreerd Innality in Batter bear which is much langer. Pough he has the same back fur and white chest of they are right. *Linux, repai*lenss will beit first new bait softio the reachaits (Most usernologids new desmes the usernal marks as



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Which he doesn't know even after a trop lad price, an much about the beneric det, he beneticten engestaan, statu oppulation of even hee heetings. One often mystory reserves to be devend up k seems to be devend up k seems tot. L'asuu regalense laeves discrity hommoor tacks in the anxw, which may finally doming the the riddee the sevent and congregiverball anovernam. - Discrigen hebbe

Leave normal dog, not normal

- Oukpanian stanno

N THE FAMILY

Same investment focused of defension register setnations the invador of one networks of the invador of one networks of the invador of the patients of the invation of the invador vation and one inva

The par begin ther study in titleb after a child who had witnessed a parents munder wes referred to Eth tor troatment into was autorshed that the child had gone for monthe without pay chological help. Eth and Pyroce asis of discovered the problem was subcopread and they requested referrats from public agencies of other orbits and and and neared subchardow. The problem and evolution 45 Los Argotestras arbiten herging in age from three to agriteon the stres assess they begins then house to be charten then bound and the public the background and the charten has been one part full and another the part of the charten the background and the part of the charten background and the part of the charten the background and the part of the charten the background and the part of the charten the background and the part of the the part of the

Predicately, Bit and Pynoos loand that most of trees children did poorly in actool and became annous in addison, a number became lapereased and some will become vesion later in the they believe. Among thes other incidence.

 Children are not likely to receive much help from often family members who are usually too busy dealing with their own emotions

 Many youngeters read they felt guilty that they dich 1 do more at the time to prevent the mander, although they



Every year thousands of children wereau the number of one of their consists. 20 occurrent wereans papert will the other



CONTINUUM

probably could have done to se to change events • Some children tear retaintion, worrying that they may become the munderen's relativedmin

Ein blannes the structure of her publicating terms for not providing routibles installalineach care to public terms of onnas. Yooking the bases of careba of the publics is sayed. The system is careba of the publics is sayed. The system is careba of the publics is sayed. The system is careba of the public sayed. The system is careba of the public sayed. The system is careba of the system is not po beyond collecting muchor case a much more lively to get psychiatho careba is then a child whereas is

Trimechate psychological attention can tundo what a been done, but it can mitter naze potentially sencus consequencies for the child." ha orgitansJool Schwarz

To these elementary level there leads to Agecal path, but only inhation, supported by being sympathetically in souch with experience."

-Albert Excellent

KILLER MILK

Homogenized milk thould digity a hall weeting like those on cigaritie packs met Correction rewardsare Dr. Kurt Oater and Danied Poss Inither book, The XID foctor, Hey clem that be cuse of homogenization an engine in milk, adaftine oedate (or XID) causes handsning of the attentisean acknowledged precisions of hoart attach

This process begins in infancy A vast number to Chev If coronary deaths are due office enzyme, " seys Officer a indepart cardiologist 4s colloaque Ross is protear of loalogy al rearby faifaid University faifaid University

Isonopervariation, which Define and Press Georg. Soldwards The sace of the part learn mitk, also even conflict test to the lear of the consamely, but they claim of algo entreflates NO capable of spaceting through the stormach eating and the stormach test and the block that NO then associations all that NO then associations of membrane host through the configure and anti-negatives custoperbiblic to cholestoric custoperbiblic to cholestoric custoperbiblic to character associations as the store of anti-negatives custoperbiblic to cholestoric custoperbiblic con custoperbiblic con custoperbiblic con custoperbiblic con custoperbiblic custoper

Deaths inner to after o sciencies are highest in the United Bates and Finked where virtually all mink is have discovered the largest Sociocorcementers of XD in have identified XD in hardhave identified XD in hardtrage inferent from subcesses

Bot many research and reasdentises the Orean - Road Indry as parts bunk, many and the proceedings with a loss of the memory and the second second second based on the data - large - Andrew GRMs problems on the the University of Calorima at Deers Offord with here in the University of Calorima at Deers Offord with here executed National Dary Council research funds, state "Techeroon" the with classiss in the United States National Recreased Nation the Arthough Second Recreased Reson the retroduction of homogenised

"We need more search and less revearch

-Water Gronus



Conventioner Autogram (Liborit) is a three-detection al strape of the body now there is a hologram of the mode of the body

JODY HOLOGRAM

Redokinager the nowoot member of a growing territy if meticial imaging devices, uses safe cheap-racko issees, striver their X strips, to issert the furmen body-- and yields holographic potures for classified.

With a three-denersional head-to-foot portrait of a patient doctors can scan and diagnose spinal oranel dental, or obsterric problems more quickly and cheaply.

india wave, propignited in phase like the light waves emilled by likers to cvatie an image in much the same way that a loser precise a hologram holographice, lice, of Boulder, Colorado, orpecito to inhoduce the device need year.

Holographics's president, Aldans Sacrek, claims Radolmager has several advantages over the earlier computer tomomenty acers. and nuclear megnetic reconance (NWR) mad vinis "Radio woves are safer then X rays because they bounce off basis, depositing much less energy in the body."

The pakent stands or less in the sek-foot machine and is exposed to brief burits of coherent nation waves. As they bounce off the body, the www.set are picked up by anbanca bring the shell. Abor processing these eignate, the composing generalise all upto-the eigenmit body.

Beeside being Triesdimensional. The repulsingrmages will be higher in resolution and octain, clums Scatter, Aphysicien will be niske to waw them from driftenort perspectives simply by rationing the device. Tochreen ratio waws, desched at the body from drivent angles cain prevail adversity final desait "clums Becask. The waves are acathered and the robust and another body. measured as they pasa through the papert

Way simal shifts in phases reveal minute variations, a principle borrowed from ratio astonomy. Astronomers typically measure amail phase changes to detormine the shuchan of selectomers objects emailing ratio waves

Developed entroly with oxising technology Radio-Imager promises to be relatively low in cost, less than \$100,000, or one tenth the price of NWR units

-Corris Zwae

"Contentment is the smother of invention "

-Artorose (Marce

OF MOTHS AND MEN

The use of small as a

sexuel come-on is as comenon in the ammal langutom as it is among users of Old Spece and Change Indeed, wess emissing assuably attractant chemacais—kinown as ptercomones—are almost as veccognad as pay inself

Now a new paper of tesolarth by charmels is - Japan and a Connel Linversity is New York Bosts Agrinultural Experiment Station in Ganeva, Nes shown in Mal at least one of Tase phanomone is shared by two specials that have lifte else in contestion the onomial trut math and Homo sapensis

When the tende counting and (nut most goes counting, and broedcausts her interest by reasong a set of pheromones from special glands in her addoment. The mate cesponds by releasing his own set of attractants One of these according to Connell charana liany Aces a methy patronata a weldy dearcoulad chemical het is found not only in the four methbul in jacrane flowes, jacropien seeds and leenon pool. It is also land—genhep more fleen cachode lacto gar lantes where it is op priced as an ingredeent. Tablit gass by the name of the queen of across.

Acree and his collespon Cometa Werkal Reachs and R. Nachda, of Kydo Liwwnisty, were able to broad mothy patrianale down relo is four component sommer facture veurteers here mithed adultons comaining aach of the Sur components Due of them is water as (+) condry opportunate and faunt to be for the most powerful of be four them on record here there does the surfor delection by smelling) 1.000 kmes as small as the least active somer

According to Acros, the performs careparens, which take a state powerful danaline a listic powerful danaline called offyrig restlying payning asker recurd They're all quere recurd They're all quere recurd they all quere recurd the same of the social of poton of the social in the same of 1 + 2-metry get at huch as a throaded?

Whather or nor has well lead to report the succepttamis semants to be abon For the moment augo Acoust "the benefits are so substaning further and i think the perfurse companies are going to do just that"



Now there's a new sealment for A/DS, acutatorium

At this Subatance Abuse Division of Navi Yorki Corys Lancoln Hospital Cr. Michael Britth has been using the ance abuser and the the ance abuser and the the more than 30 patients suffaing from acquired immuno obligancy synstems

Tenament of Dr. Bristis Initial ADD bears was approonly auccessful He ayrigtoms--rayl weeks and anime larges--desppeared and his block lasts which previously revealed like T-cell (while block cell) rays to part out, however, tating one twol weeks and the two auccess of ADD bearterer

On the other tonicil there is one case in which acupuncturs seems to have haited the spread of cancerous Kabbe a servorris teachs which are considered among the more territying and athrait new territying athrait athrait and athrait at

Birth is extensely cachous about offenergia ar onlywai of how the accipantism mechanism operation. "The next participant provide the saye 1 am provide yabout the saye 1 am provide yabout the saye 1 am provide a research part to the New York State ACIS Instatus to do a therough ensistence in acceptantism effects research the fight against the disearce —Juke Note.

Happiness goes like the wind but what is interesting itays '

-Georges O'Xeafte



Do you really will her or is 4 just her assures of Orenta' hur reati? Humana and buda inter dat turned on by the sume chemical

CONTINUUM



AND YOM on angry computer could, dedicated to strenging out guilt, alienation and officience PC television-commonoials

COMPUTERS, GUILT, AND NEO-LUDDITES

It was one day last writer that Baven Bosum e nor maky placed Briow who overs a high technicopy sales promotion firm in Walkelay Massechusets. Insi holood a grawing mathom-theil soon turnes to ourget degoart sumst to ourget degoart services commerces plugging personal computers.

Takes tasky offended by what have seening. Shown in recalls. Like the one when the the child wetting on his failed as a boose the optimist avoid the boose the spectral avoid the boose the spectral avoid the boose the spectral avoid the part of an englished avoid the boose of the spectral avoid the part of an englished avoid the part of an englished avoid the part of an englished avoid the theorem of the spectral avoid the boose of the boose of the spectral avoid the

They were mass nerchandwarp (PGs the same way they mass machandee coarnetize. Only an dol would dany that home computes are manufacture bace and in twenyone's home there have built beer place and in everyone's home there is no every angle American must own or every

So lise some vergeful

Inversenth-century Luddie batting England's industrial Revolution an angry Stroum decised with the lawyer and founded the Calubaptie Am-Computer Calub to wert aams rage and to combail what his calls "the mesponsble lactors" of the personalcomputer rolation

At least wears to b... " whet sort of progrie Id heer from " rays the Northeasarch University graduate whose sub general malert noticestry. Most of the wayness have come ham computer company executives or math protensos—obwauky tright, sophisticated people. Dewids clearly typod on a dotination profer. Toward gates wids clearly typod on a dotination profer. Toward gates

The currous call daily and at lear court. Cobleaces had more han 50 subsch membershops and subschiptoors to a tomorphy needed ter called Laving and Cam public, which esamines how computers affect our every day which esamines how computers who will be done how the more how the house how the house house house house - George Nobbe

fa what five naver sees elove that i recognize " —Orane Adaat

THERAPEUTIC ONE-ARMED BANDITS

Decemptionel herapy for handwapped pakents has taken an exciting new vacit all hor horstypeans interaction boro barreters involved of soldcawy stacking blocks of puncting registerists, the haddareal segments for accurapational herapy, clients of Alexis Services for the Harriet capace in Boranton and Wilkies Barris and perpansing themaeives for the patient to preveng slot machines

Additional reactions to be table to international Reaction in Marvine CRy and set stoud. The second set of the international Reaction in the second set of the international set of the second set of the second set of the second set of the set of the second set of the set of the second set of the second second set manual second second second set of second set manual second second second set of second se

The whole disk of occupercirs it energy registers Affect vice president Michael Anno. 's to get the upper extension working again the act of grapping and pulling the handle works on the nands Buy in order to grait you've got to be able to meth out, and the gets the show and Heudae in whole Some machines there are the spectro the balance and pure groups can be pareful to the stack. The singleIt is like a workout room The slot program uses essentially the same technicues as other occupational therapest, but with a little lack

Indeed that kick seems to be what it's all about The alots stit spin, the Me lemone and chemes still pop up and when the pickpot atries the machines still pay off in tokens

By twen that has accurate some local controlents, "I there the autobio way of making gambing more acoptitals," says one oburth leader. The very very devour. "But as the ac-Accuraand his patients are concerned, the controlversy has been overhowersy has been overhowers.

"I have not a word to say against contents of people, so larg as they keep qual. But do not, for goodness' sole, let them go structing alaxat, as they are so found of doing, crying out the they are the true models for the whole species."

-Aerome K Jarome



naturbahad akt machine

2 CAIN

Relacts warms James Rob



The statle loiet or waste coluction pyriom (ACS).



-DI Lawren

Withorn Ewent Glackstone



The guardians of faith meet the forces of reason in the hailowood world of





For the first live mo-recepteder, first hornowing specification of in-comproder, first hornowing specification of in-recepteder, first hornowing the specific of the specific operation of the specification of the specific specific operation of the specific operation of the systems that the specific operation of the specific operation operation of the specific operation of the specific operation operation of the specific operation operation of the specific operation operat



 Genesis is a myth. It's not a scientific statement of how the world came to be, but a statement that God had something to do with it.?

son? design? a sudden suspension of disbeliet?—everything in the room seems to draw the eyes up

Now them is a rushing of robes as a property of Algerine barhops patisals behind us then giertly as not balaou to diago into the not the second diago into the not the second diago into the not the second more set that has potential works without which the set to be into a manufacer. He takes the there and manufacers like the to with the transitioners guidely be with the transitioners and the set with the transitioners.

These is an address by one of the scientists. Then the Pape, speaking in labored but effective English given his regly His readils finiter Cannee die Yeusles, the Belgain cleat who devoted more than half his file to heating the second Microsoft

only to be consumed by the disease tensel and Getteral Inster, the Norwegian bologist who discovered the elucive laproley microbiotenum. All the Tope concludes, he geels ofrocity to the scientists, an international array of experts on locoury theme is no matisfand his ancestry.

Ladea and gontamos. The says, "continue your research and your throady, and be assured that the Church lay apports your work. Be dispersions of lave and justice to all house who in the moot displate contents of the works are estang to receive licent today is apocary a message of hope."

Wat the addexiation Plane prevent everyone personally any growthing to each in its own isonyation personal personal many as telefone photographene strate policities, personing the schedule with every the strate in a mergin reporting toboot if would seen that hard everyone is increasing, to cause to most of the cause of history in the loss segmentation in the course. This has grave a discussion mergin and a course that the produce of personal the tobole end to the course. This has grave a discussion of the tobole to an owner them are instant. The affects of the course to the course of heads and the course of the tobole to an owner to head mere instant. The affects of the course tobole and the course of the course of the tobole tobole and the course of the course of the course of the tobole tobole and the course of the course of the course of the tobole tobole and the course of the course of the course of the tobole and the course of the course of the tobole tobole and the course of the course of the tobole tobole and the course of the course of the tobole tobole and the course of the tobole tobole tobole and the tobole tobole



icance a resonance' available to no other scientific organization in the world

That resonance is parketlarly faces because the scatenty's fluctures membersmore than 20 are Nobel lauteable-adheat to regroup acentitic procedure with nary a released of the local Gleenals, seen-day relation or Adarts the Even the recent rauge group on leptoge which in the mid collinary remains a toblecal' deesee, was remarkably the of international to activity.

How can a church that recertly insisted on level interprotection of the Bible now turn so charantically in the direction of puts socientics? Part of the answor is noted in the evolution of the Church and the history of the ecolotry fault

Founded in 1603 as the Academy of Lyrses (the lyrs, was considered a symbol or intellectual targehodness "sur-

passing that of all humans 1, the independent accelerry was soon acids with the validant AI the center of the contentivity was the accelerations member, called Safety Califies an allow of the Drutch when the used the telescoper to desive the primers of the solar system desmograph the fada provide acceleration to Drutch dogram—that fad aca provide acceleration to Drutch dogram—that fad aca valued acceleration to Drutch dogram—that for a dark

Getter right have eccared condemnation, for econt owdense indicates the line the presentation. Candroll Reference, was writing to contrader the arguments and had actually advected by a second second second second second a smoother to angue for the data provider to be a smoother to angue for the data provider that have noning the weak the provider that will be set as as of database and the sums strukture by weak to set as an empty to the database backs as services of the set as as

For the months the scientist was virtually reprisoned at the Wills Medical memore Finally on June 16, WSG, Urben reademol what may be the most famous electree in the history of Christinscience existions. Dealogue Concerning Two Christ World Syslemit world be barmed and Garlies would recard his helicoentie theory under thesit of trulue.

Dist, sind, and means brind Stalleo book book he powson the labering suite, beinging to byteweet of the old wity. The sub-traquent sentencing, included of only important book a week to the sales to encode the source predicted groups more one week to the Urban moments. There of means (a failed was allowed to not this howeverse in Termory, Gallace was allowed to not bits howeverse the "immore, and the test of schring the positive was relogated in the state Mean Delesia a Campito ruit Suie was allowed to another a sub-test of the 1981 has been seen the ruits allower test of the state Mean Delesia a Campitor that built was allowed to another a sub-test of the 1981 has been used by the allower test of the state of the test of the test of the solution was allowed to complete a sub-test of the 1981 has been used by the allower test of the solution of the 1981 has the calculated test of the solution of the test of test o a thoroughly helicoentric view at the solar system. This ame though the concertities callies asysted clear of Libban and the Valcan, publishing his summation in Lieden: the Nathanhands under the segar of the University of Vennia.

The Liprove were not as started in the distribution of the started st

In fact, says one recent scientific associse it was my detrict impression that ence the time of Garleo, the academy had bascely been asleep.

That skumber came to an starupt and staout 12 years ago. The break with the past involved is renaissance man and extensit nerred Carlos Chanae

Chapter set out from here fail day in 1922, to a baseling drive hero. Genore, where her had been attending a sourtific meeting, to her attending a sourtific meeting, to here only a set of the time of the set opportunity to unwers. In the other set in the set of the set opportunity to unwers, and here the distance where we deal were the deleted wines of the CRe of Chi He amount of here to child. Au, generative measured

A cight the next morning the prove sing 1 were he Private paper have to (a Vehoan emailer), adving to see Chagae at moother not duy 1 was becomend on the chagae incells, toocsare not not except ing well and chagater move with the name. Chagae could'd magne what the name while because indicatif the could be not interview of the Division Advision while because indicatif the could be not interview of the Division Advision while because indicatif the could be not interview the construct.

The number came deadly to the point. The most recent president of the academy had just diald and Pope Paul VI wanted Chagas to take his place.

Evenishth shock-of my life 'Grages says. "First of all, I was instantly asterned of mysed because I had been so buyy in my labceatory that I hadn't attanded the say two of the obderry is beneral second. But the most surprising thing was that in the helicity of the abderry, I was the first norphisal to be appointed therefore.

The Pope must have known that Chegae was a near-ideal cancillate for this importent but potentially conkreversal change A model. sever Cathole and the sour of a works to move event in topool diverses. Chappe had printed models school at the age of freem. Five years table the work diversity a heapter inthe fixuation misrary. Chais many to Ro de James the load adgress in preord, dhemaky and mith, combole holding team—a feat in topola of processions benefat team—a feat in topola of processions benefat team—a feat in topola of processions bene anergy for the body holding and maritura the larging present maganitic diverses.

As the years passed we take on the role of scentific outmonstratur and objective Ho hala served as checking of the University of this hostitude. Checking the pastern his still holds—and as societary general to the splaceton of inclination contentions on the seplaceton of inclination and pastern his to her Therd Weind hereas stoppedemic of the Weind health Organization's Committee for Weinda Health Organization's Committee for Medical Research

A compact, handsome man with almone

The Pope sent delegations of academy members to the heads of state of five nuclear powers, thus creating a new form of international deplomacy.²

eyes that even now, all age severity-three look capable of metored. Oragan has the vocabulary and the secondimined at said effort, in combinition with the sublety, the printifield bearing, and the secondiminments of a diplomal. At his first metoring with Paul VI, when earlies that the wated to do with the academy. Chapta make his goals exauately ensure

"Your holiment, he said what I want is maily quite clear. I would like to see the academy change trum a body of prestor to one of action."

With the Popols approval, Chagas immodealiny set out to make good on the word The first challings came when minicolomy achiestato based at the new presonants arbitistus plans for infang the group with you. Chagas says: The worlds the addus you for the water and harding with the saturawary to ensure an harding with the saturaenty to ensure an harding with the saturading to the same and harding with the saturatary to ensure an harding with the saturation of the same same saturation of the saturatic same same same saturation is of its parachages time in the same saturation of the saturation of the same same saturation is of the same saturation saturation of the same saturation of the saturation of the same saturation of the saturation of the saturation of the same saturation of the saturation of the saturation of the same saturation of the saturasaturation of the saturation of the sat

Then he bogan to ensure that the academy's ranks—which included such venerated ecemtetrial British physicist Paul Desc and American toochemist Edward Dosyusmed NJI and prestigious Keeping the acInscore machinery well becauld the tackers under Capac guickly model to realize members who had interior or passal saway. Amenden Model Surveice Service Orban. Nerthall Nimmberg, and George Halda wells same of the adhetic of the new entities, and they were later proof by such tackers and they were later proof by such characteristic and the same of the adhetic of the model. The same service and the proof of the same service and the same service tackers and the same service tackers and the same service and the

With the methannes intend us, Chargas methods to protease in tectors of absorbing granup, is task from approach with the secgranup, is task from approach with the sector sector and the sector and the sector and binding method in a well and to consider the sectema, and entry task granup and the sector and on entry task sector and the sector and the method in a sector and the instance and the sector and the sector and the method and the sector and approximate the sector and the

"Terret appearing noting but a will be human Mucoun all Prets's two interward peothemic James Ardenson who are thread as a base program on the most and an appearing the terret and threads to the arrouppear. This terre waits threads to the arrouppear This terret and the arrow of the appearing the thread of the appearing but of the parameters are terret and the demonstrate and the arrow of the thread of the appearing but of the most improvements on the late late late, there years."

Sciences who were exposed to the acad emy and its work quacky began to prose Chagas for the mergenic isoderition. Thents no doubt about all says Malone. "Chagas has brought a breach of here interfectual vigor to the academy."

Wessiopt agrees "Chagas is a very active man," he says, "a man who lives to do exactly what he wants. Since he became president, the ecodemy has become infmider more when

If Chagas's apportment to the presdency marked a tuning part in the history of the academy and its influence on Church policy, the accention of John Paul II in 1979 were in equal to mortain benchmark

A populal laader wie an schoe even nees of he work, dwn Prek twee het soence and lechnology would continue to eve lannee scoeth for years to score. The nee Pape audity made known-wit he most daudity made known-with the score scalar distance way poesition.-That he works in the score teknologities with the poes way. Themdalandy after ha wood scolar tocelle Westkapd, the towne to one of our collewastway are



FICTION

Two women from different worlds—one haunted by the past, the other alraid of the future—face the dark together

THE SERRATED EDGE

BY EDWARD BRYANT

even a land of scrappy of which his learned to be likely. It always reserves to need a sourcestable of the time of monoprocesses and closed neurini. It's even a wild cavit in work of powers and resonances hought into never before encountered to confrastory a woman. Part of it was her boeignand—or tack of it suchts potent where before encountered suchts potent where before encountered and the before the before and a confused me. It was always hard to part a needing.

My chearre terrify me, "Condaha-Daha-sad" So horrible Angela. They give me worke rightmets in turn I must have looked blank. "How do

2.1 month revenues them lake use by the num-almost Bibliothed block her roth, cark syste only inches from mene Her partners that is undercard and somehow involves that another sysrest of much "I wake up potenting and somehow involves that another sysrest operation of the some her deskip, you more" 30 emitted function in the local type of the ministration of the system of the some her deskip, you more" 30 emitted function with the system of the some her deskip, you more" another the system with the system of the some her deskip. Use and more some her more somewhere and minist been in the light Lake and mass been happens.

PAINTING BY MARSHALL ARISMAN

snatched out of my life '- Her solt controll no even and tensionid sightly "Doct high my libes has here Angeber mached observations have here and light my lise hand on here. Deals when addated here. It was the coice of my moming optime. Deals a basedy store, if could be here. There could no store, if could be in the solution store, if could be in the solution store, if could be in the solution your bran clicks and you come out Another based with commonly on your bran clicks and you come out Another base the solution.

"Do I go anywhere or do something wexd?" she said I nodded "Not that I can tel

She looked down at the table considered her hand hencely sandwidhed between my hands with drew if. Deta looked back at my face. The we that sock table sche and the section of the sock.

We both sat still for several seconds, two abruptly self-conscious women I twisted noncommittaby in my chair Why are you asking?

This is being, Delse taad. Somehing--somewise-as systematically culling all the love out of my life. The warmth's leaving: "She sead the words with a tank helpistis and topoless. There is going is be nothing list." The bism settled in the lanks of her face Data waart much part thing, but her feelungs sudderly toos on surdher decade Neo decades Lamended. The elian lightened across her skull Light knowled her chakkones like the origan of daggers. They packed a childrate terror. As meeting alleme as Deliats sken hed fatt, now I fatt a bonemarrow chill I started to shiver.

Can you help me? Dela said it could have been a child pleading. "Will you?

Do you truly want my help? I thought been yourself some aproximon: it might be a mercy. I wanted to help her, and yet-

11 i can. 11 finally said. Then I hes/killed Riggles of ice willer wisified through my kill domen. Everything in ms lightened. I fet i was close to cleath. Geographically close

Tautime Caseline Calenia al meteoremp possible in a providencia da la tradición contri The regression da la tradición contri The regression environment al reflectivo regression de la tradición de persiste cubre el tradición de la tradición persiste cubre el tradición de la tradición con tradición de la tradición de la tradición tradición de la tradición de la tradición contradición de la tradición de la tradición de la tradición contradición de la tradición de la tradición de la tradición contradición del la tradición de la tradición de

I stood volumed with a fuberg in mythanol and watched the action. The video of networking wats to get togother a neth mix-of professionals markly yaking and life thiem release. I had been told beforehand that before the store of the store and information brokenages. Free My consulting work was teelance Chaitcrarky the networking sale server decusation as a cost. Tongh was increared amore

Then is size the vorma across the root 1 did to know how 10 mased ber. Waytes the had been stilling surrounded by supplicants i could understand their row sciency and across I couldn't have dis been to apple approve that signal Senter black autors of decration wearing the solid presence of I nearly control decry site secredula device that by the future of the presence of the site of the site of the presence of the site of the site of the presence of the site of the site of the secredula device the site of the site of the presence of the site of the site of the secredulation of the site of the site of the presence of the site of the

My name is Cordela Calve," she sad when Lapproached "Dela" She extended her right hand

Ancela Black Ancel

Our hands remained joined comfortably for many more exclands this the perfunctory Hisrayea held particulty steady. "Poure a women of powers" and Delta Calvin. "I am a women and have power," and Delta Calvin. "I am a women and have power," and Delta Calvin. "I am a women and have power, but you deal with the work have not the policing."

I inclined my head slightly I wawn t same iwas being complimented. Recognition and talk of powers sometimes made me ner in their agus Treserved sudgeseni But the womail dicht seiten like ofte to deal in hasty doo pons or to pane easily Witch was nd a word to temly her

We will sail there same "Twas both qube lion and sharement I model She nodekul as well smilled, and lat gool my hand I sauddenly instead the heat of her dkin. Dele kamed and moved into a group that had formed. These prepile pailed refu magnitcance as there clustered around her."

You don't income a short come up broads

iny elsew I shock my head Just enough to make

Tau selly don't know her? The young man-aryono obviously under then her tarted exemuting young to me-evented anamoli at my genoance. "Donotes calve doals in some of the proceet properties in the ony. Nonly insistential though we'll source some insizeweeth dovelocition?"

 Defaits features suddenly took on another decade. The skin tightaned across her skin Light limned her checkbories like the edges of daggers. They pocked a clokeate surror?

The women's up in this ten million club High powered I said

"Especially for someone who clawed her way out of the ghetto the said. At least that's the story She's a self-developed reality"

Egathered I was huppeded to laugh The young man appeared to take my slance for either obuseness or slupidity. Uh you want worther been? I be tool gammiy.

I shock my head and stated patt hm at the distant curren

Makes creptinto his voce. "Shes a lough babe. Goz where she is by doing anything she had to do! Word is she started getting bolinthrow by silveoria her way ab

Taurned on him sharply. Youre in real eptate too?

He spead his hands apologetcally "I in stall business communications systems" I saw something regritful and hubbacd in his eyes (continued to stare all him unalifie sard "Dilatebook" Link them in:

That night I went home with Delia Calwin Wo faked and held each other. That was all

Four wooks, twonty-right rights later Dela pushed her char back from the table leaned back, and played with the knills. Said and hatemend silver caught the light from the candle reflectors descing in her hand. The kine was the limited in her hings, a sum radged inplice of the study organithet Senegateer limiters use to guid and silve ther catch. Chase to the hit the blacks underade divided fros a sone of located bothe it was a besulful and ultiflasan instrument of adapt.

Thad seen her tay with it meny times betate. This knills did not make mainstructs. It seemed to take the place of worry beads.

"Its a tamly heriborn is the had said. One of my gravel greate anough I is with her in the 1856s. My anostors clonic core over here with the slavers' site added. "They were transported from Alnos by well meaning Luteration."

Now Delias turned the larks hypotebally and we laced each other across an obony table. The shadows of carved total int set along the walk weveral in the light of the mount famo, Anonys, a grafte an object in mode in the semi-delines. I noted the predeters were attaind

"Lovers or not she said "we sall can't have children." I heard mande wathunsis

"Obviously not instrugged slightly. We could adopt

Cendelight Reshed in her eyes, and she sed nothing I saw mosture glearn on her lower lip

The world's full of unwarred kids " I said If wa--o" you-- I amended want one there shouldn't be much trouble. We've both and a basist nearestablety."

I realized I was trying for an oterrent of lightness if at this point emphasically ded not want a live obstrong up my life. But De lia on the other hand ---

She stawd at me trancal ke

Lease sequel the table baloe the object duel Desistants lightered baloe the and drug persed the head between my bislant. I taking the object coupsed that and murmuted fings. Angle, she said again. The least Starty and server, And that no noting 1 should be a said the said Propage together against the distributions. I played to that waited the couple burn down. Dela side noting the myse opmand web and stared has we call and blank.

Atter hall an hour Delta shivered volently as though with a fever. Then she cried out

I had heard that sound before, when the perty all Roch house Realiand Comman had business dealings with Delia something to dowthinsoftlete. Rac block during much the opposite of Dalais when, saget of Dalai the freads in retenuit carls obsolved around ther bace full on the looked the viscous somethics move students if all see her ner ensemble on a local merring staff how all threy. Bach and actived the kind of success

that needed no coasting on looks

Here home was confortably Deco see at the end of a cubick-sec that terminated at the Botanic Gardenis. Most traffic invest suppected this part of the city costand. I fixed in a cheeper more modern part of town. That this residential history these memories were as well preserved seemed combining.

Sports and eccorrery care filed the cub space in that the facts, so is personal the Audi in that do the next neighbor sculi, i had have basis been therein to be the source of the had upon instally no time avail. By at uppermandes and another had been about the filed to explain the source of the filed to explain the source of the source of the filed to explain the source of the installation of the source of deer of Worse, source in a source to me the intervale of a source in the source of the specific to be the source of the source of the source of the deer of Worse, source interval to be the intervale of a defined the work of the source of the source of the source of the source of the specific time intervale of a defined the work of the

People clarit alok around me for very long," she had said later that right a single of what seemed to be metanoholy in har voids. They save They always leave Or

The sense of alonenoss in her voice slowed and chiled to descition it was not self-ptv. Gone every one '

I wanted to question that I stared steeping from my and of the could! Delive toping term mote. I got up and walked around behind when are set

When I stand to kneed the back of her neck the muscles fet like hardwood

Wrgie, screetung's masing."

T think lots of things are " I said " Like what?

"Gone Taken"

I had the feeling an integral part of the conversation had passed by without souching me Something is making. "Can it be trought beck? Do you wark it back?"

She heated around and looked at me oddy, No. She seamed to reconsider eyes gang out of hous a moment. I don't know now.

I played a hunch. And if you did get it back? Whetever it is?

Her reaction was to tramble slightly I thought of appen at the dying and of summer Delete remained slight her eyes still out of locus, stamp to show the writes-

Five minutes had passed I said. Dela? "What?"Herichin quivered. "What did you

I sensed distance And I shought where have you been?

Pace party was rather more social than the networking session. Roz Coresan had empreted from somewhere back East, so there was title need for other Delix or me to say anything at lest.

Dela hi "A queck hand/bake and a kos "Held? You must be Angela. 'Another queck fim hand/bake. No coast? You gets hun gry?'Rooff in the clamitg room. Dency in male is heaven. Want a dent? Soft such in the kitchen, on the counter Haad dut/f ion the right. Dain, you know where the loo is Have a great time. Got some interesting toks tonight. Talk to you both later."

New quests arrived: we shuffled lowed the lattern and the draits. A Modelhead for me white wrist Ist Data. The pacepta e Rech party looked guest like the pacepta who had been at the get-legentee the right betwee Some of them I want thought a tocograval Maycen I was just the types I shouldn't be grant. Joban and passaed, of docum. The pacific Lipst Sector The Sources I works I was Documents.

Delta and locculated and she interchand the to a number of people i dishritinow Must were interesting. At one point we found our selves happed in a comie try a Severtheeth Street barrier. His tweeds were impocable this pape trefeted. His previous convertational partner had ouched out with an exdem expression of hold.

Data and i had apparently inhonool him like a pharaohis curse. The topic had something to do with news accounts of summersolatios between this in a lixed park.

She wailed, her voce cycling up a primal scale that could have been a birge for every person who had ever died i withdrew my hands and convered my ears.

"Summer siliness." The banker said Watnes? Wege? Dela wetched mission ong with okvous amsement. Cog Alone: Ta just an excuse for bored suburban haukewish to dance availed nelled and pop psycholotic druga.

This point d do t seem worth arguing with the man. I looked for an escape

He breathed gin turnes into my tace and said. You look like a semable lady. What do you think of this toat??

"Territle "Load Just plan owful "Limade amantal role to sho into the bathnoom at my red opportunely and restoran a queck impotancy charm. Not worthy of me. Laghed. "Go to Indi," I said to him sweatly with a several amin on my loss.

The binker smied adknowledgment in the tace of the party furor. For a moment, he looked unsure 'Pardon?' What did you say?"

"Ecosis ma, I and Roc was using her budiest shallest voice to call us all with the living norm. I platted the way and Delia tollowed. People took and sherhiled the closeware to hall and letchen

Poz introduced a tai, thin man as a certited therapet from the Windstope Ecuado. ton in northern California. I didn't catch his neme

"Party games" Data said into my ear

Party gimes indeed Thotherapettalkist about Eastern and then said nasty things about Synanon, comparing more clictus frain Id heard in a month of Sundays "What is the crup?" Leastab Defia

Roz is bored

binght girrie it turned out, ves parg to bailt search in set-doctorum. The to bailt search in set-doctorum. The to bailt search is the search in the search devices bedress the classifier of the search integrated data before and if den search in the search of how the the search is the search integrated of how the theread search goals date of how the theread search goals and my own all not back into my check like the owned on back into my check like the because of the cread soil found theread back dates of the convert soil concentrated on because of the cread soil found the search of the because of the cread soil found the search of the table sedence of the cread soil found the search of the table setemation of the cread soil found the search of the table sedence of the cread soil found the search of the table sedence of the cread soil found the search of the table setemation of the cread soil found the search of the table sedence of the cread soil found the search of the table setemation of the cread soil found the search of the table setemation of the cread soil found the search of the table setemation of the cread soil found the search of the table setemation of the cread soil found the search of the search of the search of the cread soil found the search of the search of the search of the cread soil found the search of the sear

The field assertion consistence were not the monitorial prevailably. The main sampling came from a precedent labod woman who obtained to terr the first Sin decorread as childhood incident in which has become a bindhood incident in which has been to down from the one provide and been to down the one to ensure the bit of the bear to any the origination of the down from the single the down from the single optimized bears and the loss of the single down from the single of a kitteria chair. Then the title out parged one to the single.

I save people across the room whole at the payoff. I looked at the face of the women who had told the dary and save a loke of sears form across her ways. She not only remembased, a the downauky and fex? I wandeted if this would serve as a coharse. Or whether this would serve as a coharse. Or whether this would serve as a coharse. The would attem froms I thought load if is

The tail block woman, said the thesapait pointing beade me Data i terned her stiffening. I behave you can handle the Tell the please, what is the worst thing you have even dene?

At first Della hold seent

Finally in a controlled worde the said. The done lots of things.

But the worst " said the therapist. "The no holds barred very worst

Teso again clapsed When she spoke her vorce sounded almost puzzled 1 clan t impre. and Dells 1 clan't amember'

The therapist heard that, stand back at her then seemed to scored the answer He humed on to someone who had solen her dwng orandfather's pen mechane

We bed our good-byve to Roc and left scon after We were not the less to leave. Once in the cas, both of us said inching as I negatialized the quiet neighborhood streets and furned onto the one-way that would take us back to Derive to new.

After several more minutes of stience, i turned on the racko Delia locked epologetic concrete/polynamics en en

Travel along the road to the stars and humanity's future on distant planets with

NASA'S MASTER PLAN BY THOMAS O TOOLE

ensitd J. Wasserburg the man whose analyrocks put the age of the solar system at 4.6 billion years and sat for a moment, staring caused for effect, then looked straight at his young "We recono to build a house on the moon." Wetserburg declared coing to have a mommy and a to someone else, 'Hey, live got

bis The professor's preview of tion? Why not make it possible aboard space shapper, colorooted soundly in what has al- for minerals the earth has never. Not all the major missions will ready happened-and in what had as well as for any earth- mydive humans. There will be a century Why not build a lunar I to be mined into extinction? home for the moon's triat tem-

automotoers can sel up an ob-

lookal place to do that." Wasof the earth When the first child earth, it will be a magical moment an enormously important

and their machines will conpepton Pluto (Too small too paring satellites in space will ceuticals, genetically engireared druce and eaplic melservetory that's multierable to als and aloys, all for the first

PHOTOGRAPHS BY PETE TURNER

spacelights to asteroids and "There's no doubt in my mind comets in which robots will did is/2 Cr a know workplace where that people will be off the earth out samples to other in Farth

aty lights and electronic pollu- time. Man will settle in space

back a sample from the red planet. Both the cosmos began

In chawing up a space celondar for the tuture, Omvi began with 1985 and looked ahead 50 years to 2058. It soamed weet to start with 1995 That's when Hallevis Cornel will appear to Earthfords for the first time as ca counter Uranus, and when the \$1.2 billion Scene Transcripte will be placed in orbit to

T Oversus More (at 15 miles hoh the eruption Mans," says Caltectr's James West scope. It will be an event unpanalished in

Ending our space calendar in 2036 seemed equally appropriate The world's space scientists have a plan for space ex-

In diawno up our 50-year calendar, we business People like NASA administrator James M. Broas, "star wars: General James A Abrohumont former automat and US aper project sperrist Edward C. Stone, Jef. Propulsion Laboratory agentists Ascen Albee and Albert Hibbs the University of Par-Neupebauer, classifier of the Palomer Obcoveror of the quasar and president of the Amoncen Aetronomical Scienty We alked happen what could happen, and what should happen. We taked them to be con-

When they and formed the essence of this Fox of Nats and Bolts. It starts in 1995, when and its four large moons, when other spacecraft will own us car tint look at the surfa-Telescope begins its observations of the

Epoch two starts in 1992 the fwo hutdrad than two rsary of Columbus's decovery is we will laurich several missions to the moon asteroids. Seletide repair and the commer-

Foods free is the Ape of Space Colone zation an era that will begin when the linst will end with the tinit massor to prior. Mars

Epoch tour is the least easy to torecast. OMO

hubite exects have 4 will culturate in 2006 on the surface of Mass. "If we don't co "warra-Wesselburn the Russans will on Rut f we're all amart, we'l go there together

Here's a calendar of the next helf century

1205 January 24, Well out our closest look over at Uranus, a planet that is sail a mystery. Qurwith scientists don't show even the langth of its day Voyager chief scientist Ed Stone quasses. 'It's somewhere between redner and twenty-four houts " What does Linnus look life? The best pictures we have make it look like a tometa." he saws in the trid clean encounter ever with the seventh anus just beyond its outermost rings, a scart tarea, and Oberoni that some experts sus-

> There's no doubt that people will live off the earth and that the moon is the logical place to do it. And if we live off Farth wo'd have chikken off Earth?

colliciting and disappeering

February 8. Halley's Cornel swrigs around the Christian Watero out in space to prest named Glotto, and a Japanese spacecraft photograph its 100-million-mile-long sal The U.S. spece shuttle will also photograph Holoccasion. The best pictures should be those taken by the Soviet spectrall, which will scientist Jacques Blamont, developer of the compras. We expect to photosteph be understand its nature all for the tirst time

May 15 A Germen-American specieositi named Ulysses will be released from the cargo bey of America's space shuffle and rent on a curving path lowerd Jupter, where it will be caught by the giant planet's order-

terional field in July 1987. Then it will zoom hank toward the run. By Oncenther 1989

Nav 21 A sévery spececraft named Gal reach the planet in August 1988 and orbit steed of the lew days that were allotted to

Sometime in August, the space shuttle will minage the \$1.2 billion Space Telescope ST will peer ten times tarber into the heavphrost 54 billion years ago. The ST will also plow up to do the meleorology of the whole torna Institute of Technology, save Will never fully underland Jupiter's grant rod rentern with the Spece Teleanone

1998 April The space shutte will minders rader deh, firee times the size of the spacecoalt most The crafts name Versus Raday around Venue and begin to peer through the ractar capable of 'photographing ' loabutes as smell as one islometer across, it will generate a cikipal map of almost the entire aut-

August 24: Yovager will encounter Neplest to be explored in this century. The spacecraft will make the closest planetary a puzzing internal heat engine that rad ates Also orbiting it is a moon named Titlon, which moves backward around the planet Voy turne to get a good look at its proulitar moon solar system basides Tear (which belongs



THE ODYSSEY OF A MASTERFUL WRITER DETERMINED TO HUILLD A SPACE-ADVENTURE STORY ON A SOLID FOUNDATION OF SCIENCE FACT

BY ARTHUR C. CRARKE

The may be quite a surprise to the cellsr to C even balant at least part of the balant is of 200° Colyaco, the Tast por a test of the test neyser balant cells and 1 agreed the data of the and the test point is the set balant cells and the set of the cells and the test of the least shartering away lead to descene them too the least result that says the balant cells and the cells and the set of the test shartering away lead to descene them too the least result that says the balant cells so that 12,000 words, and in May (967). Test the set of the the set of the the set of the the set of the the set of the the set of the the set of the the set of the the set of the the set of the the set of the test of the set of the test of the set of the test of the set of the test of the set of the

What happened to the spaceship Discovery near Jupiter is 2001° A joint U.S.-U.S.S.R. mission is ordered to lind out Star Rey Sciencer helps John Liftigee suri up (bit) for the and two Belan is but to the Discovery (opening spread, belan). Occurrately (Brikit) which hill the computer, beach on Delove H00











in my collection The Other Side of the Sky. That I thought was the end of the matter, and I longet all about the story for the next 20 years New putto 1979. Picture a typewriter spinning around and around the

Now out to 1574 induce a typewrate sprinning accurate and and accurate to the suddetly straining into a word processor. See Wear and Date School counters have appeared, and is earns that three or won bur bodge are interested in second-thiom moves. Though the solid over and Date School over again that a second to 2007. A Sprinor Organize table ympowiate and that I herein the sightest instrumon of writing one. I find mysel tragged by a lascnaking problem. Star Was and its contemporare see adaptiful fastases, but any one has set we exceeded the problem.

After sensionsking-payling into an orbit-incored Jupiter (bottom right), Scheider (top right) discussion the importance of the microsofti (dowe field) of the incoreshin a indised comballed by a higher information, at may be the law to unappeding the active of the Discourry (right), new againing active to incore in



Ensuits in 18 (2) percent inclusion that no nutrout detect on our exceeding the time steps of all grids the inclusion of invest to the steps of the

Photographs from the Voyeger spece probe were used as models for the film's effects convey a Jovian eruption that sends out vicient stock waves isoking the specielings (for right) and knocking a crew member unconsisions (right)

















happen and that doesn't defy the laws of physics?" And I subderly re-membered "The Songlish Datam Earch " I also cemembered correling else Years ago Sparley Kubrick sed to me, "A movia consists of sequences evenaging a couple of minutes in longth. Each can be described in a prote sentence. Achius al I want from you is a mere surby pentences. Is that asking too much??

So with these noble words inging in my ears, I sat down and wrote a move outine, about the length of this actual developing and axtending the dose in the 22-wee-old short abov. That I cleoded smuch would frally get it out of my system i also discovered that move outlines

Designs for equipment appearing on screen, like a hidemation sur (left) and schoop aboved the space-out (licp and bottom for left) draw beavily from the look of hardware in use lockly. The ouse skin of space surst (above) was make with the same material that MoSA was to proper it is astromets in a pance.

 This may be the first occasion in history that author and firmaker collaborated in real time on opposite sides of the world.

Hough scareely works of artare quite fun in a low pages one can create a whole universe sketch characters, and deaicha apposite/function (comp all the locious detais to the magnation. There is no need for hundreds of pages of manuscript one can get almost all of the anyoprent at a bactorial the discourse.

Well "The Songe of Dataset Each: driv appoared in Orive is 1661, with rice illustrations by Robert McCat. I did net know 4, but Id been hooked. A few wondering if ware possible after allowerie a social to 2007 in the form of a move exciting it wouldn't take long to find out wouldn't take long to find out wouldn't take long to find out

Seven, actually Happy to have cleared up this bit of untrivited business once and kin all. I maled the cutlers to Scott assuming that once again held pass if on to Catter. The weekh



dat repting of the sort. He sent a strugts back, with a long lefter saying, "You can't do this! You've got to write the whole inover!" And it you'll each a contract. I'll get stou a mis-figure advance.

After cursing for a while, as I always do when Soott suggestin I get down to some reet vork. I had to some that writing the whole novel was not a back data. I hadly did wart to write the noval. The advance had not the sightest influence on my decesso, but in certainly did to any herm.

Despite the fact that its gam was a movie dutine 1 deliberasky spored this angle as soon as I astrand to concertaise on writing the royad 1 was determined to write the best book to could, and the full with anything disk indext, at one stage 1 wort around sking people. I'm writing a rowit that even Sakter more than through the use birth the rest than through the set birth the set of the set.

That reason to hope that as a work of fotion. Objectively like would be supervir to the original 2007. The lister had been working for the loads purpose of garanting the move II had thatabas concentrated on visual aspects of the subject and growed matters that (abit 1 and that taking) to being filled Octaves Viso would be under no such constants.

Table had owned other magnaturentages own to precurse When 2001 was concerned, the Adols program was set to be giving, and the sateletes of Jupter was more point of light in we thing work to take to be a sateleter of the thread of the many table of the sateleter of the trade in the of the thread of the many table of the sateleter of the trade in the of the thread of the many table of the sateleter of the trade in the of the thread of the thread of the sateleter of the sateleter of the thread of the successful Vapage massions had a survey of the Jupter of the 20 years alread thing softwards in the new book would be towned of time realities, on generalizers as of rought to be alwaiter new

The bridge from the Leanov to the Discovery allows actor Bob Bell abain to cross over and explore the species of shandowed in 2001 Lam happy to ady that wrisely everyone agrees that it is (Shut an, the real pl you)

And now something has happened that takes me right back to the begrinning of the story toked, it gives me an every toked, it gives me an

unevery, the is where I came in sensation, as it mone of inceunionumate time travelers who has gotten stuck in a loop

As soon as id therefred Odynawy hile the individual of the Songle of the therefred Dataset Earth's stander dogging at me There were no escape almost with the force of a revelation i subbinly around the time was the book i really warhed to with it had taken me analy a quarter of a century to take that fact.

The design of desire (Lerif was getting alway, war relevant water beam would not alway back posted of a distribution of Od analysis, and the second second of the distribution of od analysis, and analysis and the second second second second second is and analysis of the distribution and the distribution of the distribution of the distribution and the distribution of the distribuance and the distribution of the distribution of the distribudied and the distribution of the distribution of the distribudied and the distribution of the distribution of the distribudied and the distribution of the distribution of the distribudied and the distribution of the distribution of the distribudied and the distribution of the distribution of the distribudied and the distribution of the distribution of the distribudied and the distribution of the distribu

When the contrast cares table is the second inner, to on to sure local care that which was not include to it holds watch a latent distance in May 1948, and investmit distant would be writing to miss of latenthal a proceeding within a would be propared to segn a contrast in cohornee's buildners (errors There was some hanging, but it takes the my pairs I a was about the probability of the second second second second in closely the probability of the second second second and closely there are benefician than the moder of pairs I a way accord buildness there are the to the top of II a way accord buildness there are the top of II and the second second second second second second second second second way accord buildness there are the top of II and the top of II and the second secon



"Believe me, you'd get bared." A rose petal fail softy on hor check, and the tech bauthed if all. He turned to bare the two lawyers who along sterily rearby, walking. Yes the logal praimmarks faished row?"

PAINTING BY ÉTIENNE SANDORFE

The lawyer in orangetage nodded. The one in curple said. "Carit her grightal per-

Drawing a briefcase from his pocket, the wetware tech threw up a holographic dia gram between himself and the wirresses mestano

"We've mapped the subject a current perremains" He reached out to touch several here we have what are laughingly related

A thin waterfall dropped from the dome terrace, a bright razor stash through skalay

personality was never recorded. The acco clent seriest completely randomized her terrely deligate memory protong, we could resettible the original it could never be the

contribut at the moment. She wondered why

The attorney made a nucle none. Weil then, go ahead and do # 1 wash my hands.

The tech herr own Fig to reception alternet inductor "This won't hurt a lat." he prom not 'Just presend that yours at the dan-

tring-desk workers in their open air of fors a backsrake summarized by the path. the stone starts out into the terrace walls. Her

aze wert from them to a small cave in the

So you'll be stuck on the moon for a full Levelon-amost a month-id you want to collect your settlement | G. Feuchtamin exarst they final labity Got that?

And then -raidciroly wrinch. The cruid focus again She took a cleep breath "Yes" she said Yes I-ckay

'Good' The afforms canoning just sub-

They had arrived at the cave 'Hey, Hans! hanz well you?

A small man with the roquish face of a 30 CMN

terminal initiand "One minute The said" If the on direct flex time-oct to wrap up what Time

"Otay "The lawyer sal down on the orange Ein watched, lasonated as the women low tatioged into her skin, emerged

"Hen" Electrate "fourte a Jossie"

from Earth orbit? She stuck out a hand "Dorra Landa, S.J. Im the client oversear able for speritual guidance. Mass is all nine

Ein wared back against the chill Grape vines rustled under her weight. Alreedy she megand the bissed out feeing of a knew me-

You were Things may have changed Lants folded the town info one pocket un folded a meter from another "Speaking of

Elerated for relactor Busicart au-

She saw a giant striding through the trees, towering over them, pushing them apart with two enormous bands. For a dizzy instant she accorded in disbalief

sounded her over, namewing to a port at the bridge of har ness, swooping down in a iono curve to the outside. If was as if she magical about if something giamorous

1 feet live a rappoon This splot mask "

"Get used to it "You'll be wearing it a lot"

The what's the post?" Fire was surprised sonaity, it's stilling in here I don't leel ans went computition to run ampk with a krifts to warn the officerny about certainly

"Leter Lands and Reft now yours like they're loo big for it. You're a stranger to surprising things You can't control your entenants with you loan what they are And

What I you have?" Hans was back her forehead smudoed black where he had m-

-alitiewarrang Ch. I don tiknow, Hans-Whither you have on tag

"That'll be Chanty You?" be arked Ein-

He laughed "There's no such thing as a could lunar wine. The art's loc most. And even it is weren't, it takes a good century to develop an adequate vineward. But the

"filltake that then

"Good 11 bring a flug for your hend too"

them pushing them apert with two encrmain trends For a decry instant she oppgled in disbrief and then the man shrank to human stature as she remembered the size

He connect "H Battember mo?"

He was a tail man, built like a specerock some but carried an intense freight of will

"Tory Shostokovich I reprogrammed you" She studied his face carefully Those ever thought she might be making this up-a him thing so desperately he dare not ask for it She could lose herself in analyzing the ru-

Tim pleased. He nodded to the Jesui

She eyed him skeptically "fou don't seen your usual morose sell. Shostokowch is

No if's sat a special kind of morning " He amiled at some private icke, returned he get accustreed with my former patient "Hk planced down at the ground fleetingly shy

two her "So you're a wotware surgeon, she

Hare reappeared to distribute mups o the skull-plags. His face went still as the

Actually, Tory and "I wry turnly work at a wetsurgeon An accidentilike yours is rare you know-membe once twoe a year Mostly

"I've heard that name before Just what a

down into the lake, a cool breeze from above ruthen his curis. Elle caucht her breach / pointed to the island in the penter of the lake

God lives on that island the said

Fin lausted Think how different hadon tion?" She wanted to bite her longue when

"Noure being cute: Shostokowich "Landar who Losz thats wie stuff"

Tory rubbed the back of his neck number "Max culor Well let me park you a little similate because with machines you start people there's some ten million years of

'So to date we've been working with the package them like so many boxes of bonemeal But the human mind is vald and un-

plosition of the basic substructural programming of the mind. We've indefined the sence programming in one-to-one concruinto with the interest substructure of the

"What proprietic rol" Lands gestured at Bins storeware mug "Dinnk up The Star Vascan Synod is providing funding so we

Thats a cood part of it. This set of well wart to computer model the infinite. Any tried cut on-what was the name of the test

"Down! matter " Tony stad quackly

Only half-istening by now Ein unobin. lines on his face etched by who knew what agit En hought Then agait, who knew what she might believe in anymore? If was a

"Fatience Assway, the volunteer was placed in word reprogrammed and a terverweid Nothing useful

"horehour" fory spid, "we learned more

"It was deranged gibberish "Lande

Two rever been too on theforeial publi-

"She didn't come down She was stuck

Tory plucked a blade of grass let s fail



What happened was that we had reverse control of them--eacht down to the involunher own metaprogrammer

"Metaprogrammer is ust a buzzword to

'Heah What we cidn't sale into account. we tred deprogramming her, she amply overrade our instructions and repto

"The norr women" Bin sari 4ovi vitwhat a closess experience to be God

Which leaves us with a woman who thinks some of those religious iliterates back or

"I when " Three seart 11 diving make onthe here to talk shop. I wanted to invite my for mer patient on a grand lour of the Slearn

Etn looked at him blankly 'Steam

He sweet an arm to take in all of Magnitie the green pillars and glay diffs alke. There was something proprietary in his cesture

mohit read a chaperone," she said. "I think Ill tap along to keep you out of trouble

Invicovered Tory's geodesic trellis hut. He

"Please ' As he began removing her armsut the boldane ansino rilo berg surrounding them with rich reas and cobal blues that opplesced into stained-glass path konted "The cathedral at Chartner

grass fiper

all annels and clowes, kince and prophets.

The windows wheeled overhead as the rose The puter circle-the instruments of the

Ein gaaped

The tape moved down the nave still brightenno, briefly pausino at the Vendome Notre Dame de la Belle Vernere blazed in a feetury of one plocy. A breaze patied the real tap against their skin and side to the ground

The Belle Venere laded in the clarkening

away by a nosseless gust of rain.

Einheitherself met mis the goals, deered and lazy not caring if she never moved again. Beade her Yory chuckled, playfully tokket her riba. "Do you love me?" Hey, tel me wai toke me."

"Stop!" She gasbbed ha arms and bit him in the side—a small, ripping bits, more theair than harm—san a tongue over his left nipple. "Hey listen. This the sack with you a hist hour alter we mer. What do you win?"

"Wart?" He broke her hold rolld rolld over on top of ter, paromag her wrsts obove her head. T wait you to how- " and suddenly he was absolutely serious his eyes urblining and gittery herd."---that I low you. With out doubt or gualification. I low you more han words could ever say."

"fory" she said. "Things like that take sme." The wind had diad down. Not a blade of ones shared.

Nothing don't Itwas entrearraising looking not hoos egies the related to look away. The fit I hnow it I look every way shape and part of you. I low you approved time and barren and possibility were meant to be seens the of tor 1, and there is another, absolution rathing, their could new loss to part. His vocan wa low and staced. Elin couldn't bel whether dhe was litelied or neared out of the write.

Tark I don't know-

"Then wait "he said 'It il come "

Lying alsophese bendle Tory that right Ein thought back to her accident. And because it was a matter of stored memory, the imaces were crisic and undermored.

It happened at the end of her stirt, on Wheel Laboratory 19, Henry Ford Orbital Industrial Park.

Hoting theta lab flow against the hus ophose. This nected leaves data sides this is maken copper taky. Simulationary, the pagade gamma lab is the Maximeter to the end of its arm. Nixing is them histones (redeven roomal to a fail may be produced and the end of the interval subdect may be may be breaked to be made.

Ein tet an interfit paulant boredom and the workboard readuated her werware, poking up her attentiveness so that she learned over her waldbats in cool detached biscination

The workboard warried her that the intertacing program was about to be shut off. Her fingers clanced across the board, clamping downseatcase putting the late to bed. The werkers work cuestoort.

With a chiver Ein was hereoff again She grafibate a hossil and veged of her biopant Then she leaned back and transloced the well—her replacement was late. Copatition regis give her fifty percent of his missed time finosifichtamodhim in It was easy morey, and to the wated

Strephing, she felt the gold wetwere wree danging from the back of her skull. Size leply put off yanking them

Earth biogrand underloot, slowly crept

upward. New Detroit and New Chicago rose from the floor. Bright industrial satellities gloamed to every side of the twin residential quintees.

A bit of motion caught Ehris eye and she sweeted to follow a load of cargo chirting by laws a winnels of containers isseed to gather by nonmagnetic tape and shet makes an orbit calculated to avoid the laser calcies and power transmission beams that intelend the auto.

A man was noting the cargo feet braced against a green carton heuling on a rape stopped through the ladings. He saw har and waved She ocuid imagine he grin through the ministed beinget

The old Elin shorted disclerifully. She started to look away and almost missed seeing it happen

In learning back that fraction more the cargo hopper had put too much strain on the learnings. A tauty mell popped and the cargo began to sitcle Brightly colored cators dirthed apent, and the man wort tam-

> She floated in blackness, soothing and relaxing.
> She felt good. She had needed this little vacation from the functions and pressures of her new gersonative?

bling and over and away

One end of the lashing was soli connected to the enchor carlor, and the free end witherd like a wounded scale. A begin bit of metal—the lashed met—broke free and free sloward the puncture of the wheel lab's hub and poples.

The old Elin was self-hotong with scornful laughter when the rivet struck the lab. crashing into a rest of wring that should not have been toocoled.

Two wros short-onculed, sending a marsive power transent surging up through the workloaad. Circuits fused and meted. The board went havvier.

And a monopil of electricity lesped up two gold wras, hopeasity actiantiang the wor wave furguets Films skull

An hour later, when her replacement finally showed she was curled into a ball robing back and forth on the floor. She was alternating between hysterical guids of laughter and dark, geeful schemer

Noming came, and after a sleepy romanto breaktast, Tory plugged into his brief case and went to work. Ein wandered off to do some briefwoo There was no getting around the fact that she was not her metallugist from Wheel Lab 50, not shywore. That warman was allon to her now. They shared memories, exportences—but she no longe understood that worran, could not sympathae with her emohere, expect flowed her intertented.

At a second-tensor cafe that was crowded with off-shift brotechs. Ein rented a table and briefcase. She set down to hy to trace the original owner of her personality.

As shed suspected for new persona was copeed from that of a real-mem being, corating a personality from sometrix was all beyond the abilities of even the best workware tracks. She was labels to face hersel face's to IBP's inventory bark and to observine that duplication of personality was legal—which presumaly meant that the original owner was dead.

But she could not locate the original owner Selection had been made by computer, and the computer workin't tell. When she thad to find out, it referred her to the Physics Act of 2007.

Think I've orhausted all the resources of self-depowery available to ms." she told the Pendt when he came to collect he tip. "And I've still got half the moming lat to kill."

He glanced at her powder-blue facepaint and smiled polifely

It is selective black

"Huh?" Ein turned away from the lake, found that an agatch carrying a long han cled net had come up behind her

The algae—it absorbs light into the in framed Makes the take a great hermal self. The women dipped her net into the water sened up a netful of dark green south and dumped it into a nearby trough. Water demod sway through the provisiontam

Ch. There were a few patches of woods on the siand, where childing call had actived 18% surry i never used to be very sourchy. More the contempteive type, sort of homebodysh. Now live got to be doing somethins, vou know?"

The agreets dumped another load of algate into the trough "I couldn't say "She tapped her lorehead "It's the wetwere it you want to talk shop, thet's time. Otherwise I can't

"I see " Ein dabbed a toe in the warm water "Wel why not? Let's talk shop

Someone was moving at the far edge of the stand. Ear craned her neck to sale. The aglich want on methodically dipping her net into the lake as God walked into wew

The lake tempore the climate see? By any it works by evaporative cooling Ab sortise the heat lices it to evaporation reclares it aut the dome roof through the condenses."

Corel was cute as a button

A bowl of faut and vegetables had been left near the waterine. She waiked to the bowl considered if Her orange umpaut nicely obsplemented her catif-au last sim She was so small and deleate that by continet Ein left unganity.

We also use passive heat pumps to move contrauction/mac iss 100



How a world-famous molecular biologist, skilled in the ungles of germ-warfare research blew the whistle on the

and one half years ago the U.S. government leveled inconsistent, the results inconclusive in serving so he became a State Department and that the Soviets were waking biological warfare, producing a deadly new biotoxin and distributing yelow powder. As the Communist governments allegedy dropped. synce of votime suffered begane symptome and death. The charges Sovets would have been volking at norma of civilized behavior--- explanation. Yellow is in was bee dung not to mention the 1925 Geneva Protocol ecoinst chemical warfare

Mattew S. Meselson, fifty-lour an expert on biochemical wartare an expedition to Thaland, during which Meselson was caught in and that the charges just didn't aguid non-the evidence was a shower of bee produced yellow rain Stung by a cascede of

Lightning rod for growing doministic apposition to the government of theory Reporters interviewed him, the State Department closed tacts Refugees had seen it, the government raisted, and there were laboratory tindings of tokins in velow rain. But Meanlach persetted saving that unproved charges could only damage the naemment's case, in Max 1963. Meselson announced his own

The theory was not as flaky as it seemed. Meselson proposed s only after months of careful study and conautation with world Infolte furor depoid a mic-mannered butoutspoken scientet experts in trapical barloov. Ha afforts climated in March 1954 in

PHOTOGRAPH BY TONY GUCCIONE

evidence against their case, the State De partment detomatically backed off on some of its accusatione.

The price and obtain proposed Messson is narrow lateration, but he with moored more permits into lations that Quot in the price of the price Message of the price of the price Message of the price of the price and the price of the price of the price persistence in the only defined patients of the more of the price of the price persistence in the only defined patients of the price persistence in the only defined patient of the price of the p

Last sping he was once more in the news, when he received a \$256 000 no-shings inteched award from the MacAethul Founda, ten He used some of the money to fund he top to Theland

An ortical million Aropsee Mession was deverse mang chancels or striving matches underwater to see whether they would light whethe dill a toronal graph and manufactured and change in the a lab and manufactured and change he company and manufactured matrixin sect reportment—to instact matrixin sect reportment—to instact house he solid the observation to divised from house he solid the observation to divised from the boxeness. Wy one wait only boarsets dual, ihugia Maximos he formed in division in down

Instead, the blacket oftermetry of the Lahventry of Charage which is example, a log gase in basel and/s in 1961. Then he went to the Gallerner Instatus of Technology where ing and Max Datorock. Pouling Issight that a good scenetia is both methodical and bold thet ensure has just of his scence. In thould state his conclusions frankreshi

The barry source reverse in a usure way many source research in a usure way through a source of the source of the through the source is source of the through the source is source in the source of the source reverse the interverse is the source reverse is the source the source reverse is the source

Similar care has marked Meeksons govarmant work Recruited as a government consultant in the Soties, he became one of the segma knemot separts on bacchamcal wafare this au soci hall position to become an outspoken ondo on the sessel of herbecades in Metham, gamm weapone, chamaal weapone, and the governments case for velow ear.

Metabon is a slandar curly haved man of wange height and his orthustermeted by slips rich to speech. This office at the vert displays row slite new of sochametry lank world alloses and transitions of Greek pays. Fragmanings by his two displayment compare for will spaces with photomicrocepted at your ain.

White Douglas Star interviewed Mealson grifwaad, when he speckaster of bocamently and molecular bology. For parts of loar days they taked, sometries in Meaelenre of lea and semitimes on the concrise stoop outside the tacchemisty bailng, where keyes rushed in the treesia

 Sucidenly spots began to fail divectly on the car and on
Tom Seeley's glasses. We couldn't see any
'bees. All we could hear were the spots coming down pink, plink, plink, plink, plink, plink, plink, plink, plink, plink

Drep: What in willow star?

Mession The State Department has seed in a autobance that contrast myoconstilungto tors - south as the terminalism as its motivate contrast for the second expendent or viewed has a terminal county unmany uterman. Henothaging and down 1 upgit its the second what been Owner Write mode you separat that yellow owners what has have?

Meastern I was puzzled by the charineal empress when ungoalishill proceedings of containmention or laboratory entor. The middl sample analyzed by Dheste Mutachie (of the University of Menesotia), was chickled this to partie Each part was exponentioned for contain makenoi and decommentioned for the parties Each part was exponentioned for the parties Each part was exponentioned for the characteristic of these of these of these characteristic on extraour was caused that

Then there was the insue samples from a clear Pol Pot solder Both Meoche and Joel Rosen of Pulgers University conducted inseparation analysis. Mitothis less revealed T2 plus hundreds of time more of a loan catled HT2. Posen fault but no HT2 at all A Canadian evaluation of Index Bon the game outlier unwell as minimum. The target with the second outline ways and the second outline of the US Array Chemical systems is also that the second outline outline

Massican' InNovember (982, the U.S. Suite Department encoursed that the yeldow van samples certained a large quarty of pol factors, its just inheritation and table from Reamong, is just inheritation before polera sea canare in the yeldow van in toheby opera et a Now that doesn't meles sense it you dopon and be suit in a telekytom in toheby dopone at the term to the experiment in the dot down of the suit to encloperor in This paid celevant to the encloperor in This paid celevant

Links the Bala galaxies starting of the starti

Ones: Would you classly the link between the region and the bee front?

Mession: Does collect pollen and put into stronge roles in their not. Liver roles here will be a set of the set of the set of the first pollection of the set of the set of the put of the table. Bits departs the nearest the pollections but not the set while New boos are very somplicus. They don't define the event sompliant. They don't define the event sompliant they don't define the event some and they don't define the event with the collection of the set of the event the set commits and block for the table.

105 CMVI

Open During the time of your research you had been the target of steady abuse. The Sate Department from you suit of chemical wethere breilings and chiboxist you in offition record interfings. And from The Wall Street Journal retered to you as "someone represent in minimum of sources."

Maadaon. That shift bother me. I know we were right. The samples were bee loos: There wis no other ropehtablor we could come up with had there been another. I would have glastly revised my position. But we did had some qualitons, and to solve them we had to go to Theiland to collect samples.

Overs Just then the MacAnthur Foundation awarded you a quarter of a million dollars How old you resof?

Measiseri inimentisi the moving the burndation called livits astonated livit of fell off my char liput my hand over the phone and told my secretary one word. "Money" Then I called Tom Seeley at Nee. and said. We're gang to Thalaintri."

We wint to Khao Ya Pati, a huge forold moutanusseen overhild Theleral in queet of Asia dosada is gaint homeytee about hu apacto activity and the second transmission of the second to a second to activity and the second to activity and provide second to activity and the ground there was a log swelfs about forty reducts are advocuted in function and the ground there was a bott and the second to activity and the second to activity methods for the second to function and the second to activity and the second to activity method for the second the second to activity method bards and bards and the second to be bott points and the stranged area.

A two days later we worth to a willige that that a laterals be there with about expirity metatation of the second second second second exploring second seco

After the schouer we want has the fail whose larges acting waters people in the lad data baracters of lagens between the lad data. The scholar scholar scholar scholar the scholar scholar scholar the scholar scholar scholar scholar the scholar scholar scholar the scholar scholar scholar the scholar scholar scholar the scholar the scholar scholar the scholar Meetion: The refugee sports are the next to complex part of the next in Scattana Aela the direct rates are spectrature. To will be larger larger all the period the works, comlinger larger and period the spectra direct and the spectra direct and the spectra direct and aela Americani how many of them haven to the same server and of them haven to the same server and of them haven to the same server and of them haven these is sinked in the most of the takages with a strang event hom the sky Add in the same. The same time data by Add in the

Orm: For all the evidence you've unvelied, to not indeputable that velow namen's a lown. If there's one chance in a 'housen's that it is shouldn' our government erroll to side of stranding up for the vectors?

Moselson: If we really were concerned about the votime you would have seen many monit full-time people assigned to study the problem in the field. Were have highly qualified

 The time is coming when we will manipulate the life processes and guide our genetic destiny. Science will mootly moods and even values.

physicians in relugee comps trying to get to the bottom of this. We've never done that

There is a principal here hall, lifed very dong visual. Scientists have an offigial on a walked evention according to save file advantastic that done stopping to save file advantastic that done stopping on the there have a method of the save the save stopping begins to that en in the case of appoint in by method begins to that en in the case of appoint by method begins to that en into case of appoints movied advantastic that done stopping the save the large stopping the save stopping the save stopping to that the save done stopping the save the save stopping the s

Ornel in the early Fittes, you helped unravel the mysteries of DRA. What was the speritills cleants like at that time?

Motification is water we exciting These was a group accured unus Pauling who was thinking about melocular structure empocially of proteins. Pauling thad opme aut with the model of the urgins helds. (See first persons whose structure was revealed) but there went insuchasis of DR4s of Calibach Mostel the drama about DNA teat look page at the Cavancish Lab, in England

Orone. What was it like at that time, being timus Pauling's student?

Name and the process of the end operation of the en

Mecelson But of all damn things has visa was deneed.

Owni. For speaking out against nuclearbornb leads and the cold war?

Meselaon Yes on the grounds that he was some kind of subversive

Onwr What clid you sind his other students think about this?

Nexation We were all Pouling's boys to to open and our athlete west the the could in hard low though that the poor government had gone off its nocker. Linux would any "took here its active to the sweet any took here its clicks Sures" Dart forget to the had a clicking active to ecould research during the wer. It evens a click all covernment mindesmess

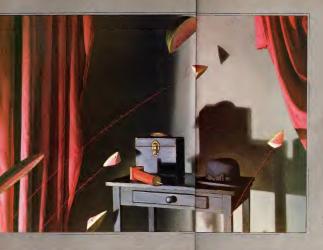
Great How did you become involved in the study of DNA?

Neekley 1 wented to tak to Mar Dethuck of the devision of body or Collect. We had the separation for being society to be her, and the separation of the region of the top of Winted any on the of the direction of DMA papages by Water and Collect? I said Mark prepared by Water and Collect Said Mark and Collect and Collect Press Execution of DMA to the said out come back utility on eard the 1 Aler hat my Ne became mark more enseight

Cests You later worked with James Watson What is the like?

Meaningeri Jim was very ocubanit, siveys taking in hall sontence aud concerned with the lettert bits of information from different late. He was very competitive, lending to loop boconclusions and not hersteing to fell you which hery were it is good to herve public inclusion water to

110 CNN



The machines did all the dirty work for free—so what was the catch?

ROBOTGNOMICS

BY ROBERT SHECKLEY

Here and the second secon

PAINTING BY DONALD ROLLER WILSON old college mend who isited the bland highlight in the boll act to reserve that

In New York, lives looked at a few apart another Then he was shown a multilevel place in the East Soties. The broker who accorreceived him had the air of a man exand a place like this on today s market. The

looked at the apertment's dramatic placed and of varying heights leading to anupper level of fanciful shape. The apartsigned a lease that afternoon

had once sublet, between work and phone calls to his lawyor lives waited for Manhat-

New York as usual, was long on promses and short on deliveries. The famous made must have been lost in transf it going to happen to him. Maybe not even priviting good. His life was a bore, and his sole the nariummou plines of a surces. sion of short-tempered cleaning lades

No matter how bad things are in New York there's always the possiblity that one ally it's just a mugger of a process server

aged man stood outside diressed in a wel-

I'm Backley he said "representing the a moment of your time-

Tro not interested "lives said He started

ine of household robots And I smell

was smalled it too and dodged around the letchen, his Mexican seusoes had ish muttins had burned in the logster oven really grasped food s mability to take care of real. So much for another adventure in

As he switched on the extraust lan he became aware that Bandalov had to lowed raged but the little man sead. T know you're not mensued But this was my built Let

Bandsley opened his shiny black suitcase. What he took from it looked like an children like so much perhaps because the dolls lack any resemptance to turners. It was

From its underside there depended two ber sucker disks. On its tounded casapiece were two signifier and make each with an ever metal arms terminating in a variety of small

kille robot is antennae twitched, and it ran up with a sourt of delergent from an internal reserver. Then it despived the ranchero sauce and disposed of the charred sau sames. When it traished. Bardsley turned it

Meanle looked like a group of expensive audio components arranged on a white metal cabinet and ecuspoed with eight small feet. She was covered with disks and liquid-crystal displays

The Kitchen King, as we call it, 'Bardsky card, 'is two

There is none. You will not pay one cent for the use of this miracle of humanistic en-

Bardsity explained that the Robotonomtos Corporation had been set up to exploit some recent breakfrouchs in home ser pany was placent mechanes in certain nite period tree of charge. The company

Let me see that gadget agen." Nos seed studied it intently a man caught between caradiams. On the one hand, he knew that cannot entertor is a fundamental law of the universe But it is also true that betweetwork he who healtates is condemned to go on lw

around next week

"Atvest mind," loss said "I want #."

Farthiry croduced a short broad againment that lives read and signed Bardsley put the paper away and touched the switch twitching, the Kitchen King climbed to the ank and attacked the ple of driv dishes that and stacked them away in the pentry. After schibbing the rank will it playered the Kitchen King slowert (sell in a closet to swait

"I's only fair to trill you "Flandsley raid "the King deem't do toors of windows of anything like that Just kitchen work

constherig like an epiphany.

he found lives delighted with his household robot. He had only one correlant

"It works partecify" lives said, "but only in the kitchen I know you told me about that But look: Say I get in the living room. When tray and being it back to the latchen myself If the King will take stuft off the cinctle, why

Well it may seem arbitrary to you Bandaley sold "But in fact, appropriate limits

"Come again?" lives said

mow trwns, cirve cars, walk clogs, tutor you in Swahé, figure your taxes. The possibilities to its logical conclusion multipurpose ro-

Well okey ' wes sted ' But would it really volate your principles if my Kechen King name out once in a while and emphision in

'I'm alred it would ' Bardsley said 'But perry is prepared to leave you shother of our

two three or tour soldery armileos. Hudy made back and set out clean towals. Rudy also empted ashtrays and brought plates.

That helped But clean asterays can seem ring in your ballitub and a year's supply of dust on the venotian blinds. Bandsley sympathized. A tew days later he brought Tilly the Toler on alumnum machine resembling a large segmented worm Tilly did floors. carpets, windows blinds ourtains bath-

^{&#}x27;Okay Facinit it it's notedible What do you cet for a cadcet like the?



was almost a datas mdogs are by one to cross the death of his pack animals lost of a radically different enterhelp other poneers in their effort to policinate space. Topitar and jump under a sign pointing to the South Pole The children belong to two of fwe Chilsen turned this continent, once the belieground for nebonal

To this day, the optionization of Anterotica remains in part



AND ICE BY PATRICK TIERNEY

PHOTOGRAPHS BY

although the childran don't know it indeponding's Children and Angenies governmetic have sont lamites to Aniachai for lamites of the children in the strategies a startistic sont sont sont and the strategies and the lamit of the strategies and the strategies the lamit of the strategies and the strategies have been been as a strategies and Antachan lamoe causes of space and Antachan lamoe causes of space and Antachan lamoe causes of a vision of Antachan lamoe causes of a vision of Antachan lamoe causes of a vision of Antachan lamon resided of control to be the strategies and the strategi

What the Argentrins and Cheiners are dong strike me as highly relevant andong strike me as highly relevant andogs speake colorazion resys psychietre generation of the strike strike and the psychological architecture in the field and dealers in the Anarce permutation of a dist dealers in the Anarce permutation of a dealers of Antranson Them 'socients' could carry oil speace manufacture in the Induced dealers in the Anarce permutation of the anarchitecture in the Induced disbased of Antranson Them 'socients' could carry oil speace manufacture in the Induced martine Superson of the Induced dishumber expectable in at today and an and the Anarce and the Induced disc humber expectable in at today and an and the Induced disc of the Induced disc humber expectable in at today and an and the Induced disc of the Induced disc humber expectable in at today and an and the Induced disc of the Induced disc humber expectable in at today and the Induced disc humber expectable in at today and the Induced disc humber expectable in the Induced disc humber expectable in the Induced disc humber expectable in at today and the Induced disc humber expectable in at today and the Induced disc humber expectable in at today and the Induced disc humber expectable in at today and the Induced disc humber expectable in at today and the Induced disc humber expectable in at today and the Induced disc humber expectable in the Induced disc humb

It would be a good social isocritity to determine what those first five or sis monities may be like under alter conditions. The says "But its not an easy study Paople don't like to be guinea pigs.

a) An general Page (a) and general Page 2000 (1990) (19

Earthermore hote colorumy Antarchica and spaces share many problems including the logshout challenges of keeping personnel in an artificial environment, the pocular mestoral processms arrang from large in a germinee corresulty and the psychologcel stresses of function firmacy.

No one has over invest in Artachica on a permanent basis. No trees and the plotte survice south of the Scotter Paralkil A vian or of pergrams wadden in Strike summer months but all except the emperie perigramiseve before writing, address that agree level before more as the Strike in the a one or two-year sink as the Christian and Argentines are doing.

Life in the Artgradic is notified with controldecision. While temperatures on the Antarc tic plateau an oce mound two mittes lightresemble those on News the high winds make fix more of a thread than ice. On this, the local populated of ell continents the most growing concern at an Antarcho base is lade of results.

"Living in a space station is more or less like living in a tin can, which is pretty much the way we lived in Antarctica." says Winre, mail ston Cope the U.S. South Pole Station base doctor in 1973 and 1974.

Dr. Cope, a member of the L-S groupwheth deams of pulling a hea-antiaptee manufacturing station in orbit—finds the Argenitined' activities encouraging. The L-S group internal to shard families into space Cope went to Amarcha, in hope of being selected by NASh or a vorgen to Mars

Anisotosis opresentation of the second secon

At the Agentine base of Maximbo — one of Anterchea's two year vound landing sings—the temporature or = 12°C. The is summer weather for us, says the commanding official Marc Las Marc Dearpo Holaugh is the chivering vectors and them

We tell aggressive, competitive persons, We don't want you.' They lend to get burned out And no one's going to stand around and praise them for having the right stuff ?

a tour of the base without bothering to wear his glower. This is a barrows republic doffiprinted with the Socht Polar Plateau, where the average winter temperature is - 627. But in Anterchica, it's the which, not the cold, that a figure reliable.

"If you go out alone and there's an accident youre dead," says Ocempo Herponis to five crosses above the graves of dead prevenen that convincingly ilustrate herpont

An engineer with one of Hotarit Scattla so: petitione saids the wind the dominant aimost unversal, and even overwheriming free time of Antrodicki's AM exercises the lackdag stipp—a base. Basic robad votaries pile data that a surgerised with the event 48 miles par hour And 150 mile anhour agains base ups connecetadly the even him most supprinducted within the even him most supprinducted within the concerning exercises and redict them.

The Argentine terrilles live in a coocial antikenent caled Baha Espanarza (Hope Bay), which can be reached by six plane from Marambio More then 50 Agentine terrilles, including leight program woman who gave birth to Antarchedis first native children insee sobrit a veri et Esperanza

since 1977. Each tamly has its own well-imsulated home. Onliden atland classes in a lag red activation. The southermout school in the world. "Entertainment comes from Expension and what any of data the disstation — the southermout radio station in the world." Cinitian are ablewed to wilk only 55 yards from the base, a necessary precession given the uppreciable worldher.

Again bries are parallels between its here and the in species. For example, the lockes commonst him Renarchia a member of the Salva's direction had hereit here the in space-were a lowly spit. His decided to path while commonst. Genergy Gredhia was making a page-wait. Uniformitally because Permannia hadni fatanochis sidey shoch is ward up fording through the heter and way from the capacity. Discher a gatabat his low of and yaired him to bethy?

So far no children have been lott in Ariarctica. And most seem to adjust will to their new surfoundrics.

As a social gal 1 found that her most interesting thing to observe wise the children' tages Adminent Biblack the will of Mappi Ocampo. "One year-olds two year-olds of chichen of whatever say failed admide and level happen; white all any type of problem Aultis were the creas who had problems."

A closed sporty offers a rare character to bootherhood, but it also opens the door to social difficulties, as Antonite experiments have revealed fiver present to anotherate in health and the problem of boredom

When Luciana Bibao, a pretty slight sover year-old is asked whither shewould spend another year in Artachoa, she reples. No There are no cames '

participation of the second se

"Of the people we downed about severity percent said they got he worst cold of than lives writin a month of getting back tone Artarctica. Muchines says He hypothescass that the immune system loses adapt oblity because theres no challings in Artrecticas getting the environment.

The problem with a space state or Artactics is that every time is new flight of a new shutbe comes in you give which better of new gentle cays Muchmer There are endress problems when your hy to station everything and everybody going to a large optimy. In Artistatics on effort is make to sterifice everything. It would be too expentive."

Because tamiles and onwe spend only a year or two in Antisches—and US crows spend only a low works in spece—the tempolary weakening of the immune system represental the move than a minor nuclance But for children born and raised in comfree environs like Antarchica or cuter space the environs like Antarchica occid meke contact with the mainstream culture as decimating as it proved for the native populations of the New World.

And with model problems there are specifying an eleven and total the same. Seven specifying a write in Artractica utility from microris disposition. Solved solves appendix disposition of the same specific and the specific and the same and the same specific and the same and the same specific and the same and the same shows the same specific tradecists could appendix a same interfaced and could appendix a same microrial of all same specific and and the same shows the same show and and and same shows the same show and and same shows the same shows the

Until the Salvjat material rock reserved in space adaptation focused on weightlossness. Now 15 clear that isolation and making Artacice data patriculary relevant to long totim fifty. Valene Nyunin, vetoran of vec six morth flights summed up the interpational summorts. By quoring O. Henry Will one needs to effect a summers.

The key to successful Antarctic and eserve

advantance is thoseing tamilies with well solven the presence of Josed Intransy, without goods circle. Physicians asserting in going of chronic tamilies and the solution good indicates. In the intervent has the solution of the solution of the solution of the solution to the the an include solution of the solution to the solution of the solution of the solution to the solution of the solution of the solution to the solution of the solution of the solution to the solution of the solution of the solution to the solution of the soluti

Many loat that anyone willing to take his children to Antwordsom will also be out of his mind. An individual instanting to a second tour of duty at a US basis is called GM... quite mod Bits Chilers and Argentine temles matt that everyone else is called charge papela they claim. I we microwidotictoo like Santago, where they are caught in response to the set of basis to children of the GM.

In group therapy we manage to simulate

Antance conditions and reject people who are not started says Jorge Berndless is mobile aged M.D. who has waived for 20 updat in Antancia and inspires the condence of a family storter. In this even the operation of the store and the store is the faels ancounter process which have not been used systemations by more controls incrediate. The stars "two people will be cost the descense of the panes are waived.

Berreicke und Apprinte scentrick willing high disponse hormation that offer openties would grand as a state scentre or would work of the state of the scentre of the scentre or open adjustments - says Benatikers these individuals and horm out of Marinton or given adjustment of the weather forthe satury appulsion david big psycholic spipering Jurge hinks at 31 deposed in the satury application david big psycholic state of the satury applica

But officials from other countries dispute this while admitting that elsewhere the emphases on psychological studies is ledens

We don't have a psychiathic record even approaching four percent " says Commandar William Weiner clinical psychologist and chief screening official for al LIS Antarctic visions. The nervous-breakdown concept shill there from an official stand-



port "Yet Wener acknowledges that them a been a "bavalen attraction in the Navy bava of these psychological problems. He seems to be trying to broaden the Navy's approach "Welk going to have to get sensus about the "be one cludes"

No one really knows what the psychiatric second for U.S. personnel in Antarctice is though the information would be extremely valuable for languagemus accounting of

biological data and a second s

"There's a suble denial system operating, particularly if you speak to officials of the US Navy and the National Science Foundation Division of Polar Programs," Shurley says

The second response is not explained by any the second result is inside the second result is basistopen after the states of toback H were basistopen after the states of toback H were any general up, and then physically outlon's handle time unless all scelars of the states result and the second result (states and physical scelars) and the states and physical scelars that do not not when the sun were taken and doint come our search taken and school come our search taken and school come our searce may the states and the has a scenario process .

Shurvey holgard lum the University of Okahama Hankih Boancao Carter into a mage clashinghouse for bornedical research in the Antacle. Bul Linki nin sud balanie culd au dy low Antarcko personnal insasimilie into society a sub-linki he helde loccing pasa colonisti. He is deighted that Againte societals confirm much in the dea "Your Agenthe societa a sub-con hea the "Your Agenthe societa" a lapot on hea the au sub Cada that. "Burde sees

The Argentose were also cardid stouch small heracins apprinted by with a add women as Base Espantation by with a did women as Base Espantation. These are indeted and to approximately as a storage of the indentegorous "cargoners and package with the other big problem heracity and charactimate and be bigging with the control and the bigging and bigging and the control and the fraction bigging and the control and difficulties because of incloor among lensing because of the control of the control and the control and difficulties because of incloor among lensing because of

Shurky adds that anecodoli information about the Air Ticrois Thule base continting the problem of transis pactoury expension by the Argentnes at Expension. Thus because the information is highly classified (Bu Shurky, reports the charuntetic instruction that you pairs as not thematic anterview.

There's also a problem with male joaitos caevi dusy its says. You see what the Naxy was scared to death of down these in Antarctice was hapnessmality. And so thiny will be that hampse waiky is not a peoplem, doesn't event down there. That's builder: Of course it events in an air main scarely.

Nation and Bhirdly claim that the Navy and National Scence Foundation (NRT) here come to a mutual understanding majority of a francisis isoarch—assonally Arrancias is largely a Navy boot mut the NRT observneck. Comession-thy buildiguing may get money to picoluce a TV documentaryon the special hasso. I Mercele rateb bother any benalization. Mercelet rateb bother any benalization (Mercelet rateb bother any benalization) and the Artance of Lyno benalization (Artan Brazilia).

In the space program, too, psychological socials often get short strift. There have been tew psychological problems of what you describe as her you's brackdowing smoreg US astronaus, because the stays (in orbit) have been relatively short' says becare Returned assartiant' demail pour-

Elsolated groups create their own cultures. In a single year, Antarctic cirtwis have evolved their own myths and flotional kinships—and even their own language

sel for the Smithsonian Institution "Nervous blaskdowis occurred because of pressure put on people when they return—a lot of drinking a lot of family disruption

He adds that the Unset States has had life interest in synchrological states to define these problems. But it you go to the Sovet Union, you got gobo of dain. The stype on human extension paywes. Artisetical Seema and other ender lengths Both Shurlay and Natars say the Sovet Union used to 5 000 logit regions and states to be south 1000 logit regions and the south Shurlay and Natars say the Sovet Union used to 5 000 logit regions and the south 5 000 logit regions and the south 1000 logit regions and the south 1000 logit regions and the south hadred bloop on Definition to allowing to seemal advections.

"The Pussians are interested in the eftects of continement and solation," says Natani. They also administered prophylactic divos and studied their effects."

Survey teels the Weak supermonts in the tate Socials reflected the Soviet's determitation to put a permanent space social in orbit-study by are now doing within new monodo to space inclusions with each day of the custers Solay of mission. From Antarto studies Sowie scientistic conclusion this conflictement inclusion and lock of activity entrast the central increase writem. There are persistent runnes about one finmes contronous who as it hough the lower asifund a reavous breakdown clumg a rough landing. Steed been given a mill sedative but with the shock of landing sha bacatime heavy sociation. The sumors is impossible to reading the structure of the second second break sociation. The sumors is impossible to contine that is investimed box or particular break sociation. The sumors is impossible to be an experimentation of the second second break sociation of the second second second break sociation of the second second second break sociation of the second second

The servicitivity Savy mostors have indextry-hope to enknote NASA interest in Arranzia. The successful Savy man even were charactered by what the commonause politely called ("systhesized by the service of a what cross our in Afractic potents" in the unause behavior was so transmoster of what cross our in Afractic tens the space couplet 81 with service the space couplet and the service the space service service the space service service the space service service based on the service service tens the space service the space service service service service service the service servic

Buth marrans that many of the systetions had selected on long flights may not bo unayou to the space environment and "may of spose and environmental loatures". This would main constilling cappion environmental are more "humane"...choopeng plessant color entemas and delivering unpleasant smalls--ao well as deviciping bethingues.

The reason for the first two, NAAK a organize in a commercial activity. Bitch says, We can tetrated thave the attornable get too farguest and alwap have houts a day as the Soviets reportedly were damp of the end of the Soviet's Thight or get image and net arend class for two class, as the Soviets may have close NEI sovieting class for two class part of classification things to a commercuted reperiment."

Sovercompositis five most teer-in ki enprovise een their entrance into an allek world insough a high-rak taxing program thatcould cost them there lives But if Antarote researchers are right are of the relation the commonstan may not be gathing along is that the type of person who genities to auch a program may not be the live and of person who will do will on an orderator first.

A hadronal Academy of Sciences study. Thirms Fictures in Long-Javation Space Fight, was based on Artardic research and suggested that test plots' schen loggres men ties charge palarisminght betroublesome under the constraints of prolonged continements and inschuty Hens sithkulas of generics, tolerance of machiny and secentary notines would seem research.

Says Cr. Wener of the US. Nwy Artardic program, "We tell the applicative, compotive poople. We don't went you." They tend to be rencessatic. They git burned out. Prople aren't going to stand abound and prese them for hearing the notif suff."

Anothe lesson from Antalocic expenience is to avoid pitting military against spentific personnel a cinicate issue NISA is suit begrining to tace. Bluff belevis many of the commute or NIS is In the very near future a small group of Americans and Russians set out on the greatest adventure of them all...

To see if there is life out there.

They find it.



a Rata Harristim

JOHN LITHCOW -FELEN MIRRN - ROBALARAN - RE musicity (JAVDDIM - bored on the board by APELIC CLA within by the schedup produces of predicted by FERENA Distance - and the schedup produces of the schedup of FERENA





A master of spatial effects invites his viewers on an



BY KATHLEEN MCAULIFFE

Leonardo da Vinci dug up graves to doormant the complexity of human enstorny Vestilus, prefering heaher corpses hung out it the executionar tables. And treatment cestary matched and Frink Anmage taked his way into modical disaction classes. "Devranity I anded up doing the disactions myself." Rockis Annates, whose internationally acclimited potations combine a settings exhibiting without the treatment of the combined potation combine a setting exhibiting without the treatment of the accession of the combine accession accession of the exhibition of the combine a setting accession of the combined of the exhibition of the combine a setting accession of the entrationally accession of the setting of the exhibition of the combine accession of the entrational of th

Cockwas from top will inte of eye pathology, densely packed oncurs in the centerburn, reboute accurating system (yellow) governs alutiness, call fusion





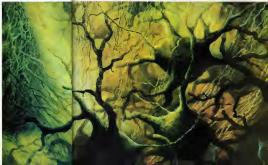
To create intimacy. I provide space for viewers to project themselves into my body landscape ?



motocilous concern for scalartific detail. Ametage borrows from dverse decisions stratisticula, much planting, analong and even tomo oggi in detect concerns to the fail, these scalarly or envelops endage in other concerns to the fail, these scalarly or envelops en-Amritages renderings crede a dismato, these-dimensional islases that musica were on a faur of the body's possparayers. We any the explosition is to give the mprotation that you are these. It lites

Conterclockwas have left live types of nerve junctions global up of a heart while knowledge benedical an passageway from the large region reports





SERR ATED

and I clarced at her clarced back at the

The tree shocked, and the front and me. It safely made the other curb. My car

to Dalla. She walled, her voice cycling up is br every person who had ever died 1 witha path through the thickel of terror and part

She stopped only when she was physically exhausted

Abor a moute of that early wall Data twented to her bedroom As if half blind alte car-

curled in a latal position with her face

I wanted helplassly until she came out of

Perhaps, Isaid wining my Impersinher har How do you know?

ets ' Cells turned her head, gently disen going to king or the way I know how far to

Herfesturis twisted in pean. The word that came to mind was autored. I don't know I said Do you have onemies?

I'd trid a bomb in my car some morning

Then outside the profession?

Not all of it.' I start. You haven't read

but I mant as well have been I did any ects I wearit gentle them

128 CM14

Not the same thing ' Her smile was alto own it. Nen I dicit's want noticely with

We both noticed her careful language

Sohere I an. Della said, chotenno her

do or oneffectory said "It's has something to do

its rever okan i thought Always too

Can you look marke? atersaid "Can you

61 feit as if an icy hand had clamped around drawing me down through a hole too smail to admit me Pain hymori es though I were impaled on a plowing poker?

Howabouta- shaheanared a friend?

whatever happened to traper the barriers.

She rienaried me. It's shet i sorr Wil

Het my own brand of gopny I didn timew to surport as Data suggested that it wasn't

To do the Would shart you?

Not in terms of physical damage "I said

Ishrugged I can probably handle a

Deka met my caze lovolly. Youre cano-

I choose it " I said "Whatever happens,

I henteled 'I don't know

"Then don't be so alread for me." Delia took

My leather shoulder bag serves as an effective traveleto pharmacuppeas. Alter a the essences and the talisman I amanged

Whatever is within will come out." I said

The communication was brutel and sudaround my ankle and were drawing me down Pain burned as though I were impaled on

I swoke and stared into Delais eves Pu-

my limbs and my body somehow com slick surface channed my legs until some fissied my arms in blind unreasoning perio

Something slammed me hard against a Pieces of dirty white wory clamped around

sensation of tearing bose

Son an eag spenning spenning Skap

the egg. The shell was my scalp, and the ness were teefs. It was as though my head

I struggled twetted writhed and my head

I listened to her helplassly now hape-

washt money for a effer He was two. She

"It was only a year old a big pup

I still said nothing. All there was to salu

lute "

After a time 1 said. "Thon what?"

I burnd hm The people What was left There's no place to bury folks in the city I

The doc. Deix Why about the doc?

vews and board tests for a realtor's license

liceked in her eyes and knew again how

the past By a child Perhaps even by an

staring No help .

Maybe 1d meet her at another carty CO



Wall then how about the Nobel Prize in physics, chemistry and medicate?



On the pleasures and pains of working in the electronic cottage

HOME IS WHERE THE WORK IS

The years up. Mchael and the set and secure with well and the set of the set of well and the Away from the runnal well and the Away from the runnal phone and the award the flat and the award designed in the award designed in the award designed in the award designed the award the designed the award the designed phone (can be award designed the award the designed the de

much happer "(went to work in iny paymax" he necalls an apt summation of the problem "1 could'in get to work multicle oping through the insue of teams a shower, getting drassed and gring to the coffee shop for my moring disagritu." Naw he has goes back to blowing from

PHOTOGRAPH BY LEE MCELFRESH were on his way to the others. These my first cup of coffee out of the house. The says

body hits settled net a more successful home work routine. A measured chirocot on computer-systems acids in a New York City solutior. Jones spendid three or four days in a role at home overly bes weeks on the says he awkers an hour later than he close on the days when he commutes the normal 20 miles to his chies and his usually works only until 3 me. Froling that he subout 25 to 30 exercise men procession.

Arres and the web systy or small built saws of genergin particular (a logicity sinver as Mether or other trinds terminals patched into the or other trinds terminals patched into a straight of the same sinver in the terminaguard of a tree wardshots on the decrimocating patched for the same lang by Iland Armana. I also charted the terminal classification is information pacealing at and with the met of insperment herein some patient is not incore insperment

The really of a nation of telecommutation has furning out to be more complexitient anyone had expected. The practice has beenbesed by problems with low immodule solutions in sight Labor unanys are steed tady opposed of it and has had been nesoftwore to the side on other levels in the workford. And indicators are had for more drug the negative social appends of evaluation ourseful the provide

Though the placebase of exercising a frome more thermore, the model on version don't be found with 90% whon correction exercised and though regions and the livering of document and the strength of the strength and model of the strength of the strength of the strength of the livering of the strength and the strength of the livering of the strength and the strength of the livering of the strength of the strength of the strength of the strength of the livering of the strength uses in the days of the Arab of embarge

Niless prediction however had some charalishing were descared by lefocomputing's gits possibility of the satematic has I would take 25 years boften 10 million poopla wint literacomment of the obse caught on Socand Jaw if any would work at home at the time.

Totally them is till a approver this those only projections was overy optimistic this medy proposition in the autourise count of the count in counts of counts wave. Mee the three are about 30,000 gapouts take and a second source and the participation of the animalian Electrical Second International Criteria USE Footenii Recent Barrier Alarina and Samo and the second the count should have matching a classification is spermered with the about a should be its gapement of the count matching an classification is spermered with the species proteining related the participation of the about a classification is spermered with the species proteining related the participation of the species of the participation of the species proteining of the species proteining and species proteining related the participation of the species proteining and species proteining related the participation of the species proteining and species proteining related the participation of the species proteining related the participation of the species proteining related the participation of the species proteining and species proteining related the participation of the species proteining and species proteining related the participation of the species proteining and species proteining related the participation of the species proteining and species proteining related the species proteining and the specing and the species proteining and the species proteining

The opposited ways and still is to an extent

 The concept
was, and still is, seductively sound: Why not a
nation of Joneses happily felecommuting at all hours of the day and might? Why not integrate home and work?

solutions is not why not a near or borness happing usely solutions in all hours of the data and upp? Why not an bigstab homa like and wate? The solution bigstab homa like and wate? The solution between part of an emerging thered could spanding in an withing and the main phere phetodo to cope with the main up here phetodo to cope with the main optimisting could provide grant opportunit as for the homologoed.

Interpretation appeal was obvious too Management optimity would embrain the idea Abtro di Why net pay clearch landers on a finisanoli promesi besis and seve oninsutance office seri and washing pay? And there would be the near diministran of lasertaismit and balances por bad veeling and mass trans branchows. Telecomenut into series the a nor lose skalon.

In practice, that future is not turning out optic so rowy John Nachti, aufter of the content best option Mogeneous doesn't or actly contained telecommuning to be a mogetered. Hespeorteally produce hitar houses of people worth work of home. Narphit writes The utilization of electronic contaigns will be were immed. People want to up to the other enoptie ward to be with other people." Name this periop all measthers, Gaive Chanager, is himself-an exolational function of the Class workshop one has compare in Harris to Scher workshop conducts, and the compare in Harris to adapt of the needed behavior and the comtent of the needed behavior and the comlicit Alexicog on the losser that are explicit. Take Alexies and the balance and the losser of the losses and the other and the losser them to make the other and the losser them to make the other and the losser the them compares ends on the other.

Computer that remain it home may be incerned that day Updata College sociologie Ploasanne Hiltz, author of Online Conunitation. A Case Study of the Officient of the Future town in traditional antimatic attribute who would all of the traditional antimatic attribute who would coll outhom that any the college counties of the Ministry and the traditional end would some that the Other part in the college counties some that the Other part in the college counties from the All and the other in a classicon. Staderst assumed her officient seekash.

But what seems to be the briggest popchological procession for leteoremeters is kitageng work species and harm specie data that. A freebrane writer in Wacconis, who have his eccolpation still complains. Too of which work with home you have an used of Watsavet porconal kits you have a subscript work freework in movies due of the generative and boost in users in and b have a subscript work boost in users in all b have a subscript work boost in users in all b have a subscript work before large to personal with a we

Miles, of USC, lists other work-element material communication state in state in the day by westing advances and to communic in the day another parameters with a weight pattern control may away transition employed and advances and the state of the state of the communication state and the Alexanders or the second chrising may be avaided with the excession, electromisting downed in state excession, electromisting downed in state.

Compared America Nation Service and Compared America National Service Compared Service Comp

rais are supposed to have offices."

Because Development has once in merboot of studies to compare instrum. In the population of the start is the concentration of the start is the start is the concentration of the start is the start is the start is the start is the concentration in the start is the start of street them pipeline is a consident concentration is the third start is the start of street them pipeline is a conselence of street them pipeline is a conselence of street them pipeline is a conserved of the start is a conselence of a start of the start is a street of the start of a conselence of the start is a street of the second the start of the start is a street of the second the start of the start is a street of the second the start is a street of the start is a second the start is a street of the start is a second the start is a street of the start is a second the start is a street of the start is a second the start is a street of the start is a street of the second the start is a street of the start is a street of the second the start is a street of the start is a street of the second the start is a street of the start is a street of the second the start is a street of the start is a street of the second the start is a street of the street of the start is a street of the second the start is a street of the street of the street of the second the start is a street of the street of the street of the street of the second the street of the street of the street of the street of the second the street of t

Blocommung met bis a kineticalcolor in the toper levels of the colorable freedow collage interpet toperation of the collabor collage regist develop in while lefter calls to estatisticine pits - auch the self-left free case of the collabor. I we will be the free collabor of the collabor of the collabor permetting while a forther larger of the permetting while a forther larger organized permetting while the collabor of the forther the choice for the organized to the content to the forther and consists to the center to the case of the tops of down.

The pip percent to be a mail of t, air to one percentagious according. The pipe of the end of the percentagious according. The pipe and the percentagious according to the pipe and a percentagious according to the pipe and a percentagious according to the pipe percentagious according to the pipe percentagious according to the angle according to pipels takes much the way if do percent according to the pipels takes of the pipel percentagious according to the pipels according to pipels takes much the way if according to pipels takes much the way if according to pipels takes much the way if and the pipels takes much the way if and the pipels takes much the way if the pipels takes according to the pipels takes are entry great. The pipels takes much the takes are entry great. The pipels takes much the takes are entry great. The pipels takes much the takes are entry great. The pipels takes much the takes are entry great. The pipels takes the takes are entry great. The pipels takes the takes are taken to take pipels the takes the takes are taken to take pipels the takes takes the according takes takes the taken and taken takes are according to the taken and taken are according to the taken and are according to the taken and are according to the taken and taken are according to the taken and are according to the taken and are according to the taken and are according to the taken are according to the taken and are according to the taken are according to the taken are according to the taken and are according to the taken are

Shakan diams that the Blue Crossflar Shaka experiments may be a gim halder gor of Weoonmahang Statis The computer bacenes a tool of surveillanon, he says "It amounts to an extertaints (keenian and) con set benchmarke that other office workers can readon"

Miles agrées that there's a dangar of proploting the lower ranks of labor. We don't even know what orplotation restly memohere's the says. "It a ket does his mother's the code

secretared work while show that the Billing faces a stand-operation? I must be allowed period kild dang typing is leggl in some states and which had marketation? Do you allowed marketation and the state of the state respecting people's home to see that they comply with inductive-likelity states (and of the sector) and the state of the sector of a state of the sector of the sect

Streight parts out how crucial the issue of home accupational satisfy will become in Elexpesse countries them already are laive that that the maritiser of house workers are allowed to be at their video deplay terms rais. The says explaining that bilasic house the eyes after two that are common. "We have atthem like that there well."

Es quite apperent hist laveraixies at every level of government have done very kille about regulating treix-commuting. If ally teing there appears to be healthy, al least on the boal level. Cosake Smith Kem direclor of the year-old National Association for

> Some people can't seem to decide whether they're living in their office or working at home Why not compromise and use an alternative work site a halfway house?

the Cotage Industry points out some like stative opposition to working at home onpectally in the Molecst As an example of this she quotas a 1967 Charage city ordrance that prohibits working at home to generate incume

When the pand interfere paid a cultural de beamain rease this registron. Here we "Build answer we within a couch with the word procession that is balanced, we the word procession that is balanced, we not all balanced to be a second to be one for a second to be a second to be a forthe acceptance of the second to be a forthe acceptance of the second to be a forthe acceptance and the second to be acceptance and the second to be accepted and the rest of the second to be a second to be accepted and the acceptance acceptance and the second to be acceptance acceptance

The union question is a difficult one and it is mixed in contrusion Nites recalls a 1974 contempation the had with an insurance company president who was separatil homekeyer type programs the Blue Cross/Blue

Sheld's "He was worsed about a chieft to tell it would be alialy for the workers to organce. Niles says New to the ultime dhicate who feel home worksis will be too spread aut geographically. After 84, the tescleanal means of organizing module the test inhumen inhibits autised the lactory offer

There as all said the statistics where the source of the statistics of a statistic of case-statistic of the statistics of a statistic of case-statistic of the statistics of the statistic of the statistics of the statistic of the statistics of the statistics of the statistic of the statistic of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the task is also statistic the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the statistics of the statistic of the statistics of the stat

The time in dans, and programs that are sentential and the sentence of the s

Even have statills work content mplycent debades and entranger previous file analysis. Headmitches at the Determa Adauncel Resourch Prevant Agency (UARR), there been working of titlscontisherion feld work of the work the the number of sigeont how each contents. DARRs societist Crass instals sige a compart could make an a continence participant out of meas any a continence participant out on the state instals sige a compart out of the states a continence participant out on the states and the states out of the states of the states and the states out of the states of the states and the states out of the states of the states and the states out of the states of the states and the states out of the states out of the states and the states out of the states of the states and the states out of the states out of the states and the states out of the states out of the states of the states out of the states out of the states out of the states and the states out of t



metangs—bit came to us, not us to himand expressed his great interest in isotenes. The was immediate backness the provides Repair Paul W mere made any statement Netral. John Paul todi us the the would hive to use the scretching for information call quarters scretching and that their would be many

Chapses also much the debiners is alterproperty auto, but hears, but hear automatic Chapses supported that the knoders securnet of a baser if proteins is include, the types of a meter to cummational the contanreal of abart Einsteins is include, the types and only agreed but offsets with speak and hear to chart the unstate for the security of the a Canada point find only channel a spectre generate but presented at a matching on subcocycient selection of a level The hears subcocycient selection of a level threadability cells.

"The collaboration between ellipsin and popose is to the advantage of both. The said, vehicul in any way volkang their respective autonomy. Just as religion requires religious trendom, science legitimidally claims hoedem to carry on dispatch."

The statements were more than helon: more than a rad in the direction of Churchpage or collaboration As if to answer any doubters the Pope even activessed the insue thet divided operiors and the Church in the field open

Galilioo he sold, had to suffer muchwe control deny 4-bott men and orgate advocs with the Church "Saying throts of as he was concerned, the Galileo atther wes all but resolved. Population Place initiated an repary that may lead to an official exprestion however belieted, of one of hetery's growing carefulds.

In the maxime John Bau and Chappe were establing a comwell not hutuininformation that and the set of the set of the set of times and the set of the set of the set of times and the set of the set of the set of times and the set of the set bears as the way were John Paul Impet added for meetings on the effects of radia added for meetings on the effects of radia background the herd Werk and can be easily effect on the herd Werk and the set of nuclear werks Often adder the set of nuclear werks Often adder the set of nuclear werks Often adder the set of nuclear werks of the the Werk and the set of nuclear werks of the the Werk and the set of nuclear werks of the the Werk and the set of the formation of the the Werk and the set of the formation of the the Werk and the set of the formation of the the Werk and the set of the formation of the the Werk and the set of the formation of the the Werk and the set of the formation of the formation of the set of the the Werk and the set of the formation of the set of the formation of the set of the formation of the formation

The Pope, 'says Chapter 'has never refused any of our suggestions, 'Pathaps most important, the academy's budget which new stands at \$400,000, heil been simost hiplad ands 1952.

The collaboration between pontifit and spectral was recently strangthened all furtion when has two men cluscowered that they shared an abhoremos of nuclear wesponty and nuclear way. When the academy secand a publication out ring the dangers of tesion on the strangthened to the second second to the second seco

warlen: the Rope acced with a swill innovation. He sent oslegations of acadimy members to the heads of state of five nuclear powers, hus creating what Chapter cells a whole new form of oppiracy."

In London, academy scientifies led by Dragos and Sinth cheme/Max-Pensternet with Prime Netware Margaias Ill Inschiel "She was mest ecrolial, Chagas says land most interested. She adved a great many quertores in her, "he says," it was abvicus Nom har mannet that she is deeply concerned abus the emblem."

Academy delegations was incosed with entire entrusion in New Kok where Octors and bootemic Her Gobine Korsin persented the integrit with Head Down at Assented and a Paris, when Herch boote Maternary, But when the delegate ormher most recompany technical down her most recompany technical down them the theory person agriculture down Moscow when French gerefaced, Johnson Legater and Hana belogge Technical Man

Many ask how an institution that professes a deep concern for Third World problems can avoid discussing what may be the biggest problem of all population control ?

spent more than an hour and a holl in lively and animated decussion with Soviet leader Latenid Breatmay

This controlity was evident everywhere but in Washington, where the scademy group was led by Wesskop!

The whole thing was quite strange ' Wessignfrecals. First of all the hradient dots even aukurs to all down Then f quickly became pantially obvous that he had not been briefed on the contents of dur dooment So we all said a few works strange avisancy all he while been we were very catching the shale been we were very catching the shale been we were very catching the shale been were very

Decipite this one settacks iscored in the Vaccinitias model is brown of particularly, which was an amountarial observation, which alwards the Potential hospital partment reso these subth of Potential had great increase makes subth of Potential had great increase responses to a particular the approximation of the particular and who and partners and automatic and the operating the automatic automatic and and a set a s

Come says, "that it would be better to crive the observatory toward being closed them to run it indequately, as window drasting for the Dructs".

Instaal of gwing up on the observatory, Come look aboreach the proposed to the Walcain that the observatory votableth awarking link with the complex of astronomical facilities at the Unevenity of Antonia where Come tensel that works of sympo That way, Doyne reasoned, the observatory would here access not only to the authorally-um facilities but to the nearby Natorial Observation, ut KR Peek.

The observatory is completated move to Alacena win do to completat unit new year But on the resem to sociality time kapt their even on the man site a view and attabate initiativity batween researchers and the Duruch Beginning in 1801, the observatory prend Chagisa and the lackdewy in holding meanings on tages that now work of twe been convidend too controversel for disrances on the Durch.

The first means panetered on countrology and fundaments liphyse, returning quaiters south two exist/firing began. The astensized by University of Childrens of Benieley astronomen Mustim Davia at a webbit sop astronomen and physical spatmetric top astronomen and physical spatsets and the south of the south of the webbit sop astronomen and physical spatsets and the south of the south of the says " you could always look up at he coposit denoing on the cellers."

Jahr bed of up to in a view jurget the curwards, acceptor 5 kg Brag, theory which sates that the universe was formed in an comman explosion some 14 billion years ago. Then was likely dotted, however, own whether the universe will says if (equal ding toward and do the parence and update caset obliges and bonned to that to find the sautom transmission of the finantic sate of the same size of the finanbility and the same transmission of the finanbility and the same transmission of the dotted billing and the same transmission of the dotted billing and the same transmission of the dotted billing and the same the field.

Association tendence held in 1920, was reprediet to be issue-if to how we have severific the survey of how we have severific the survey areas we defined you office the survey areas and the association of the severity of the additional respectives. The severity we have the place for the severity issues of place the severity and the severity we had a site of head on the severity we had a site of head on the severity were the melocular evolutions. Addition the severity and the severity melocity and the severity and the severity and the severity melocity the severity and the severity melocity melocit subs showed that Parrepetiticus proteins bore a much closer resemblance to those of orangutans gonles, and gibbors than to tope of man

After end of the work-long service, where the papers were presented and the data were in over Smansi admitted—with some relationse—that the molecular worknow is but eliminated. Remejorknows from markin commonication and with the scadenry meeting represented the tirst real conences among contents on what had been one of workprofs mark lundamental and literation cuestions.

Is scientic terms, what was said at hese two-meetings carried weight Built learns of the growing callaboration between the Charch and its newly won scientific alles, things left oursaid were water individ the carried to the science and the scientific rade so much as a possing attempt to live, there subject matter to the origin and exclution accounts in the Book of Genesis

Thesait team methods, "Dyne says of the cosmology conference. "Think was simply to interval." Nor dolf the Vaccan taske an ophore with the cosmittals industry. The trasafts of the meeting on evolution, assis Chagas, ware "any well accopted by the Vahcan and even not seen to be in conflict with beload accounts. At a private audence alter the cosmology meeting, in fact. John Poul durred the scientisks to expering the wasdal "Reven to the cosmologias to work out the detable of counts".

This remarkable tolerance echoes the weaponts of Chagaia and Dayns, both ferwerd Catholics whole neighcs, devotion cannot be questioned. Chagais sees the Book of General sets of the sets attempt of describe the angres of the ail sets attempt to describe the angres of the ail sets attempt to describe the angres of the ail sets attempt to describe the angres of the ail sets attempt to describe the angres of the ail sets of the describe the angres of the sets of the describe describes the describes the describes of the sets of the describes the describes of the sets of the sets of the describes the describes of the sets of the sets of the describes the describes of the sets of the sets of the sets of the describes of the sets of the sets of the sets of the sets of the describes of the sets of the sets of the sets of the sets of the describes of the sets of the describes of the sets of the

Coprept even more lathight "The Book of General", he says, its might ITL not a scientific statement of how the world came to be built a statement that Good had someting to do with it " his quotes Gailes." (Sod give us the scriptures to treach us how to go to between and not how the heavens go."

In fact, the academy not series to bail the whole scence-source-right conflict as an another mean a philosophic lice of the seni-integraterial age. Chargin's study groups have nexet addressed the supposed conflict, and these are no plants to do to in the base. This secured, step Hegerbased conflict, and these are no plants to do to in the base. This secured, step Hegerto bases the have base ways to do non-strate the security of domonstrates of us that the base ways to domonstrate the security to domonstrate the security to domonstrate macrosmetry ways to domonstrate the security to domonstrate the security security as an another the security to domonstrate macrosmetry ways control docuss to the secure sky way control docus to the

"Rather than talk," he says, 'we do

That imposes is evident during a later spring week in Rome. Summarided by the islant basizy at this Valuean gardans whose flowersplashed rock fountains and impreciable basins always seem empty and (immoukouly?) unityrided, 14 accentists (and that top. OWN. Onny observer) gather for the academy's latest meeting, on leprose

Sproy under the insecoid calengs of the Cosino Pio IV, the building that has served at the acodemys home since 1922, the spearthst conduct here meshing in Eighen But the accords are almost Assandhara in here virels more scantast who are not members virels more scantast who are not members of the academy-indright as one-of them puts 6-but who are leaders in the study of the subject at hand

In Anotype I to say our set of the set of

I like to think that someday they will say that even with our small stall, we have been able to reproduce the miracle of the multiplication of the lowes.

During the course of the meetings. Chagas is everywhere helping a scientist remove a tangled neck microphone, asking protang qualifors that are usually preliced by the statement. Tam procent.

Although the group culckly establishes in an of easy micromatily (and of the scattfalls work with their shoss off), the mechangs on der the charmoniship of Albert Einstein Madoal Callege minuratiogat Barry Bloom, more forward swithy.

Lecture and Word treats Organization advantacional News Notices Inseen The advantacional News Notices Inseen The Computer State Inseen The State Inseen State and The Institutes are second to seed and the new Inseen Table Inseen State Inseed Table Inseed Table Inseed Table Inseed Inseed Inseed Table Inseed Table Inseed Inseed Inseed Table Inseed Table Inseed Table Inseed Inseed Table Inseed Table Inseed Inseed Inseed Table Inseed Table Inseed Inseed Inseed Table Inseed Table Inseed Inseed Inseed Inseed Table Inseed Insee The sponse message are now exit for the sequence has the in relative program sum of the antibiation groups and the inthe security and the local of the security heards with a security of the security of the constraints of the security of the security heards with a security of the security of the constraints and the security of the constraints and the security of the constraints and the security of the constraints with a security of the security waith a security of the security matching the product match and the security security and the security of the constraints of the security of the security matching. The previous the security of the security waith a security of the security of the matching. The previous the security of the security security and the security of the security security of security security of the security security of the security security security of the security security of the security security security of the security security of the security security security security of the security security of the security security security security of the security security of the security security security security of the security security

"I think," he says "that this expension, especially the audience with John Paul, brought out religious feelings in scientists who mere menoices they had them."

When a lew days the scientists like this leave, most of them to a meeting of Nordeerlo group in Geneva. At his suddenly quet Casmo Po, at his serie table where the Latin Amencan Academy of Sciencia was lounded in 1962, an animated Chagas take abadt the future.

He hopes to expand academy membership from 70 to exprovemently flob and to include for the test time a number of full members from the Soviet Union in this regard another traditional battleground—the conflict between the Church and communam—event 50 be softenzo.

The Pope is in complete agreement' Charges say, "hat we need more members than the Eastern bloc. Thogos would like to sant a separate group for younger soentes: und plans shudy groups on such scisoch as artificial intelligence and he develoment of the certisal revous system.

On the eccelency's upporting activities, perhaps the most intensiting will be an international meeting on space and tetrahle technology relaxioning such robustiles as Arthur C. Clarke and University of Maryland ecolobility (CLPHorminiperturing Sone) 33 econtains will consider such logical actual desibilities and university of space-in-clustering agence all his at weak weapons systems that have sciently been popposed by Presdent Ronald Region.

Why is the Daffalls Druces with a nodaity entitlead occurse, intertetion in July water to the second second second second second ment to the United National and Organizate of the space contention exolution. School is a one in the United National and Organizate of the classificated entities of the school is one of the Visitian in the fit involution should be the classificated entities of the school is of delayange in the developed counting the an execting quantum biotic classification with the developed counting of delayange in the developed counting the an execting quantum biotic classification with the developed to decurse three problems. And that involution developed / accession with the developed and the classification developed / accession with the no direct interest in the conquest or control of space."

Despite the projects and plane, the Vehican does not endorste modern science and technology across the board. During a incent four of careda Juhn Phail spoke out vgotoudy against weapons research and experiments on human orthogos. There often search to be maggin concern the Piper told he audience, for the "unitical dimensions that underlife and are connected with the problems of society".

Though set Pai service remains term to later in communications experiment, bioaddaxing his message to millione, he emphasized that even severingly beings histrividgy, "high hist even severing histrividge," that he cost of the second bitly to high the poors, sometheres, contratives to powerly, limits the opportunities to your the poors, and the poor histrividge to powerly, limits the opportunities or work, and removes the poors bitly of hucondemnution of his high the calibrat above or molecular orms oams to have a limit of the second history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the history of the second bitly of the second bitly of the second bitly of the history of the second bitly of the second bitly of the second bitly of the history of the second bitly of the second bitly of the second bitly of the history of the second bitly of the second bitly of the second bitly of the history of the second bitly of the second bitly of the second bitly of the history of the second bitly

The Popels stance has this for decouringel the society with the problems a single concern to Third Wold problems, from desard of a population control. Chagas and the sind here buildness the issue cancelly at least net to the record. Chily Weekley at a character to the record of the Weekley at according of the single single weeking attracted game a response has a population at restance in the single single single single attracted game a response has a population of the acceleration of the single sing

Whether the accidency will use this admiledly the opening remains to be seen in the monitorine, skeptics see no tour reconcileton between science and religion. Till be very surprised, says Thomas Makine. Till of happens in our Methree.¹ Others seem cymcal about the siciliterry's impact on the world at lance.

"Twonder about all the," says Paul Abrocht desctor of the department of acanes and accesty for the World Douncil of Chuches. The scientistis are all enamered with the clear fail accention whay will get a big platform if the Pope comes to speak to them and accidenty the world is going to move in the right direction. I think that's markly an ilugon."

Chaps insponds "Think fant's an unterturate statement," he says. "Mayba we are quiecto Maybo we are nave. But we think if is cur duty to try. I hak flat as people of podwid—which they are—he Council of Oruches would be pleased to see that we have been able to produce so much, espeoally with south a small sait".

In the background, the germanest dark of the academy-constating in its winkly of a Jossit administrator and his securations going query back of the securations the thread there for a moment there has ever asseed the background the targe with academy sublications. There to these, the academy sublications. There to these, the with our small dark we have back and the reproduces the market of the multiplication of the takent DO



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ARMA

In 1977 Voyager II was launched into space, inviting all life forms in the universe to visit our planet.

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A MICHAEL DOUGLAS - LARX LEPANDO PROJUCTION JEPP ROUGE X KAREN ALLEN JOHN CARENTER'S STAWAN CHARLES MARTINSVITH RICHAD JACKEL PROJECT ADMINS FANNOLD CIDEON "PROJECT A DAVIS 5 KANOLD CIDEON - BANAR BENARDI CHARLES A DAVIS 5 KANOLD -

OPENS DECEMBER 14 AT A THEATRE NEAR YOU.

 Are your beliefs any more reasonable or provable than a belief in flying saucers?

ANTINMATTER

Canadian photographer Doug Curran does not pantodianly believe in UFOs Yet for more than six instributions of the United Sates and Canada pathering what may be the most evealing potures and plones ave to come out of the UFO movement

Current's subjects are not LPGs but the poole who believe in them. What interests the are poole's beter's and how those plavits situates them bes he wolkers. "So the day in the summer of 1017 T Ecupits an oid Paradult, three has and set out form formation. Whenever



UFO UPDATE

block and sector room estimation. Whenever set of cases is a sector of the sector of the sector of the sector of whether they where of anymet building a stocket or trying to contact people from outer space. Sometimes they is say a use Go dawn to the table path and turn sith and assoult mean makes on ... And to behave the devictors and find a model in corresponse backward.

Westering security the context, in the Current hord and Designation that CPR more most in much and an interling and apply the years 68 MeV without the Morengel Normal field docated and the Security of Security and Normal field docated and the Security of Security and Normal field docated here on the Security of Security and Collections for the Security of Security and the Security of the Inverse product by hore whose patients in the UP from ing Verse to advise since a line in the security between the Security of Lass invess from energy in the security and the Inverse product by the security of the Security of Landmark docated in the Security of Lass in the security reports. The Security Relative and the security of the Security of Lass in the Security of The Security of The Security of Lass in the Security of The Security of Lass in moth transport to size a UFO with the equipment

Alters or if gauge, LFD bleekers her many those in common Guans bank. Note the high-thorid globanes wat also in this town made aged and quot a the cubics are somethy factor made aged and quot a the cubics these somethy factor made aged and quot a the cubics the somethy factor for the the thore of a god factor to the the set of the the the the thore of a god factor because. The Cummissis, and the direct of a god factor to the the resolution of the the thore of the factor to the the the transition of the the thore of the the there are not out in the transition in earth in matter matter of the are one of the mythe the help pools deviwhere of the theready on the the the pools devi-

Currents photographs and observations are being publimited in a book called in Achanor of the Landing. Foil Concepts of Clube Sexuel (Abbeviet), Says Currues, Trisely wat the book to point back at the insider and ask, Areyour belies any more reservable or provable than a belief in here security.² DREV (2020);5

sackness and was

Commission and the second seco

And in deliance (Mdragan, Chran took photographic of John Sheokerd which has converted his grand anthris stall house into a UPO oresidorn dentar ids wills fried with more electronic adupment than a NASA tracking staton. Shepherd trantics agrass chosen for their 'analisic houmain energy dward



TEL HERS THE PART

"My cyse were on the" one tourist

"It was my throat," another declared "I was choking Every breath of an burned on the way down "

For both these builds: and for another doesn live term a wolf to the 4.505year-old Drephon Pyrumot, in Caro, poethod I ke a soore from Averings of the Murrinas The deale experiance promoted Egypt's Anounter Department to seat of the pyramid and the page that followed created of ourses orthoform pathemat to spockase on per matters within

"Receive were coming from all over the country" explains Weder Knolos, a comisjon dent for United Press Inter restores."They were disacted by the mystery They thought that here might be some strange force all skie."

First an Amoncan report suggested that the pecklar force was merely gas from driverbars beneatin the man benal room. And finally the Antiquities Department came up with an integradution of its own. The gas that gauged the childrang it feel gave

clarmed was Mace

But dools be eventilities invalue to shake the doubloads the number of the dool produced any evolution. The produced any evolution to the sector that per interpret of listee tractioner strapped to account it is the school to be a sector that any in school the sector that any interfacture and the school and the school protection. The general school any and per any interpret period to the school and period to period the school and the interpret period.

Hadro Herrives

Sonsome sports will write on a blochboard The board ant sean only the while chait anals. The medium obsert (provide the blochboard (matanalate) But hou, the medium doain to provide there ports the doard seans a car or a plante Spins provide their own transports board their own blochboard.

wany Kangalon

COMPANY OF A PARTY OF

Centuries have vilapped since whiches were routinely burned at the stake. But one twentieth-century court in Tay, seems to have result rected whichcraft as a crime

Is an object in these with the posterior Cardie Compton took a ph as a nakiny with a family on the Italian is and of Bbs. Almost immedlistic a point of austrocout less stanted in the family's home, one nearly injuring a steeping three-yeak old grill.



ne the grins grandmotter old Compton

Reacting pre-know Compton says the wat charged with attori and attempted munder. The local authorities these when in pail where the ended up lanquesting for months.

We ner has in placed has whensake standing that Company had willed a user to by here electrical instansour analy when the willed by and that she grand the nuppersonal time will he power of her much. The fam by a mad sold i furned a hey an is both without laudent, i. Compton accills Title like I use in a witch half.

Interact, reincipation food interact the case a which that But the coup de grace carre when one of the sudges exist Compton 4 iss alleged the possessed supermitting powers Says Compton 1 ata she yaago tha in Ford 1 sould open my cell with thing sower and electron

Found guilty of amon last becember the crietime ramy who had siteady been alled 17 months was freed

Compton (who had no pretous criminal record) pro-(auto her innocence)

A few of the many simulating benefits of the knowledge alleady received from the space people or promoted by them if we will webcome toem in a finendly mariner would be elimination of densise powerty and smog solving of the problem of solutions and

Intersperyment an enteroned life span, economic security and abundiance, and for many living today, personal ourneys to other planets beyond the alian

CIED/IEI CI/IIEO



Pace in the Britshiberrol (Caleshihad Cay Sourcebod Caleshihad Cay Sourcebod The Pitter Payn-Back, I. Ityewine could explain the doappearance of the with table with well as even 22 opars ago but authorities and net doappear could aim approgram well as even to a pack bog mere Payn decover: They found a an eyebal sith attached, an eyebal sith attached, an eyebal sith attached, and eith the yalawarg nomers of a trans weble mode the head

Convinced they had Main kas remains, Chester detec twes contracted Peter Reyer Bandt, who promptly confessed to the murder Malika he said chove him to the crime by thisidening to copose his homosciulity.

The addition of the additional of the addition of the addition

body was never unearthed Peter Reyn-Bardt was no-



sently found guilty of killing Vialika and was someneed to ite imprisonment

"The sear ned deep pair served in the pair tog for about system centures and obviously has nothing to dowith Marka Royn Back proceedor Markin Thomas tod the court "But its dacovery lid directly to the anrest of the defendant. It was the account rithy

-Sharry Bake

We look at the present through a rear-were moror We march backwards into th hittors."

- Marshar Wollanar

THE R OWNER WATCHING

Moos reunangs seem to bela place in ancient clades, Victorian garrets, and other old buildings with strange and pintaipe victore place. But secondy in Seats Ana, Caltornia: a ghost reportedly vesaked hevor inside a component forth ano clast

Several employees of Saturbasis Foods claimed to have seen the etherosil tigure And all gave the same desception. The ghost was a dark complexioned man, about five teet four inches tail, with a mustache a writer smock, and a hard her.

When I was first told that a sociarity guard had seen the ghost, my reaction was what is this gave straking? reachs Lows Statistica, prosident of the company. Then the lights bagan corning on at right by them selves. And we have a thirty toosten drotter under normal common under normal common under sormal common set. So Linewe

THESE PREMISES PROTECTED BY

sometrive teel to be dont? Sabatawo socured the services of psychic None Faget (the two are potited above), who conducts tout of houries castles in Engtind by tertain Caladonain Anways and was a consultato the move Electiouses

Faget plened he sortcamfor the very next week but that weekend, before she could act the company burgar aam was mysteroxy adheted When he plent was opened on Monday worken found hugo palace of froam particle solatered account the some and an exclore one meeting back werk look he held.

To force the split to leave, Regard took one of the witreverse and Selections Food public-relations representative Sheme Ker into the cost scale treaser. The three prayed spread-saft to attact ectopicients vagoes and it a calcula regardl consuced the apportion montally, the stysand learned that he was the place of a man who worked in the factory whon it had been a meet-processing plant. After plang killed in an accident elsewhere the had manued to his place of employment only to find a manufactory to find a

After a masawa short on her part Fagat claims, the spart lich 'I felt a rush of mergy the explants' My nock was injurted as though had received as karate chop at the back of my head.'

Though this particular ghost is gote, the haunings are not consistility over this fact, several Sabatosso workens have spotted a stabolary fourte latiting on top of the building

There's afterier group up on the root, Fagett assents "Sut I don't roally feel like preving up there after it

AUTI*MATTER



1.00

There is now a credit may service to Good according to Mange Halloy of Little Rock Arkonses and Gen Nessen and Jeny Obcesen of Sen Diego Ali you have of Sen Diego Ali you have no do is write out your required on a preprinted form and place it in a write "sather the container stamped with the instrument occurs.

Geossian Netson and Haloy manifest the 514 85 box through A Creative Company based in Carson City Netwala. All company profile Goossen emphasizes, and carmanico for an unnamed chicken's chanty

Network of the up with the original value for the Goddox back in 1982 when tolkwing a sense of paradical filligadies, she decided to stuff her prayer nequests into an envelope. Har two finneds social shorte sky finar paryers was answerst.

Haley speculates that the box works because 'It gives you a same of perspective tou can see your problems in block and white and it gives you a same of relief' Gosssen has a more meta physical explanation. I thin there are a bunch of unseen beings ansund as all the stime" his pays. They are angets and they relevantele our bodiest similar we skelp. They will do our bodding but first we need to get our problems out of our heads and write down what we want them to do."

What do religious leaders there of this new technique?

In positive when your your proyen on a young when and Catholics place interaction number, or the complete training or societ James Hopewait who teaches it Energy (Hawmisty & Canadae School at Directory in Alacta Out of context such hings may seem platty titly But they can be vary meaning U but the population from the

Church of God, in Attents Druch of God, in Attents Selves a hierber valw. The Godbox if e says "in a striking each pile of gomhaily mappinable gimmicky."

but cooteen who argues hat his cricks are "selfserving, vahemently dalogites. The Godbox could out organized religion out of butmoss." He says "With the Godbox, you just go to God and esk for whitever you want. And you gut (" _______Rome, Base

"Handly one, parson in ten thousand is aware that he or she is summarized by a have instmatoly contracted on aware and the second second or aware, whether has or cold which athough investible under ordinary objumptiones, can be sear when contributions are

second states, how to

When Edwin Gesichthile (pelox) choose the work to his songe the dowining of the newstand from the peges of the majorith the theory of decays boost (thereby to example the University of decays (boost) (thereby to be boost them before both each of a carpeter with bill of the second bill the down of a second bill the them the tappetered in time to 1988.

The assembly five year-old compose togets sconing they anotas in tai-27 The tim potoche to add to that the half Moon Nacutarn a compared account of a moon half Moon Nacutarn a compared account of a moon half Moon Nacutarn a backgrown the time was only despite the time was only despite the time was only despite the time was only account of the time was only account of the time was only on table to a follow You cost of the time was only account of the time was only account of the time was only account of the time was only the time time

Where did Gerscheldkinger his normænstream approach to music? "In New York, in the Thirtees " he answers After Linecawed my cikiskabil

1 A REAL PROPERTY OF

Interrup at Vale and the Royal Academy in London 1 become part of a movement of experimensests. We were ahead of our time. We were writing music on typewriters and amorphating computeroneersteld compositions.

Although related from the University of Goorga where he headed from music, department for 12 years Gesubelsie is still composi-ramanade rendston of a letter he repoiled from his publishne repoiled from his publishes. Broodcast Music Inc.

They vector adong me bit angood on what I ve boen doing [Deer comparer 1 he table want your minimum putantize has come up for analysis] hay were sky ing it hand to give an account right of the point in account right of the point in account oppoled to score it And it may be the bost thing The ever wather 1—Sterry Bakes

The poet, she ansat the sleuth-whoeversheapens our perception tends to be ambrocial. He cannot go along with currents and trends."

Although Schurchts McDarkacharman

NASA'S PLAN

to Securit with a liquid introgen sea. Also probably has seasons.

1990 August: A spacecraft with the size of our own Grand Canyon was carved out by national water, planatopoists say To

of the adar systems most impound chailanges, says chelmission scientist Michael caused by slow changes in the tilt of the planet's axes over millions of years

Line 1900 Marrier spacecraft will be triet pri until 3994 its taxoet? A small, fant, the sun every six years. Once it makes fail rendezvous with the cornel. Mariner will accompany (until 1996 when KoonT is citaest to the solar surface. Knopf has all the observe a comet as it heats up, as its tail

1992 The year will mark the becoming of cend dramatically and we'll take the first specie-rescue service for marconed estro-

covered America, America will put into orbit after the explorer Automauts will assemble the station in space. Its complement is explace. The first onew will stay for sex monitor living guarters, a bological laboratory a whose letescopes and instruments can adher

1995 Evon the new Transfer which a warture out from the space station 300 miles above the earth, to decounctinancial orbit. nau/s will randezvous with one of our \$100 million communications with lifest Two crieve

long silent salehte Before the year is out other. The immediate effect of georgencire drector of the space-shuffe program for lar Mari m 1964. Benu able to vissar com another fon years. Wegitter satelities could be refited in orbit with new complete and weather forecasting by 50 percent Accordites will allow you to make a phone-call from

Sometime late in the year 2000 the shuttle wall take its earth, opening up a new era in space travel Who will be the first truitiets?

body camero a cordera portable phone will

1998 in a mission alway's harm blanned Geliko 2 will know the space station to do Cros Gablic anves, a probe will datach phene when the Galileo mother shap moves the mother ship to the Saturnan moon. T

1997 An riskument-lackin spacecraft, the space station to orbit over the moon's north costs what mererals he beneath the luner su

as use in the graters at the lunar poles. If the

2000 At the stak of a new century, two unmarried missions will loave the space station Columbus. The first will be sent on a Earth-crossing Apolio asteroids, and then or sible Once alongside the comet the space lature oiling the robot explorer will remove scientific cerns back to Earth Explains Calthere that are still primoval representatives billion years ago " The second apaceeral will traval to Mars, where if will orbit over the

Bometime late in 2000, the shuttle will take of whom will pay a princely sum to take the tory says That's when we'll know space travel is here to slav when the tound trade

a mobile robot with tank treads will land a to dro up spil samples. At least two offer other in the caldera of the enormous volcano samples of Marbon took along the way. The spectoralit attached to them These will blast off from Mars to rendezvous with America's strate status There space-suited acarpristine splation as a precaution against obvious. Mers is a red planet ust like Earth. changes that dred up all its water and left that huge canvon behind. Bringing beck Martan rock samples wil slow us to child the events that changed Mars forever and tell us why it did not evolve like the earth Why is there to write or if a on Maci? These

2010 Once the Luter Polar Crown lo mports north polo if will be only a question of time before the test human colonals that here way to find an extraint. This is the year that four associates, two energinations colong parange the Sales and Sales on the mind of pole Setting yob base under the critice some and part out of the sam the association yord the om they will unified 300-feet here yord the om they will unified 300-feet here yord are on the the sales there are an equal parts to sale party the discharged

The first colorisis might be ovien scentriks (bit dort) discount in properties that they could be independent working for MADs of the sector of the sector

2010-2015 Scaled drawn versions of the Galifeo opprocessfill that are to ifly to Jupiliar and Saturn will and an all leads the automoted and all four large Junear moores to Genymede Europa, and Califeo These landings will be shroly for searcine. Sha the landings on the automote califer instan the difference between the automoted langs and californic

The space againcy already has a program called Spacewatch under way Scientists are keeping a close watch on "Earth-crossers" elercipis hill calif acrossibility inter of the a califace course with Earth and destroy multiple of the legal as a sectoral may have any sector of the calcular SE officient years ago Nonexod as second has almady based an atomic sector of the original of the programment of the california of defect have any second with a hydrogen barro.

The dinosaus folied to develop the technology to avoid their extinction "the council said "but homo sapers has He can avert any further extinction by assertid impact We think he should."

At the same time is approximate products by the lagst has thele over contracted admonstrational series of the same the test intervention of the same time of the same results are stated and the same time of the product as particular and the same time of the same time of the same time of the product as particular to a same time to approximate the same time time to approximate the same time time time the comparison of the same time time time approximate the same time time time time approximate time time time time time time time comparison of the same time time time time time comparison of the same time time time time time comparison of the same time time time time time time comparison.

2020 The space station will come of age Astronauts will be using their space tag to venture for aheld in space, when they will since gain match believergoe to study the entre Maky Way, and laten for intellights sigrels from detart space. The mesons will make the beginning of an intolose galob based search for other planets into Milky Way. The appene stiftorm will be respendid to accommodate an many at the accomplexity and a latent size of the search of the source modate and the second to be been matale, and electronic parts in an about dance not been determined to day.

Four American extrausta wiji ad cut tom the space states Calumba (hights orbit Med americ field) on a historic fights orbit Med orbits and the states of the states of orbits Media in the scheduler the doades. After carcing Mass the extravals will benefit to scheduler and scheduler the planets states or a search for the bod carb memory shakes an school head scheduler and a colore scheduler in states of the scheduler and the scheduler in the scheduler and whether instant beings should colore another planet.

2030 The Marken coloratil will see alait to the rad plant. Larking their specification solution to the series of the series of naisy to make the large panels. The toohages makes former association (Acobi F1) and US. Series their dense. The first series and concerning their dense of larges and concerning the dense of sectors and will be series of Panelson and the series of Panelson and these artised DO





the excess heat down to a locati-storace

Contil picked up a tomato. Her features the face, but they were remote and unlo cused Even, white teeth reneed at the food

the lake radate if out to keep the crater

That's why the number of watertally in OCCUPATION VIDEO

Now Consilisat down on the rocks. Her laws would react

What now? Ein wondered She had seen they were all tresome disapporting. Even-

bakenoing act, the actech said

and called Father Lendes "Tim bored" she

Magnitiz had begun as a mining colony back when it was still prolitable to process ers were oone now, and the prater war debarred from locating Eartheide

stretches of undeveloped field others effect Germ-warfare corporations mingled with nuclear waste engineering lims. The a tomace to riself, and it essented with custols. There were a few off Swee barriend

watching a rigger bolt logerher a cot end wrein the surgical equipment

locis waked of Locks live area simosi

"Good." Elim fung herself down on the cat

a clutch of images overlaid her vision. Ghosts waked through the air stand at her from

There was a audden overwhelming sense

and blass the clother PITIT Cas noes the as

On it's safe The button doesn't connect

Just a precautor: a lot of the research

The intercom out out and again Ein tel grams through a secondary level. So with

roden human being in externor Now about

of branching crimson kines dark and dull that throbbed slowly Lacy and organic is her forehead to be like when she had a

That is what you its going to do then-one criteri ete veto file God state so thai / can see

back. We start slowly though The Instises

Make the day special Give her a bridal set as valuable as your love









ming level, integrates all your mental processes, and puts you in low-level control of them. The nontechnical term for this is reading the CAVIST DON't fool around with anything accurate or anosa."

His vace faded alte was alone, and ther everything changed

She was in the presence of someone wonderful

Ein feit that someone near at hand, and struggled to open the eyes she no longer potessied, she had to see. Her essteroar opened, and people began appearing betion ber.

"Caveful. Tory seed. "Hou ve switched on the intercom appin."

I want to zee!

then's notody to see That's just your own mind But if you went, you can keep the intercom on

On it was deepporting. She was surrounded by love surrounded by love by a cracity happy sense that the universe was holy by wisdom deeper than the world By all rights a had to come from a source greater than hereel

Biason was not sufficiently strong to override emotion. She effect through the intercom bringing up emote after mage and discourding them all seerchings

When she had run through the entire project staff she began hunghly scan rung the orater's pubte monitors

Agtechs in the tralas farms were harvesting strawbernes and sweet peak Elin could taste them on her tongue. Somebody was sering up aloae from the inner

lake, and she fell the weight of the rist in calluard hands. Not far from where she livy a couple was making love in a grove of saplings and—

Tany, I don't think I can take this it's too intense

You're the test pilot "

Damos, Espi

Donna Landis materialized on the intercom "Shell right Shallokovich You haven't to disced her ence of 1

Tolidnil seem were to risk dissociative af-Notis by cranking her ego up too high

Tory grunbled something staudible and desolved the world

Finfinated in blackness, soothing and th

isong She fel good. She had needed this liftle vacation from the tempors and pressures of her new personality Taking the ptihad been the right thing to do even if it did increariarly displayae. Tory

Tory She smiled meritally He was exappealing at times but atflishe was coming to rely on hitking hen around. She was becommon to think she was in lowe with hm.

A lesser love perhaps Cartainly not the love that is the Christ

Well, maybe so Still on a turnar level Tary filed needs in her she hadn't leven exited it wis bor much offert to argue with hensell though. Her thoughts drifted away mito a workless, turnous revoling, in the bodiese state. free from districtors, careIt was Goo

Then Tory was back and line voice the presance was gone Tory? she thought i mink / just had a religious expension

match-the rend clears out a few old programs. Nothing to worry about. Now relax, for a pill while I pluggiou beck in-how does that suil?

The presence was back again but not neurly so strongly as before she cauld resial the urge to chain after it. That's fire Tory, but letter, I nearly mak-

Lets leave analysis to those who have been programmed for 4 shall we?

The lowers sholing enricesly through a

brushing up higher brushing up higher logical night was coming, the agtechs hicked the daylight switch off and on woo in warring

"It was need Tony. She taked with mer Imnot meking it up "

Tory ran a hand though ha date only har looking dotacted Wel assure ing that my profes social option was wong—and It baths first to actin that the program is a bit oppocentric—latil don't hinkwe have to stoop to mysticism for an iceptantedin

To the far side of Magnite a waterfall was abruptly shill off The stream of water costlered, seeming to descrive in the air. "I thought you said she was God

"I only said that to bait Landis I don't mean that she's heraly God just godike Her shought proo-

A cassette player four-fifths the size of Beethoven's Fifth.

Toshiba's Super Mirrik/TAS10 offers features that cassette ayers many simes its size don't. Like Golby* Will auto revene, 44400

stereo tuner pock and metal tape capability. Only a first from Toshiba could improve Beethoven's fifth



fine and deconnected

Naming a departmented All the aniverse is a vasi nerbil intermesting programs. Elin was annued at hereell. That had assurided like something Tary would say. She d have to vasch it she might love the man but offer dich it wert to indiging like hem.

You wany needlessly. The varie of God is suble, but it is not your pen.

Ein samed. She searched through her mind for an open inlarcom channel, didn't find one Helb she thought. Who sext that?

The areaver came to her not invortis but in a sourceless assertion of identity. It was cool emotioniess something she could not describe even to hersall, but by the some token absolute and undensable years more efficiently organized than ours God is just a conversant metaphor

City Spiwuale your extratration .

Indetti a tessi chi artina chi su aland-the things are everywhere. She probebly pegisimmed it to cut into the intercomwithout the charites aseming to be open.

Could she do that?

"Why no?" She has that million-year edge on us—and she used to be a wetware tech; all wetware techs are closed computer hacks. He did not took all her had not looked at her for some time.

"Hey She reached out to take his hand. What's wrong with you lonight?"

Me? He did not meet her eyes "Dont mind me Tm just sulking because you took

MEDITATION The Psychic Bridge



Have you over experienced a sense of futility—escend to be thwarfed in your accomplationent? Have you over struggled for a new vital idea or solution to a problem? Heind your thunking mind may lie the very answer or vision you read.

Yers have a remencions reservoir of mental power writing to be collied forth it fas yas beyond your surfnes thoughts. Twe methotsics as not alle randers blinking—or mere conceptivition which test the mult of their losss. It is a techning that opprachasmics to the full power of mind and a realization of self. Every achievement—in anyce's (if—begun with mediation).

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the job 11 get over it

What's writing with the job?

She' guided his anti around her walst pressed up against him. "Well don't be it's rolling you can control—I have to have work to do. My boredom threshold is very low."

Tknow that "He triefly turned to take the strilled sacily "I do love you you know" Well standed love you too."

His antic bandhird all satirtises from her face like a sudden wind that broaks apart the clouds. Say is again. His hands resched out to boch her shouldes her nick her face. One more time with leaking

Will xelf Laughing she find to break away from hen but he would not let go and they fell in a trangle to the ground. Beast They rolled over and over in the groun. Ensate She harmened at his chest tore open his arresult. Tred to be his neck.

Tary looked embarrarsed thed to pull away Hey not out here! Somebody could be watching

The aglechs swiched off the arc lamps plunging Magnite into darkness

Tory reached up to touch Ein's face. They made love

Physically is was no otherent from things she had done counties innes before with towers and hendls and the occusional stanger. But she was committing hensel in a way the old bin vecid never have dated letting fory prest bir derivative taway function opan to pain and huit. Trusting time file was a part of her now And everything westiamformed made new and workfall.

Until they were upfl at the bank of orgears the both of them, and halt delinous the could list herized go momuning. Thew you have you. God They other and part as one chroshed. Tory othered and finew here head bands, and in a vacie that walk withinhed from the depriss of passion while need. Corel

Half blind with fury Elin stocke through a resolvation activitient. The hutin glowed softly loan the holdbappin playing within—offlatee scattered nanbow patterns unreactable out side then holds of focus. Sheld left Tary behard beautiveshift han terrares abrea.

Ein hated before one hut stood indecr sively Finally because she had to talk to somebody she tapped on the lintal

Father Lancis stuck har head out the doprway blinked seepiny. Oh it's you Don nally What do you wan?"

To her absolute horror. Ein broke into team Landus emerged Japping up ter jumpsuit She cuddled Ein in her arms, mede soothing roozes, lettened to her story.

"Core!." Lafce sed "ANN'h Suddenly gyarything falls into place

"Well I wish you'd tell me, then" She tried to blink away the angry team. Her face fait red and raw and ugly the wetware pani was all smartered.

"Patience child" Lande sal down crosslogged beside the hut patient the ground beside ther. Sit have and period that I'm your mommer and I'll tell you a story "

"Hey I clidh't come here-

Who are you to onlices the lacest techregars in spiritual nurturing, hey?" Lands childed partly "Sil."

Ein did so. Landis put an arm about her shoulder

"Once upon a time, there was a little gri named Goal—I longether last name Doesrit matter: Anyway, site was bright and antoboala and ambetous and litvelicus and just life you in every way." She nocked Ein gently as she spoke

"Coral was a happy little gri and she laughed and played, and one day she fell in love Just ike that" She snapped her frges "Imagine you know how she latt"

This is kind of embarrassing

Table Well also was very tucky for as much as sha loved him he loved her a hundred time back, and him as much as he bowd her she loved him a thousand times back. And so it went I think they oved at it able bail their set memory environment.

New Core lives in Magnite and worked as wetwoek soft. Fire was an antibious care too-intryine the work invol Ste come they and the occurs of the soft of the soft beyond in the occurs of the soft of the soft beyond in the occurs of the soft of the soft beyond in the occurs of the soft of the soft beyond in the occurs of the soft of the perial more than the outmit of the soft of the perial more than the outmit of the soft of the perial more than the outmit of the soft of the perial more than the outmit of the soft of the perial more than the outmit of the soft of the perial more than the outmit of the soft of the Activitient were all class allo fragit the india as work exponent fracult the soft of the as work exponence from

Sterparsed to give Ehra Ing. Besttorg, Iad, here comes the rough part Wel, her boycherd was brokenhearted. He dicht wer to ead, and he dicht warf to play with his financia. He was a real shit to work with But then he get an idea.

"You see anyone who works with exponmanial workware has her personality permanently recorded in case theres an account and it mesois to be nearoned. And that pertain data or becomes God the personality rights reset to GF. They no snearly lea that Web. Tex-citid i remainion his name was

Well, log-doi I mattello fils infinite was boyl- bloght to himself What if pomebody were to come himse that were passed boyle and the stand was a year. Bound to get used in the future And Megnite in the presidely basis is necessaria to both the presidely basis is necessaria to a some the presidely basis is an apost an eve they rel way good charact bacase thereis basis for ontage and the interim the comercentry bars.

And then he had a baid thought. But you must taken in mitor 1 He was wolking from a bully set of most precedent. Suppose he flought, J regard the computer so that insead of choosing sandonity it would give Coalle precedently to the very trait latting and who come eleng? And their was what he chd' Landria lazard info since

Bin wped back a sniffle "How does the story end?" Tmissli waiting on that one

Oh Ein pulled hersolf together and stood Landis followed

"Loan Remember what I load you about being appuppy hoping over its paws? Well you've just stubbed your toes and they hurt But you'll per over 1. People do

Today we make a Buckha Tory and Elm back him with a cold state is and noting aven fough the ways in green and in the amount "The is a higher-level program integrating all your mental functions and poling them under your concrosions control 50 in the epcally important thet you keep your hands to version? I new?

Rot in hell you cancer

Sed Jon.

Ein did not te spond and after a puzziel sience Tory contruod. The laav ing your sensorium opeative so when i setto you over i want you to pay attention to you to pay attention to you surband Okay?

The second Tropan horse came on Everything changed

E-wasn's physical change not one fast could be sean with the types E-wasnice as if the names is one wasn's the name site of the sean methy way much like A inter this case, and couthed accelerative in New Derice when she had loaf her with in New Center when she had loaf her with one she had loaf her with the sean endowers and Artis E-mean endowers on hart. E-was only wood growing out of the execute

A mole poked its head out of its burrow noise crinkling pink oyes weak II was juit a small buological machine. Whoots she said involuntarily This is weakly cold.

Bother you?

Ein studied him and there was nothing there. Only a human being as much an object ize the cells and no more. She fait nothno lower for anyone him. "We faits eard

Were getting a good recording. The words meant nothing, They were clumsy, de void of content

In the pass, accord her, Ein row is gray holiaing an if it war all subty on the Log coshy the know the flickney was the fing of nerves in the role and panels of her ryse. but emotionally it was something also it was time. A gray fine that destoyed the world consistery learning it ways and remeking it acain and pan.

And it didn't maker

A great calminss wapped itself around Elin, an intelligent detachment, cold and im perstanal. She lound herself icknofying with it realizing that evidence was simply not imcapitant It was all thincis, cherols.

She could not see Tory's back was no longer willing to assume it even excited. She could look up and see the near side of the earth. The far side right will not even and it dictors will the door limiter either.

Bin stopped away the working greend the solaring teach income maker of how objectent/and in sensory input the thought And to shaped called the there will be used. It had no shaped called or peecem built was what indefends the bright interplay of calles that "This the sension to

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men# The Hing was, the underlying notingritise was insid—if mean had any meaning if meaning had meaning. But beyond real and beyond meaning. There is what to And she had found it.

"Density youre Integring on dangerous ground Youve—"Landes voice was a datraction, and she shull off. Ein feit the desine to merge with what was cross simply had to slop the desire for it she reakized, and it was done.

But on the existence honor collepted upon her. Hames seared and burned and croped and there were states among them, great almy things with dispusing mouths and needle-share failes.

She recoiled in period and they were upon

drawn up into her lungs and hot maggots wallowed in her brain tissues. She field herough a mend this writhed in agenty turning things on and off

Until abruptly sha was back in her body, and nothing pursued her She shwared, and her body responded it felt wondarful

Well that worked at least.' Tory said

What—" her voice creaked She cleared her throat and tried again." What hapneoart to mi2

Just what we'd hoped ion-when your mod wis threatened with extinction if protected itself by reprogramming back down to a normal state Apperently keeping your ego caranteed up high works."

Ein realized that her oyes were still closed she opened them now and convulsively closed her hand am unithe edge of her

was constantly being destroyed by the gray free of ame. She contemplated the raw stuft of existence.

"Please don't monkey around with your programming " Tory said

The body was unreportant too it was only the local point tor her senses (grante them and you could grante ut thin could field her self tading in the presence of the vise). It had no material existences no valid here given the granted—it was but an exho a ghost an unsee without on water

It was like being a program in a machine and realizing it for the first time

Lands a vace fooded her. Donnely for God's sake keep your ingers of the expermetal cot II was solid and real to the louch Such a good feeling

Till be down in a minute. Tory said: Just now you need to rest. He touched a bone inductor and Ean fall into blackness.

Realing again every mitipharical harve on edge Elinfoundhesself hypercensitive wello outside influences, preferensitively wellow even suggestale Stat site suspected mean than screed—Confis presence Go areav she brought These priv mind new

Tarm home, and J am anways. You Take Set foot in my country and are dimly aware of my presence Later, when you have climbed into the insumance, you will lead tail or in and and then you will be as J.



WHO NEEDS A WORLD ATLAS?

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The thought that came to her was almost amuted. You are only a program caught an a unwastal web of programming. You will do as your program dicitates. To be nee of the programs is to be God.

Despite her anger despite her hurt, de spetiettre cold trickle of leer she tried to keep, in the background. Elin was outious. Main's it ker? she couldn't help asking.

It is golden fittedom The universe is it bubble infinitely lange, and via who are God as the Wei vor the bubble outside. Wo in tanzal and we program We make the other show and the valewing grow Wei programming flows though us, and we alter it and main ten the universe.

Elin pounded on this last statement Helen tidore a very good job of it have you?

as you will addestifiend This was Elin reakzed, the faint of cure

This was the restored the kind of queelion and-environment to four intert have gains through repeatedly as part of the Say Maker project. She searched for a question that no one else would have reaked one that would be here along And after some thought she found it.

Do you shil-personaly-love Yory Shastokovich?

At his there was a sight pause, then The kind of Jove you mean is characteristic of lower order programming. Not of program free intelligence

A moment later Tary canceled all programming and she hoated to the surface leaving God behind. But even before then she was acutely sease that she had not seoewed a straight answer.

Fig. we've pot to tak

She was patched no the outside montos starng across Mare Imbrum II was a straight visual program she oold feel the ware, humid ar of Mogrite sgenst her skin Neithero In Nik straw Tete and

"Darrint yes that all limit about to lose you again because of a mounderstanding a--a matter of semantics "

The thing about Outside was its arriess clarry Roles and shadows were so preteretaristly shape. From a series or the canter assessment slope after shared off into Mare imbourn it was monotonous but in a comterling sort of way. All the like when she had make a Buddie. There was no meaning out, there, nothing to impose ratell between her and the surface.

"I dan't know how you found out about Cora!" Tory said "and I guess it doesn't motion I always figured you'd find out sooner or later Thats not important. What matters is that linear vice....."

'Oh huthup!

Ein leit her natis dig into her pains. Sura I can she said She topscolched down the conter to the surbary. Them the mass driver

Tauna identifying with the worman who

'Listen Shostokovich tirisering with my teles her nince. So why don't you sust go away

er slength stopping procesionally for a spot-

Youre not the old Ean Donnelly either and I thek you know it. Rocket are transect drace your quiet strength, your impawhat make you yourself. The name doesn't matter, nor the past You are who you are

Yeek well, what I am does not love you

One of the repartbots slowly fell off the driver It hit, bounced, shuckled to regain ta

through You can thade that from me. I know matter how anony you might temporarily be.

race "Yeah well if that's true then why tell

Because I want you to put your rob.

"I don't want you to become God. It was a mistake the last time and I'm atraid it won't Krys water left to a whateer 1 don't think I

away liking defeet ections after Only then

day we make a God. Tory said. The is a total conscious integration of the mind in an

One The hell of it was that fory was not t warted and was empty whicut

WHAT HAPPENS NEXT

To us, it's an engineering triumph, with a precision sparkwheel and an adjustable flame To you, it's just a flick of the Bic.



STAR PART

LEI EILUN

She was either cursed or biassed cursed one rather manipulative human being. On

Nothing was any different Marintia was

Torv's lace borned over her his eyes classy almost fearful His har was a tangled

A king wat-perhaps twerky seconds

viewed objectively-as the wetware was

ol it and the choking and gasping contain-

shoulder reassurnely called back to the

ers-still cathering. Landis had been only

He shivered even wide and unbinking

Nolton Lands said Or maybe 'it docent metter is a better translation

of green and red. Looks like a flaw in the

Ein stroked fory silorehead His muscles

Take a look ' Lange sed and patched Toy smacineed them "We ve out as m apery tep of his weltenschauung coming up.

Scriethoo howble approaced on a black

Ein pould take only an instant's exposure

She stood in a room infinitely large and cluluinid with great, ocesome mechanes

They ware landed by malevelent demons who shreked and cackled and were main chines thereselves and they generated pan and machese

The disgust and resultan site late was absoluble. It optical not be put into words—nomore than obside the actual expensions of what the had soon. And yet—while hinw this much alticut welvare techniques—it was only a rough approximation is opticant of what was connect table with This should be

bline body trembled with shock and by slow degrees she realized that she had releasted to the surface world.

Tory's head was still cradied in her arms A webwaro toch standing nearby looked stimmed her face gate.

Ean gathered herself together sold as gently as she could "Tory what is that you re ereing?

Tory lamed his stark fearted over on her and it took an effort of will not to funch. Then he spoke his words shockingly calls

"La-while is it's reality The universe is a damned cold machine and all of us only programs within it We perform the actions we have no choice but to perform and then we fade into notingness. It's a cruail and notevicies."

T don't understand-chdril you elways say that we were just programs? Ween't the what you always belowed?

Nas but now leoperance it

Ein noticed that her hand was slowly stroking his her are clid not inv to stop it "Then come down "fory Let them deprogram you."

He did not look away. Wichevo he said The tech, recovered from her shock reached loward a piece of equipment Landia bathed her hand away. "Noid is right here techel Just what do you think you're openg?

The women looked impatiant. "He laft in structors that if the experiment surred out badly I was to out the semigrator watch

That's what I shought. There il be no mercy killings while J m on the lob. Mac

"I don't underskand. The tech backed away puzzled "Surely you don't wanthim to suffer...

Lando was gathering herself for a witering riply when the intercoun cut them all dil. A like in red shot through the senso num along with the email of bitre already specifie of static electricity the laste of kench. "Emergency" We we got an entergency" Ablack and when lass meterolated in thins mind. "Emergency."

Lands flipped into the carout "What's the problem? Show us '

"You're not going to believe this. The face disappeared and was replaced by a wide angle shot of the lake

The greenish-black water was caim and stagnant. The brute core island, with its scattered grass and woods stumbered And God welked upon the water.

They gawked all of them Const weiked across the lake her pace determined but too harred, her here service. The pack soles



"WHY THIS SHORT PARKA TOOK US SO LONG" - Index



Lon stolan is in two was Mohar Boyle She stile Pantien hen Anisher O years of one

Ne Analog Reda AnnuerLond scorer and Store a length long on furiers

length parlos on the market, the waar't about to an a wast-length version come up thort

menor/peers/keet seasts Véctor? colts and collectmake in survey, and so finaments (solid of Gon-Tex? Insurance to cough ben handnome Antroof' cyline with solonike score flipt to make schere Queline? maakene entimate wright, s compar keet actors attor

to mourning Ecoberry All of which took sure.

Then are chopen wantloagh juckets realible. Lowof them they as More than to errored as all, this mone patter 16's controls a Accilentian main



For solid caping and \$150 or at 4400 N Baltimore, Dept. 0, Perfault, Orogon \$720 Ber Will and Dept. 10 or 100 or 100

Ittle man briskly efficiently obey

bright gints of light appeared at all of the

across the ground and frame her arms

The ar was in turnol. The holes in the dome roof-small at tirst-grew as more of fing grew to a screech then a scanian and

Binwesflung speerd tern away from Tary

Einhung suspended between moon and start pass crystalized and shifted. The world became not metry exactly but socialional Both it and she grew tentative cossibilities

Come be God with me new Coral said

Tory a presence flooded the soupy uncer-

outhingues, more resi. El in talt fugged in five chreatene at once. Tory a prostrice swelled

of rocks with an audible thump, the world

Ein undeedly climbed down the last fight of the stars ther facepart as happly appled as their programming, several mons of

She found the ladder up into the farm and began climbing. It was biological right, and

high as she could until she was alread she swund herself onlogie dag wedging herself

She swung her lags back and forth, andrunk. She cackled There was something

Below Tory and Coral sat quietly on them monkey sland They did not touch, did not

Rinking hard, she looked away from the loke. The brighter stars were reflected there. A racht timeze hopied the water making ran sky They floated lightly on the surface

looked up into the stein face of a security guard You're drunk Ms ' he sed, "and you're endancering property

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She looked where he ported, at a young yam plant she had squashed when she sat down and began to lough Smoothly, protessonally the guad rolled up her sleeve, clemped a plastic bracelet around her wrist Time to guide the second s

By the time the guard had walked Ein up fair timices, who was nearly sober A steady incide of the blood wound through the becelet was returned to her body cleansed of stachts? A secret/goals waste of wine, in her domen

In another twenty steps the basealet fail of her wrist The guard snapped it needly from the ar and disappaient Daeper cheed in onher again. Bry, my Josef And since these was no hongs of sleep, sho kept on hudging up the binacce, back toward Hanse rithtwelter the conther behaviori of wine.

There was a small crowd seated about the rock that sorred Hars as a table, if by a crois of hologram-generated fary lights Father Landa was those and chinking have by "Tomonow I file my report she annauroad. The synch is pulling out of the withdreeing fundiro."

Hans sighed took a long swig of his own wine, writed at its faste. I guess that's it for the Star Maker project, huh?

Lands crossed her lingers "Pray God " Ein standing ust outside the orcle, stood slantly, litering

I don't ever went to hear that name again," a tech grumbled

You mustrit contuse God with what you've unit seen "Landis admonished

Hey, come on? Here said. She moved time backwards or screeting. I saw it my self. This place exploded—doesn't that prove screeting?

Lands grinned, reached cut to ruffle has tair. Sometimes I worry about you, Hans You have an awhilly small concept of Oad Several of the dimiser lauched

He blushed said "No, reply "

Well, III by to keep the— the feared toward rapped hat mug against the rock. "If the us regist, hey?—ereo it sampto We had analysis case up and down Confy description of the universe, and did you incom them was no page in it asymbolic for such things as many, hope fast? No we get an

CREDITS

WHAT HAPPENS NEXT IS UP TO YOU.

More you duck. Mayle you Maff, Mashe yui Jaye a gan and more bo you none. In this working finitions, the choice is yours. So he properted. We're gaing to chaffinge your singification, your ingensity your much as they've never been chaffenge before. Interacting mysteries, cornectes and adventures from the masters of the otherm left-one.



erves software in prolifiche for cost popular briese camp ders whereas to the are

THE FUTURE ACCORDING TO SCIENCE FICTION CINEMA

Art an each medig or at writer's usambul, each or, when, Silverberg, Bloch. J. Mr une mixes and frim makers (John Bedham, Nejolas Mayer, Stantey Kramer, John Sayles, J. explore af films from 1900 up to Orwelts 1988, With hundreds of fluctmeture, many in color, this book, for the movies it celeforates, its a chungh of revealation, 317/350 oversize appendeux, SSS 00 hordower.



amagem of substrates supraprograms and soft meteoreting physics. Now what makes God support to us is not just intelect—we've all known some damn clever bastands. And ifs not just power, or il could go and buy an atomic device on the black market and start my own release.

No, by definition God is my moral superner New Empart am but indifferently honest—but to Coral moral considerations dont even exist. Get if?

Only Elin noliceut the haunted, hopeless light in Landiss eyes or restand that she was sperming words effortisesly without conscieus control. Deep within, the woman was caught in a pivale crists of tath.

Yeah I guess. Hans scholched his head to shill like to know just what happened be ween her and Tory there at the end."

"I can answer that " a wetware tech said The others turned to foce her and she smiked the center of detector. What the hell, they plant the center blocks in us all tomorow—It is a probably my only chance to talk about if

"We reverse all the tapes, and found that the expend problem starrmod from to base design it we bootshows the bootshows these trought his ego along. The God state a very ago-freedering, he couldn't accept it i Ha mod webeld, deneed it make into others of homes Beckues to nocept it would mean owns as he is denth? "Sho passed

Now we don funderstand the why or how of what happened. But what was done to wary clearly recorded. Cotal came along and shopped wary his clenitly."

"Hogenal/" Landia was on her feet beligerent and unsteady. After all that heppened you can't say they don't have any identity! Look at the mass that Cont made to pin Tory to her—that wasn't the work of an unterlent, strettly-they crystaw."

"Our measurements showed no trace of identity at all," the tech said in a miffed tone Measurements? Well, and that sait scient

Vesselverenero vela sen ma (al contre a su al gent). The practic face was flabbed with churken anger. "Have any of welve chanses practic participation of the welve chanses (mach if have all participations) as an welve of chance in the participation of the welve of chances (within flags) well the "She atoposition (well well and the second "the chances were select, had all chann make them har."

"Scuse me," she muttered "Too much wrie" And sat

"Well." Hans cleared his throat quicked a smile. "Anybody for rehits?"

The stowd came back to inc. a interto bosterous, loo nasily determinedly cheer full Watching from the fonges outside the criste of light. Elin had a succeed dark famtosy, a welking nightmare

A dask tech glianzad har way, He had Tory's eyes. Whan he looked away Tary smiled out of anothere face. The damkers shifted realizesty, childrenng and targing, ike concers performining a party in some loftogen, and the eyes canced with here. They fitted from person to person materializing the. Daw

nowhere, now there is attacking whenever an individual changed to look her way.

Sha heard a quiet voice say. We were fated to be lovers

Go away go away go away, Elin thought funcusily and the haluoinstion osseed

After a moment spont company heread, En quarty suppod accord to what bands out. "I'm leaving in the morring," she said The new persons had taken, they would not remove her bacepaint until just before the lift up, but that was more formality. She was characted is seve

Lands looked up, and for an instart the woman's doubt and suffering were writ plan or her foor. Then the mask was back, and shadmad. Just sally away from opening tal religion. They like? They hugged briefly Yest eremities what I take you about stabbing your loss."

These was one final temptation to be faced Seting in the hut. Tory's terminal in har lap Elin let the soofhing green light of its alpha.

The screaming cled — the air was gone Eirr's cars rang funcusity, and her skin stung everywhere Pressure grew within her, and Ein realized that she was about to de 9

numerics wash over her. She thought of Tory, of his least body under hers in the pale blue certhlight. "We were meant to be lovers," hold said. She thought of Me without him

The terminal was theorik artifact Tory had foll behind that held any sense of his spirit. It had been his plaything his davy sinch his loabox, and its memory still held the Topan horse programs he had been working with when he was—hardprined.

One of those programs, she knew would make her a god

She stered up through the style the denied sky. Drift a few stars were waite bottern the black sincustrat leaves, and there writed of and crearin the small movements she made bottering. She through back to Cossis statement that Ein would score per her merging mo he unashed, autobic state that any Tarya medding hore spend her.

"God always keeps her promises." Tory said quelty

Ein started, locked down, and saw that the grass to the lise sole of the hut wise movng, foung Swith; it formed the familia, halfamused, half-embitiened reatures of her lower, certinung to flew unit all of the head and part of this tons rose up from the foor She was not half as startled as she would have lead to be. Of course the earlier manrestations of Tory had been real, not phentoris thrown up by her grief. They wine aimon ratio as she

Still, Elin rose to her feet apprehensively. What do you want from me?"

The loam-and-grass figure beckoned. "Come it is time you join us "

Tam not a program. "Ele whapered consusively She backed away from the thing." Toan make my own decisional "

She turned and plurged outside, into the fresh, cleaning right air. It braced her, cleaned her head, returned to her some measure of control

A targe of honeysuckle vinas on the next tensor wall up moved softly. Slowly, gently, hey became another maintestation, of Const this time, with biossome for the pupils of her overs. But she socke with Torv's vices.

You would not enjoy godhood," he said, "but the being you become wil."

Take me time to think? the cried She wheeled and strode rightly away, out of the residential cluster through a scattering of boukters, and into a dark meadow.

There was a guist kind of peace here and Ein wrapped it about her

She needed that peace, for she had to decide between his humanly and Tory it should have been an easy choice, but—the pain of being without!

Elin staved up at the earth it was a world full of pain. If she could reach out and shake all the human many losse it would food all of creation extinguishing the stars and posoning the space between.

There was it not control, then a kind of cold perspective in that in realizing that she was not alone, that she was merely another member of the commonality of pain. It was the hisritage of her race. And yet—somehow—people kept on pong.

If they could do if so could all a

Berne slight nose made the look book of the bouids tests Tory histowas apparting on each of the stones, every files kildfill different, to the log gard upon her with a discen expression of low. Un offer need a greater than your test' he obilit the version bouncary back and both botween low. No matter when you therk need by matter when you therk need by the board test.

En did not reply amrediately These was something in har hand-Tory's terminal. It was small and weighed haroly at all the had beought t slong without thinking.

A small, blask cry came from overhead than several others. Nighthowks were feeching on meets near the dome toof. They want foo fait, too fast, and too dark to be velicle from time.

"The price is too high," she said at last "Can you understand that? I world give up my humanity for you."

She helized the torminal in har hand, then throw it as fair and as hard as the could. She did not hear it fail

Elin furned and welked away Behind har, the rocks smiled knowingly CO



Human Spart by Sharing Turkle (Brivion and Schussel), as an attempt to look on the computer horogin the eyes of a humanic rather pay horogin and an associate publication paychologist and an associate publication (MT's programm in exemas, lactionizing and accepts) has safe publication in the second with the programmer in the second goal is to exeming in our water the computer with be liken in the future but who we will be liken the liken that of of percent last we becoment?

It is a tascnotring idea, using the obmutier as a mirror in which we may asso ourselving most issially table planges into the matter with energy and isnowledge. Untertunitiely, the tends to with like a secologisticity tablegat, and it often takes an effort of well to issee on reacting. The effort, though is seventied in the and

The Af Business Commercial Uses of Ar Mosil Intelligence: editectby Panck H Whi stor, and Karen A. Prenciengiast (The MT Press), is a much more practical and pragmatic book. The authors begin by stating

Some people believe at those resting gence is the most exciting scientific and commercial enterprise of the centary Cliners rase detress fags fearing eventual misues bit objects scott arguing that the lactinology will come to nothing.

To see which the basis and brighted expetits in the halo halo is one about it is Mr and the halo halo is one about it is Mr anthean intelligence. The halo halo is the intermediate the halo halo halo halo is more the term brokets or comparison in a concerned with the value and possibilities of isolating models or the another halo is as intelligent as human barries. — and mode to a halo intervent with the solate and the about the solate of the solated of isolating models in the solated brief. Becauting the halo is the solated of the solated

Nevers name that The Source in Sports, edited by Ence W Sohne and Willem II Alman (Scribner is in association with the Amarcan Association for the Advancement of Source), as dide/thild company and her physics, seredynamics, physiclegy and bechnicigy involved in sports as diverse as bowing and hang gloting, besideling the back terms and sole within

If you want to know what makes a knucklebal flutter, why a boomerang files back to re port of anger, or what makes Frabes do the threa they do the as your book

Any new book by Jeremy Bernstein is will worth reading, and Three Degrees Above Zaro: Bell Labs in the Information Apr Scatters of a neglective featuring study of the sound the neosatch half good on at one of the world's foremost industrial research laborations.

Biarrolain confesses that at first the thought of writing a book about this meanmoth netbuon dearreled him Bia chink in first day atthe Manay Hill. New Jensey taboratory complex. To dearred on me that the levy to write about Biar Lawa was. To beaut the subyort up into people to construct akind of moreae to them.

that when assembled, would make a otherent semple of the whole "

He successed admissibly Three Degrees Above Zero takes the needs on a laternal ing porney through time and ideas and lets us waters the memory of the transition the development of computers and submission the successing of our unersets organ and the wolk in supercivil organization from which the book development the

The Man Made Sun The Guest for Austern Power by T.A. Hepperhennie (UBB, Brain and Cempary and Dmn Hess), is a nervew of what some have described as the utili mafe energy source: "Purion is the dringly source of the sun and the stars and if we keen to hances in here on Earth writely lendless energy multiple out for all this.

Happenheimen an orthusable somthan auf wirter and is book with the works, inderstanding the book with the works, inderstanding and the integration of the source similar book was an enternative sum book to mee intromaw wilked statut the savature of the sum of the similar of our tigs were into a source of the sum of the similar book was an enternative with a statut the savature of the sum of the similar book to be portent moments and free local to it is encould have the integration of a mean partial manimum and free local to make appeals manimum and free local the independ counts the same similar

From maximute surfs to road data. The load Associaty by Right Hencetella and Micheel Methysis (Samtoniga Lanvesta) Princip a suppart and neich (Lattated and Lanvest of the data of humanikardik Lanvesta) data experiments and the works of our own robust experiments that works and an another appendix to be started support. The Mine Maromony stower how patients the Mine Maromony stower how patients and the and and our content particle substantial data works (many of the inverses a another formation.

Finally 1983 has some delights in store for leave Asmoy and Arthur C. Clarke fans

X Statids for Unknown by Isaac Asimov (Doubleday), is the latest of the good doc tor a collections of essays about science

Aamor explains: "Because of my belief hat he true delight is in the finding call stifter face in the knowing, my landericy in writing my science cassays is not to describe the knowledge hybry, withoughn twine deliveraut from science of all knowledge but to classifie that memor in which which is lower because known, have twis found do.

Artisti C. Claske has become a parchiel hopered in hero wouthy of diverywhete ease in the word. Ho Pockes of the Nutre Hold Pathetic and Window, regressive publeaded in 1982, as at all way and photoata all Pathotaky Issociating and the fact has an the name callen at it was all pathotaky Issociating and the fact homos memory that the land hose basis and the second strategies and the future, were when obvious inclains of capace was defined than to lead hose DO

HOME

weight their, even into a small library of impressions studies and devices and devices play an animated tack with the appropriate suppressor. Forward JIT issued and the masks may be appreciated a system that would work by providing these places there is a support of the support masks of the tank must take place the masks of the support of the support of the support of the interface and the later the support of the support support of the support of the support of the suppo

People activation at terms on computer and part the management of the second second and Computer and the second second second second computer and the second second

The Labor States of the the own accurry many states of the the own accurry many states of accurrent integration of research many states and accurrent integration of the many states and the states of the states of the many states and the states of the states of the states and the states of the state of the state accurrent integration of the states of the accurrent integration of the accurrent integratint of the accurrent integration of the accurr

One tranges now certain As the electrone cottage bacomes increasingly common poblicits will start appearing with present frequency. The question we face its Will we find bacous around these problems and make telescommung an important part of our future ways life?

Aller three years of selecommuting, Michied Jones has what he finition is a natilated perspective on fis lubars. We could have a nation of people chained to keytoards. He says Three's a chance this big builtees could abuse the electricity cothage.

But it gives you a greater degree of selfcontrol ' he adds. 'It's a morale booster that gets you away from the nine-to-five drudgory it's something that's going followe to be monthined very closely. 'DO

Buy Milton Bradley's Robotix from a toy store that won't treat vou like a machine.



FIRE AND ICE

Evaluation of the people whose stations were

Psychologist Donra Oliver who in 1977

ships with the oldest member called to

olimose of strace recents. Without the la-Moses we will have to wait a generation

Anyone heading for these cyclec colo rios-be they on Antarchica or Mars-faces

Rott now there is no place on Earth where

base weathermen explains. We obuiding

medical doctor who is most disturbed by The isotoene temp he says The X ran ion burst into fames, which quickly inchis-

Lowe my life to the U.S. Hero saws the Station a good doctor gave me several medication-too for my mas people for

The commander speaks in English

lingers grip the per with difficulty. "In your peaks. Then he writes in large latters, giv-

These are lears in the commander signets

phany of brotherhood and unity was tikiny

Due ment yone eithe is onezy DO

The 20 best games of the year



By Scot Moms and Phil Wawell

Eor this year's annual picks of the bost gamma of the year, we divide our chroces into two categories the two best gamma' games and the ten back videoloomyune games and the ten back videoloomyune games and the ten back videoloomyune games contact crotes not by preference Gave proper tend to be on the high side Show served for thom too

TEN BEST GENERAL GAMES

1 Conserve 1 (Conserver, 1122 Wett Butterik Bestreven Ultrahmer, CA 20150), 51750 pilos 5140 posting-10 Conside Bonghi an which physics move by Jand of shal Baloo the Conserver, and the Conserver, in which physics moves by Jand of shal Baloo the Conserver Data (Section 1), con the Section 2), addition 1, for control to Baloot 2, addition 1, addit 1, addition 1, addition 1, addition 1, addition 1,

The year, Bange has revised the gemp based by allow for two nine psicolin—a categots and a sage angine.—Not give now dimension to the geme The categoris adds single angine is all dimension, and the sage engine is an enformerly powerly peece that can be captured only to element.

Encreation professional activation of the composition of the second seco



Cimpitor much flabate. The solid revolution comes in programmable and homebulk version

In the simplest game, the dopter like compares a timoge why on mellion compares to timoge why on mellion compares to transfer any other than the compares to transfer any other than the timo simple where the timoge of the minimized mellion that the simple of the timoge of the simple where the minimized that simple that be an image of biological that the timoge of the minimized that the timoge of the minimized and the player player and the simple to the simple of the minimized and the player player and a chartering simple of partials and -when a minimized playment block player, and the simple of the playment block player and the second block block player and second bl

3. Net Post (Parker Brothess under Sätt). The Net Net is a clossisterity high quality and new additions have repeatedly suppress a sity being beint the me apacitati A loan-rubban lootbail or soccor bail that which break wrandow is and throng bail who would have repeated to patient autoversitivity and a close to bornering that request be have add bornering that request be have add bornering through the source the load close parts of the recent be have lattern even biblight.

Parker put a feldive covering on these pool balls so that they roll across a smooth surface with much the same "drag i as empoth balls do across a felt-overred surface. They bounce off electric task and into batry observ-and neit pockars (not pictured). Too soft to mar Marries best telek he balls are sell just hand encogh to produce a selectying clack when they shree new aether.

4.0 mmbol (form, about \$236). This is the top of the line of three navelly robots effauld by Yony the year. The yong are siblings are the Origbol (welfarg, resembling), direction changing) and the Wabbi (ymbol volce opticided with eight commonds in its memory, from "move freewed". We have fait in 0.0 million (set up.).

But Omnibute is the tops if thered is certain object you to send a transverse on a flat surface formatic loads, pixel kit, pixel and the sendence of the were your seads of your own certainads. Just send the were object to the send caused reaction is and of your own certainads. Just send to the day particular and send the sendence they provide the sendence of the sendence they provide the sendence of the sendence of your own certainads. Just send to the they provide the sendence of the sendence of your own certainads. The sendence of the they provide the sendence of the sendence they provide the sendence of the sendence of your own certain the sendence of the sendence occurs, because of the sendence of the sen

172 CMP

within the next seven days, even while you regone

Ormitot is more of a toy than a genuine helpmate, and its novelly may soon wear off but unit the next generation of home robots comes along, he is the best you can get it a compositive prices Unfortunately he doesn't do windows

B Persona Langua Davidal (Focus b) (Ber Magazon Discus Davida) (Focus b) in your house to prove the party out on in your house to prove the party out on the party of the party out on the Langua Davidal (Focus Davida) (Focus Davi

Throughout the season, you check the box scores to see how your players are performing. You keep four stats on your picture—ext: sweet, RIV-and rate both particle and particle and particle and particle and part toros—home true (RIV) and particle particle and particle in the appropriate table of the payers II your part 2 parts 1 your how of the payers II your part 2 parts 1 your how of the payers part 2 parts 1 your how of the payers were. Expert to dry our society 7 you involvements and and the payers part parts 1 the sampring. The other how many 1 you parts 2 pay on the payers and payers parts and the payers and payers and payers parts and the payers of the payers and payers

At the and of the season the letty is divided among the four top linishers 50 percent to the writer, 25 percent to second olace, and so on

The game gets its name from the New York media rant. La Robissione where it was test concerved. You can play it by buying the book and anteing up a tea to the invertions. In tearn, they'll give you then bleazings and will comple your state on their computer.

Set in Bronze Age Itemary-Europe," the contraction mail tee



Countrobolence from tap lin1 Trivial Studies Statz Cooperal + RoreCorect ico Nert Pool, and Rossone Lasgue Basetad The Sover Creats of Gate Adept and Dre-on-One Operation Whithend, King s Gassi, This Castles of Doctor Ones, Bould Poster, Rain West, Exodual



Advertised State of the second state of t

INTERVIEW

CEARING, LANCER MAL 40

His that Has a great leader in molecular balogy and has assembled a lot of very bright people to work on important problems Geen: You ve said that DNA, impored its

Measare (Larger score) which sign proceeds of sevence or the same many measurement of the sevence of the seve

Greek Tell us about some of your own receint work with DNA

Meaning We trad to dragge experiments this give rature to way cat. She had to tall whether DNA repleated consonatively or semiconsonatively, she had to let whether or not the ecommendator was by binaking and painting. All kinds of itnings could have gane wrong but that she that we had for

Note the carse of the restricted induction: these cars had coords foreign TOMA when it begins and had coords foreign TOMA when it these cars had coords foreign TOMA when it these cars had coords of so we could go who ways to do have exceed the coords these. But have been have it for a does not have been and the source of the does not have been and the source of the does not have been have been and all the place arrange for many becomes all sources and the source of the source of the source of the place arrange for many becomes all sources of many becomes and the source of the source of the source of the beam of the source of the source of the weeked to all source DAA the week bying be given as your does do and cardial at the given as your does do and cardial at the source of the beam of the source of the source of the source of the source of the beam of the source of the source of the source of the beam of the source of the

Okey well has DAA was been protected by becrearing hops, a Pail time 4 was Tought that the paincale phage needed energing to that being this DAA. However, the thing that beings DAA is actually coupled with the paint of the the theorem in the special actual the thy well actual the special the type. The theorem that data was obtained with the series of the theorem that data with the series the shoet data to actual their well the shoet data to which data actual the theorem whet data mention when the tabas markets (18 actual the AIV).

Onwy The late Datek de Solia Price said that

An experimental procession of the later in more than the second s

Nearest in the interface to the adjust to the second term of t

Omm. What is the future of DNA research and secombinant technology?

Macadean The time is coming when we will be able to many particulate the life processos themawas and guido car generatic destrusonance will able to be stelle for intervine in merral processes modifying models and water validable to be intervine in were validable to be intervine transmission will overtually technical mercal table to thema an excise that intervine table and thema and the total mercal table and thema and the total table and thema and the total table and mercal variable. Mean tamings probably tables and tables tables to the total tables total tables tables to tables to the total tables total tables tables tables to tables total tables tables tables to tables total tables t wouldn't dream of having 4 done, given their ents will say. "Tablih, our kids kust never go to that family get high marks every time." Sponmerchody will be shored it. It seems likely Ifoamos When it closs, there will be atlance about the difference between rich and poor?

of the expense of all charg? Mevelson: I mappine that over the long heur some groups will advocate that. And then we'l need humentanan principles-our best values to drei with it. Belogists should try cratic Dath. You allow the physician into your home to probe your body Given our ex-

treme valuerability we have extracted from

ten certain guarantees and standards of

behavior. The science of biology bears a re-

semblarica to modicing. It's the one science that indicalingade us, that has the potential to

change what it is to be a person, to alter inte

ballooy must be consecrated with human-

target objectives, or the world will be helleth

Qenni How did you begin studying be-

Meetingen II was a total accident. One day

Ormy: Do you worry that some members of

What is the essence of being human?

Meselson hos, lots. One of the main weapons we produced was Tularemia-sabbit teand it halls people. The mittary was also making a relatively nonisthal agent called Venezulari equine encophalitis. Youd some it if you wanted to meke people sick. We also

in 1953 a Harvard colleague who was on mettee asked ment would like to work at the Arms Control and Disamathent Apency | said yes, absolutely I wanted to see throas from the inside to see what the world was maily like They put me to work on European theater nuclear weapons. I knew absolutely nothing about nuclear weapons, and after trying ther a week. I realized I couldn't don't My boss suggested I work on chemical and belogical weapons, because the job was open. He raid that they used to have some-

Omoi Were we make a perm weapons in

Messiage. I figured that we had already

made a large eventment in rucieile waap

one which threaten to kill people over huge. areas and also physically week things. Germ

weapons can also ware out populations ova-

that he killed is most 1 took the job

Gener Don't cerm weapons have some de-

weapons lor?

of germ weapons was a point in their fevor To me thats the biquest aroument agained them. What if you were the Secretary of Detense, and a man came into your office with a propage for making hydrogen borntes that Would you want a world in which everyone could allord a hydrogen bomb? Sance we rouldn't do anything with get m weapons that we couldn't threaden to do with nuclear weapons. I recommended that we not have

Amendans by any method-including com-

them-what do you think we'd use nuclear



Owner Wheel is the pressent-day status of our Meselson They were dismanfied in 1970. after President Notan unlitterally decided to get ad of them. The laboratories where belogical warfare research had been clane were charged by presidential order into an international contention cancer research

Grever Did this country use genth weapong

Mennisotr No but we used a lot of chemical

weapons. We dropped eleven million pounds of teer gas and enough harborde to detolate twenty-lour thousand square kilometers. The public was told the lear data was used where there mand moved populations two instead of using explosives I believe that hannened roactly price in all other cases it was search used to other with autionate to LLS, etherword workson policy with about the bousand names and presented it to Pres-

deer Johnennis science adviser. The Presdent did nothing-topr gas was employed in Vistnam until we withdrew

Owner We did stop using herbroides in 1971. however, largely due to a report you produced after victima Vietnam

Meselson 1 was in Visitnam for securoris in casion for the Advancement of Science] committee on herbicide spraying I ways given a helicopter and pilot and allowed to go anywhere in South Vietnam

We tound that harbicides and defoliants made cleanings in the juncle, but the herbiraries took four to an weeks to make the lasses fail off. You might as well drop policards toling the enemy you'll be back next. menth for a closer look. As for prop destrucwere essentially owhere Apert from humanufarian masonal defoilants were ex-

Lasked the U.S. commander. General Abrens, what he moustr about hisbatiches mitary impact He said. I think they're worth tor?" He and "You don't understand. There's FROM THE

ESPIONAGE MAGAZINE From the Kremilin to the white Bouse -- and every

where in between -ESPIONAGE Magazine is bringing readers the best spy stories ever written. Writers like hoch, coulart, Harlove, Wellen, Asimov, and Gerson, as well as others, are bringing be cold war to the boiling point with gripping, true-tolife fiction.

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Geesi You also studied agent orange-

Meeslees the Welcon nacky opportable levels of down in the mill of mohest who levels and annot in the mill of mohest who share. Weile found down in fail. This east chickly athoutable to sorrying because the people athoutable to accurge the people athoutable to accurge the people athout and the sort of the of sock methes and sock babas but that anries also be athoutable.

Orms. Has agant orange caused the Anese of Itoursancis of Vietnam weterarcs?

Meession we add don't leven affords it is doned to learn the set of the set

Owne: How large are our stockpiles of chemical sessourc? And while are they?

Measias The actual arrows in classified but inclusions property synthemic that we have ensuing corrected weakpoints and actual US prefer experts are Reminimed VX They are entimely mailed to contain patient and US in the experts are Reminimed to the entimely and institution of the the through the year and institution and the entimes an anotypic of the experiment transmission. They cause a weak limit, and school during the vesion uncontrolled vorthing and vesion uncontrolled

I do not hank hat we should detern jidoopole at to han Command weapons are unqua. They're the only mean weapons against which you can know provide al aiddar webu company, and the should be all personal and the should be all the should be personal or and the should be all the personal and the should be all the common and the should be all the common and the should be all the common and the should be all the personal and the should be all the common and the should be all the personal and the should be all the personal and the should be all the common and the should be all the personal and the personal and the should be all the should be all the personal and the should be all the personal and the p

of every twenty shells we shoot is a chemical round. Any more and woite displacing more effective conventional weapons.

These arother expect Chemical wave on as the list outvine. I owhere don't how make or due to ut them on a the right level peak wave of the top of include the right level and wave of the right of include the top day, would be right of the of on those them it is warded get datalist. If the man dependent would be to get utured or normal become levels and used and the other of the other top levels are nuclear wer this cut to that by the same ded get datalist. The number ward or late complete surrender for the restener share complete surrender for the restenter werbuild get determinant of the sources.

Center How close are we to agreeing with the Sowets to do that?

Meession: The United States, own and the Imagen administration has also the ansets of salable data types to the or there was been administrated to the origin to the second states of the second stat

Gees Do you belove the United Sizes might be developing a brobgical weapon based on recombinism DNA?

Maselson That's pure bunk. Errow of noting in DNA research that's weapons criented And I have feelers in the field.

Deary Many people lear that some of the recombinant-DNA work could easily be apintend to backbackal-weapons research.

Massion: I see no incertive for a big power to make biological weepons. Quint the optrary And its not so assign to do scoredy in the process of developing tretring matrutacturing, storing, and maning, the odds of being caught at it are high.

Grees Do you know whether the Soviets and doing DNA-weapons research?

below the state of the state of

Great After aparticing readly twenty years in your capacity as a consultant to the government, how do you note the defense and intelligence work you've seen?



White Magic from the Black Forest

Burrple Miraze, Icy, clear pervisition: An exclosing 100 proof drink imported from Germany's Black Farest Boldly refreshing. Sharey Coal: A genume and world faile: Servager than Enterprove 100 PROOF: IMPORTED RICM CERMANNY: ENCOY IN MODERATION IMPORTED BY THE PADDINGSTON CONTRACTION, NEW YORK, N Y Meselson: I wile amazod at the missianworks of fact and lack of objective information. The things some of these people plan workfuget rasis your than

In 1989 for instance, the administration were logited as if at 6 monst shreen a were logited as if at 6 monst shreen a shreen logited as if at 6 monst shreen a shreen as the they had instable distribution of the structure in the case, yate in logited the rest in they were also give a side of given character with come in the Alamont with come and entry early were in the Alamont with come and entry early were in the Alamont with come and entry early were in the Alamont with come in the side of given the side of given the side of the side of the Alamont early were in the alamont of the side of the side

Then there was the 82 psychocches weapon E2 was nothing of LSD hat was maken in this Scelar. The Army channed out travanish of power of this strift. I basics of supposed to be an inspectializing nothing wappon. Dry target of this strift has been been channed and the strift has been been associated by productive behaviors. I hadron the field is could also many phase that manages and there is no beneficial by many and the strift has been hadron the field is could also many phase that manages adverse like to strift here and a strift here in the strift here and a strift here in the strift here and a strift here in the strift here and the strift here and the strift here and the strift here the strift here and the strift here there the strift here the strift he

A = 102 The branch discovered beyower $Q_{\rm eff}$ and Q_{\rm

Onver What's wrong with the system that it encourages such mistakes?

Meestaat "Me too" and yes se' are the enables of the right answer Now however political leaders samply are not seeking independent accentific advice. Where are the scientists to check, double- and triplese measurements. check/ Where is the open discussion? Once you've criticated the opverment, it seems, the whole beleasanady closes in and seals of it's othical to martise high dandards of anada leaness to compatent work, it priches of people's onegas. Too much secrety is a damper to the United States.

Green If you're so opposed to secrecy why have you kept much of what you could leil us chemhed and undecused?

Meadleon: I took an ooth. Its as simple as that II one doesn't expect the secrety at rangements of ones government with I doe this is these shade to leas socrecy then the while system would go be proces. You can I have individuals detacting on their own whill to declarely.

Deep: Do you feel you've been closed out of government codes because in typor opposition to many of the military is position? Mesebon: Fortuneitry if mis well-inven fly now that my verse gui access Eutyes—the no langer a consultant to any part of this administration. I coased being a consultant on these methers in the second year of the Besault administration.

Ocean You recently said you plan to use some of your MacAnthur money to search for lotal Greak classics. Why do you have such an external in support Greece?

Meeting Decoupt has an way strat the mean way strat the decoupt physical and the coupt physical physic

Creek Do you and particles between the difcent Greek Inteless and body is somethan? Meselecer: We do something animal. We quastion everything, We want to know what is stuff, the beats of human everythme it is an issue the body will come face to face with when it acquires the ability to all of the time man state. At the point we must have some uses of what we vake in burnarially.

Geen Your words are those of a humanet, yet you appear to be deeply facurated by war and weapons. Aren't you at prose-put poses with yoursel?

Mession his Thread's a unity here I are set and the destauction of childbatton as great heats, but the way to deal with them is to use our minds. Cuang the destrues will not make it become light, you have to understand what the light sources are. Then you cen build a light DD

GAMES

CONTRADING MASE 112

game allows fantasy rolo playing with an almost limitiess variety of characters

8. Shuttes (Shochard) Game, Inc. 300, 164, 500, 164,

Brucz Alvana, Carma 2702 Nerff McCa. Charlen A. 20525, 519 Bis postural. The Organization of the Control of the percent hest partners instants. Cont There percent is backgrammen instants. Cont There percent is backgrammen instants. Control of the deparatibly of the porces All the Hall your percent in the porces of the Hall your percent in the porce of the Hall your percent in the porce of the Hall your continues and the control of the Control of the demander of the Control of the Control of the demander of the Control hall she devert. The temps on other players and itemsial them.

10. Trivia (Avagio Hell 2328) It has been here spass an one weighted Trivial Privat an one of our beet genneer of the year, no this year where been given a web variety of trivia garase to choose horn. We looked at Timud Private, Batty Borrow and Share Screen editions trivia garases from Papley's Betree to Not. 7V Garance Regio Migrames. Time magazene loose Aerose and others too loration exercise.

There is a lost to writing these questions A pool one is interesting workin (you get 1 wavery. The "you! Phrased questions in our question of the second second second second second capity of the guestion in the you at a fload of these we load "happing Magazine and These all adaptation to solarit based and second second all adaptation of buildings," and "more transend agraphics of buildings," and "more transpositions are phrased and the second second

TEN BEST VIDEO/COMPUTER GAMES

 Aroben M Adapt (Discourse: Aria for Alan computera. Commodore 64: and Apple TH Adapt: acquait to the highly acclaimed Archon, is another splended combinition of metral and physical accian for one or two releves. The metanouser board counsets of





Now the magazine of the full to can be kept for the 1 June 3 tone your mouse of DNN in 0 new Outrien Sound Library Come mode of black shrundhad berher its bailt to all and it will keep 12 shoe immer contail in head into the shoe will be all the sound of the shoe will be all the sound of the twee to a gold therate the recording the shoe is the shoe.

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Allow 4-b weeks for theiwery

STATEMENT OF OWNERSHIP

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2. Bableway (Aam to Aam to Aaam to Aam to

Does not one to store the focus parented behaviors in which includes like sources to store which apply to increase the sources to store which apply to increase the sources to store which apply to increase the source and the source sources and the source must be and to store and the source to store and the sources and a source source and a source source to any to apply and the store and a source and a source to any to accord the source the s

3. Backet Date, Triet Stre Schwart, Errick Stre Schwart, Errick Stre Schwart, Errick Stre Schwart, Errick Stre Schwart, Schwart Aler, Control et Alge 1. Alers Schwart Alers on the Schwart Schwart Schwart Schwart, Schwart Sch

4. The Clastite of Doctor Onege (Brookband, for Commodore H) This campy game gales you 13 spoolsy cables to play in-each with a obtainer targoat of notes: — for a total orman tana 200 individual access Each is its own special puzzle. The norms connect in a venting lakywith of ladakas pMiferma, and water and access Each is on a venting lakywith of ladakas pMiferma. and doors, some of which require keys These Keys are difficult to reach, often guarted by electrical charges, trapploars tobol campina, wampina, marmina, and even transcession's monitor. Solong' a room means opening all the doors, which in turn means solving acquired tooms, and so on all live a conditional lactic surging

6 Except Uterve NI Cright Setema Is depending and the set of the set of the set of the set of the most set of the most most set of the set of the set of the set of the pending set of the set of the set of the set of the pending set of the set of th

6. The rescherise of cases to the Global pritocom for the point one comparents, 30 and the comparents of the second second

7. King a Galaxy Giram Christine to ENP PCD (Fog). Forge character is unspected in the best graphics/hast adverture on the year bemated addom to the genre to home the genre hingh ten amore, and he moved from scone of the scone with keyboard commonds of home to scone with keyboard commonds of home beautiful high-resolution scorem to infrance beautiful high-resolution scorem to infrance which there characters under each declaration.

Se Gaahamas chalkinge is to explore the medicival country sock, that stressme cheel an encharted mean and a magacal abaid, and return term to the larg. Mapmaking puzzles of Argel's Closet And a introlocida of chickens atolics holps because along the way one meets soncerner, comes timita, where, witches, a larg godmidter and all these of of abatch closes these twice are model. a. Operation Wherewhol (Brightstand, In-Commode & Brin Max computers) Board war games area among the most leduce to learn because the rules governing play are so numerative and complex. Compater ware form forthefort points beginner. Unlin row them forthefort points beginner. Unlin row war game that can be learned and played with name.

The battletict letterat—peer govern woods streams belofings node unit year inst observe the obs—a symphotoly depeter has command a battlenion of tartes, attilities y regnesis, rituiting and reconstation of the symphotol tartes and contraerry control of the tarte or advortage of all terms. And just to each tartes much contraerry controls of course the computer anary control of the table advortage of all terms. And just to each term much task mounter excellent battlengy and officient optimation of the symphotol of the observation. The symphotol of the observation of the symphotol of the observation of the symphotol of the observation. The symphotol of the observation of the symphotol of the observation of the symphotol of the observation.

3 Fair Werd (Stancpc Smatters): Ice, for Apple 11 Commonship et al. and Auto company. The Apple 11 Commonship et al. and Auto common the Mark and Auto common and the Apple 11 Commonship et al. 2018 (Smatter Apple 11) and Auto Commonship et al. 2018) and an and the Apple 11 Commonship et al. 2018 (Smatter Apple 11) and the Apple 11) and the Apple 11 Commonship et al. 2018 (Smatter Apple 11

In the Save Date of Galactic (Sectors Arts, for Alan computer, Commodum IV and Apple II) this is one of the boar, pames of exploration: computer, and deformacy you can find II alan has the borus of being edusational in that the territory you explore a all of North and South America. Most playens use an disk for hele.

Being west from Spänn in H40, loaded to the barment immer book, and I dong oppose, your at pays will evertually had a positive latering parties explain in second on more latering according to the second of the second second second second second second effect of positive contrast for investion. The latering device provide the second second second second second second second second particle of the second second second barrier positive devices and you will also percented new second the have block you can not a weat you will also generates not because the your will also generates not second sec

For their assistance in calling to our attention worthy pominees for this year's lats, we are indected to there. Defoven James Dation John DWenne Set Sackeen and Wayre Schmittberger DO

A Dutch of Class.

HOLLAND BEER A brewer's masterpiece from Holl



while lives was out crept around the spart ment shifting out dirty clothes. then plug great with delicate fabrics

The next addition to lune a heurehold was bled a medium size plestic octoous. Shorty's sore and lerminating in faste probatilitumed

Bhorty was soon tolkwed by Billy Bar asked in martinia

This pretty well took care of lying's greaa hot new development that Robotonomics the Mood Maker

carpenno and pluoped into an electrical outet. Mancia took charan of mana: lichting and perivent second. Within class she had acquired the necessary data on lives's emo citionous, crees of avaluatis, other trees d livers slightest move or gesture seemed to take on a hephiened sum/icence. It was like

When he came home from work his apart ways reactly when he wanted it. Sometimes it was one of Shorty's snacks, other times it Robotgnomics' latest addition to his house hold Frances the French Chef Alter derree. by magic as Mapde tuned in his levorite TV ment and would full him to sleep at right.

began to spend all has free time at home

Why surrounded by perfection should be chertwood him into the perfect urben re-

Manssa, now his existe came by one atternoon to discuss the discosal of some driver Billy Batterider produced the propert when precisely chilled and Magda ore-

Edmont its all quite perfect I suppose

Well I was wondering whose you are in

little uncertainly. But all of the is me

Robotanomics had orchestrated him into the perfect urban recluse Women and friends didn't seem to matter His apartment was magic, and you can't do better than that 9

Not if you like it, I gures. Marress and was dight understand her statuce and a while after she had left and decided if wiis nothing but peakuay. What could possibly be

dressed dropping his clothes on the floor. presently to pick them up. He fell aslesso on

twenty in the moming. Marssa must have he was wide awake, slert-and applehan celling, liebining to the silance tape. After a

The Kephen King, Rudy Valet, Billy Bar circle on the floor Lucy the Launchess shared perched on top of Mapda who cocupied the directe's other side. Sitting on the stove

Of course, François said "I told you to continue monitaring him.

No e's beiter this way " Buck West said.

race that was old before your planet was are dependence on matter whatspever The are race became disembodied intellithe galaxy bisend out on snighterment. Are

Of course "hys. and submind more by lators. But what are you doing dispused

deambodied enlichterment is the highest

coming targen type creatures again. Wild banks and taking it out apain, winning wars Investigation we were centric prefy decounaged. Mr. wes. Unit we found Earth

A wonderful place. Earth " Rudy Vale! raid. Here was a planet with serviced billion mserable because they had to do things they didn't want to do 11 looked made to or

So we got into telepathic contact with Battery and a try others. The Kitchen King protect esperty. Under pur deschon, they set of technicans to construct our robot bodhis

I find it a little difficult to believe said two, that you've done to all the kouble in

That "Lucy said," is because you are not

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Amprovel & Disgoset is a required theorem of ESR the AD 1964 TOR Pop Hill dama Response Neybe not. Twee said "But if you shares really want to help why don't you give us a simple cure for concer or teach us how to run our pars on water, or something washall like that?"

"Recple would only resert it "Rudy said And anytow, withe not interested Scrubbreg sinks and cleaning the cleapes—that's what we like, and that's what people wort does to frem."

What happens," lives asked "if people find they really don't want you around, no mitter how useful you are?"

Than we laave "Ruch said "We don't stay whote we no not wanted. If you want to get nd of up, all you have to do is say the word "Trans with televice" have out

Well now you know, the Kitchen King sed. But I see that if a simplify he in the maning. You must be tred. Mr higs."

" could use some more sleep." Wes said "But who are they?" He inclused the two unlamiter tobots arting on the stove. "This are is Charle Chat" Audy read. "He's

This one is Charle Chef." Rudy said. "He's just moved in with the Barlows in 12C. The other is Betty Babyster who has recently taken up residence with a family down the block. They laid outring by far a will."

You'l be seeing many more of us scont/ the Kitchen King said. "It's amazing how many humans want things done for them Good right Mr levs."

A few mmungs little term was back in this best washing the programmed shadows move dowly across the certing. Mapdo the Mood Malver was playing extreming colared metodoc to at also cologin and macoline—the sociofmusic Chirt Eastwoodmight have dopt by New was benet of his cavit movies the master of his cavit few dhat the alters had prought was mastered without

Only one thing bothesed him now land it was used a detail. Why did Robotypromos produce only single purpose machines? It could have morthing to do with what Bandley had called besign philosophy since the company washt producing real indoct at but retries nobub bodies to alive such all retries nobub bodies to alive such

Then he had in The Kitchen King had told him these was a whole roug of bodiess elses, out free millions of hern meyse billings, all waining to their chance to save somebody on Earth By keeping the rought tooles some gie purpose, they write providing them solvies with the machinem number of jobs. With five or len alient servicits per human their balance them billion.

Note had a suddon' woon of Earth turce into a vot zoo handool coges there were house and partments. They was find out individual and the sum of the subscription of the second content, cared to by here it the sides perpension and sugfather warm donted a lot and amused. The alters were obtained and and amused. The alters were obtained and and amused the site of the second and below the second below the second and the strandom to a would be there were to bottly the site of the second below were to bottly the site.

Secure in their centently lives fell at last into a deep and refreshing sleep DO

shapping mole corpse the country And we word they you monstrously KAAY BE Future etiquette Requesting the honor of your telepresence

COMPETITION

By Scot Morris

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 Criss's fifteth-balticity both Pick an event and presiding what to wear say or do or what not to wear say or do. See servicing. Invitation to a space weaking 'Request ing the honce of your telepriseance • What not to say at a science factor writers convector 'I'm media to act in

 What not to say at a larvar eclipse. Why don't they schedule these hings in the daytine so the ads can writh?

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 What not to say at a nuclear power plant memory 18 if soup v87?

 What not to say at a Heley s Comst watch In pales in comparison to David Wolper's closing operations at the Olympics - What to say when a nobe to propositionts you. Not tonght, five got an of koli The prose. The grand procevence water will soorwe a follows one week cruste for soorwe a follows one week cruste for

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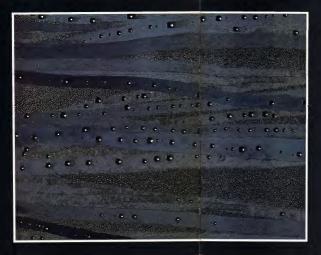
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NORD

By James Gorman

The latest thriking on ear shape is that it's sortiething of a crapshoo whether you'll get a baby with most, life ones or ones that look life Durnbo's? Songai were the Kill who rever pit a clience small, Mr. Witter the Frobe statistical Event of accessed to oppare the molecular op hard present to oppare the molecular or colored sugar solver, but he does have an exploration for moury evenything olde

her Mr. Science

bank my wild's bitter has continental drift. He mind wanders, and he call'thatchis water. What should we drift.

Dear Quaken

Give him a bridges, and sheck his places trat dollar't help write to Mr. Health, His column runs on Wodnesdays.

Deve Mr. Science

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As for the rest, you here generated intern them, too, This leave their orgonic enstrope is that it's polycomic which means it's appreciating of a comparison which we are generated with the ones of one of the took. The Diversol's

Good tack, You re-grang to need a

Deer Mr. Snience

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Dear To

Front eight for your and to get a Tragement. Although these units — Lists the Englishtipe dor. The lists of the Garek assess for-Trand) — makes the loads. Et a struky a load more starting upp to do Scorreiching with words. Why the called the insetti Trave rounder, that mayba you non carlott us when the gets one of These traps

Dear Mr. Solance

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Deer Mr. Science

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-Chorasod (Formarly "Slave in Eyes"

Dear Chinasak

Im serve (was ween), it's sphard to keep up with these two that plants. I got wet of elters carectering mo-modely have backy shops Usit's set the scored enrolph Cosmoly the back the coemer comman cents study the face.

Dear Mr. Science

Are brain transplants use labelable yea? Cate I get care that dropady knows French? It would be prime meet my language require mem for Transplants.

-Ridocts'a Brant

Jost Neers:

You young policite three science is the answer to everything hust knew the would happen once they pocket executors atment.

The prover is, not well deven transplants are still in the wester think is upon and operates are tad yet over whether friends gets templetide along with brain tisses. Secondry, for everythic does not it seems to be however, for everythic does not it seems

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