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To Serve The Masters

by

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I

I could not have written this record six months ago. Our descendants will need it to explain both the new and evolving species of this planet, Ed, as well as the tremendous dispersion of human and alien life forms to be found throughout such a wide volume of the cosmos.

I am not a Grammer, yet I am telling this story. I am not History, yet I will make and form meaning as the Histories do.

I am a Genetic. And this means that I was bred to be genius in the specialized field of basic life components.

Where the Grammers are genius at communications and the Histories are genius at putting together the important parts of the past, I can put together the molecules required to build nearly any life variant which might be desired by our Masters.

Except for events ordered and unforeseen by our beloved Masters, I would be genetically incapable of telling this history!

In the dim past, beyond the normal scrutiny of the Histories, the Master race somehow became party to the engineering of space travel. The Histories say that the Masters could not have developed space engineering themselves. Perhaps some other life-form, common or alien to their world of origin unavoidably gave the Master race this tool for deep space travel. Subsequently for countless thousands of years the Masters spread throughout the stars, absorbing all usable life-forms into their system of beneficent vassalage. Now -- and perhaps for always -- the Masters feel that all of space and all of life is their proper domain and servant, respectively.

To a Genetic like myself there is no mystery as to how and why the Master could dominate any life-form. Each Master has a thin but tough integument covered by minute specialized organelles spaced in a latticelike network. These molecular groupings are spaced in a linked receiving and sending sensory-system network capable of one peculiar activity. The network can perceive (or sense) the *basic purpose* of any living entity. I don't mean that the Masters are mind readers, or that they can "tune in" on an individual life-form and know what that individual is going to do the next instant. Their sensing apparatus is far cruder than that. But, in a way, the end results are just as spectacular as if they could read minds. Masters *know* beyond any reasonable doubt exactly what each individual life is potentially capable of doing. Any life group, or individual life-form, which the Master "reads" as having the *potential of killing* the Master simply orders their life's termination. Histories tell that even yet, at the borders of the Masters' domain, entities are discovered and killed by the trillions.

In rare instances, the Masters will select a relatively undifferentiated race such as our human race and pass selected members before a group of Selectors. Each individual is screened for potential harm to the Master race. If the potential is low, that individual is retained under strict security guard to be used as a Breeder. In turn, his or her offspring are reviewed by the Selectors. This process continues for many generations until a perfectly satisfactory human has been genetically produced, one that is absolutely incapable of harming any of the Masters.

Since direct sensory knowledge of the genetic purpose of each individual is always known to the Master race I would not include intelligence as one of their dominant traits. Highest on the list would be that of survival. Domesticated races of many kinds accomplish *all* of the Master's work -- their thinking, their exploration, their fighting, their invention, their every mode of living. The Master's only work consists of

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screening races or individual members of races and the giving of orders for benefit of all. Their loyal servants do all else.

We domesticates are incapable of even the thought of disloyalty. Would a meat animal, bred for 100 generations for the traits of docility and tender meat, connive and scheme toward the day of freedom? Perhaps one of its early ancestors might have sought freedom. But its "freedom" genes have long been eliminated from his progeny. So it was with each of us, no matter the star of our origin. We are incapable of disloyal thoughts or actions toward our Masters. We are capable sometimes unusually so, in the field of work for which we were bred.

I am bred for and trained to be genius Gentic!

II

My first memory is at age two. I looked around the bright orange cubicle containing the usual assortment of human training toys when my sight caught and clung to the three-dimensional chromosomal model. I remember thinking that the energy form containing fifteen energy levels was placed in the wrong model. I screamed because I wanted to change its position.

It wasn't a question of symmetry. It was more a discernment of "rightness" and my subjective need to restore something which was clearly not of nature. The Mothers, who are usually very good about changing infant's wet pants and tending to other normal biological needs, were just not capable of satisfying my difficulty on that day. The Mothers had their own specialty and could not have dreamed that moving a phosphorus atom on a three dimensional model would stop a two-year-old from screaming. I shall never forget the day.

It was my unhappiest!

Soon afterwards the Teachers entered my life. Among the many things I learned were facts about my own life. I was 205th screened generation. I was the penultimate of many important human lines bred to be a key research and development scientist in Genetics.

Since research in genetics required knowledge of all of the sciences, I was rigidly instructed in every field. But the penalty of being bred with such exceptional talents as mine were the same as the penalties intrinsic to all of the Masters' vassals. Since I was not bred to be Grammer, I became confused, illogical and poor of memory whenever I tried to discuss any subject other than my own. Conversely, any subject bordering or merely symbolized within my field of embedded competence provided a tapestry against which my brilliance could weave endless diagrams of beauty. For that is what I was bred to be -- genetic genius for the research and development of other domesticates for the Masters.

My teachers, too, were the experts they had been bred to be. They started my learning at once, and I could not now identify a time and place when my inevitable training had begun. Learning was a full time activity. I had no way at all of knowing whether my regime was hard or easy or even different from any other training, for mine was designed solely for me, and I was the only pupil within that program.

I'll not forget the day when Teacher of Biologies had programmed the multi-hologrammed learning computer for genetics of an especially advanced nature. All known facts about genetics and all of their logical relationships were contained in the computer, and I was asked to simulate experiments by means of symbolic processes which the computer then compared back against its own storehouse of knowledge. If I were wrong in my presentation, the computer was to explain my error. If I was right, the computer was to determine and compose all of the important ramifications of the simulated experiment and then reward me by presenting a realistic, but simulated, model of my successful experiment in three-dimensional, color hologram that often could fill up my large, cavernous room.

I had always been curious about the structure of organelles which could provide an apparatus capable of sensing the structure and function of other organelles. When I set up my symbolic experiment the logical extrapolation which was presented in full color was, surprisingly, a representation of the Master race!



The experiment "halt" signal came on, and the computer carefully explained to me that the experiment was incapable of being performed due to my logical inconsistencies. From that day forward, I knew that the logical construct of heredity was faulty, admitting to conflicting conclusions. I also understood that I had perhaps accidentally discovered the one fundamental difference between the Master race and other species!

Generally my education proceeded rather well, but not significantly different from that of other inborn professions. Factual knowledge was easy to absorb by reason of my birthright and because of the chemical and mechanical aids to learning.

I was free to explore any subject matter, of course, but when I had need of communication across fields, I depended upon the Grammers. They couldn't perform well, but they could communicate very well.

Later, during advanced training, which began on my day of discharge from the Teacher's cubicles, I learned further important facts about our Masters.

III

My world had consisted chiefly of sleeping, eating and learning.

Learning had consisted of guidance by teachers and manipulation of the computer. What facts I knew of the outside world were but second-hand, or at best, symbolic, through the computer. Exposure to the outside world was optional during Advanced Training, especially for all specialists, such as scientists and engineers. If, for example, one were trained to study crystal-forming, there might be no theoretical reason for the person to travel outside of his cubicle, as the laws were so well codified that the computer could simulate all. If, however, problems of cosmology, there might be a need to visit other planets, solar systems or wherever one pleased, as not all laws had yet been codified. In either case, however, it was optioned by the student, not by the Masters, for we were all complete and loyal subjects to the Masters.

I elected to continue my advanced study through travel, as I desired to experience at first hand the result of changing ecologies, to deduce at first hand the effect of starlight, gravity, chemicals and radiation on composite and simple gene structures. I also admit to wanting to satisfy my increasing curiosity which seemed to grow as I matured through ten years of age.

Under the guidance of Teachers, with the aid of Grammers, Travel Planner specialists laid out my five-year itinerary. I was to visit at least fourteen stars of class G, M, O and A, with twenty-seven different planets to sample.

My allotted ship was five hours distant, and I closed my door of the Growth cubicle with a great sense of relief, setting the ground transporter's controls for my destination, and also anti-polarizing the glass so that I could view the passing scenery, though miles of cubelike structures were not impressive sensory stimuli compared the flexibility and esthetic range of my training facilities.

I was maturing, and glad to be alive.

On arrival at the huge spaceport, I grabbed and clutched at my very small bag containing personal belongings: a three-dimensional yellow star representing my badge of genetic servitude to the Masters and which was given to me by the head Teacher when I successfully predicted the proper genetic structure of 2000 biological organisms from a standard list of characteristics; a portable multisensory, multipurpose computer presented to me on my entrance to Advanced Training, and a nearly indestructible micro-miniturized storage unit containing the basic physical characteristics of every life form above level six that I could expect to meet anywhere within a broad locus surrounding my trip.

I jumped from the track car and ran excitedly to the spaceport door, where was the same, even, serene environment that I'd experienced throughout my short life-time.

Several humans were standing nearby, some with blue tags, some with green, identifying their purpose in life. Blue was a Personal Attendant to a Master. Green was a Master Carrier. I knew from the colors that a Master was nearby, and so I strained my neck to peer into every corner, hoping to see one, but I had no such luck that day.



Disappointed, I began the long walk around the paneled pathway in search of a Grammer, holding my yellow star proudly so that all would know that I was Genetic. I passed many sliding doors before I came to the rainbow color of the Grammer, where I walked in without hesitation. The Grammer, of course, was located by me right where he should have been, waiting to assist those, like myself, in need.

He must have been 120 years old, yet his keen eyes followed his longish nose directly to my yellow star and down again to his desk where, with an affirmative nod, he'd checked a travel listing.

"I don't have a Guider available to show you the remainder of your way to your ship," he said, "but I can draw you a map in genetic code which will be easy for you to follow. Is that all right?"

Right away my throat muscles tightened as they always did when I attempted to convey ideas beyond my specialty. My mind raced through at least 3000 permutations of the DNA molecule, but I still could not find a key which could be used to communicate the idea of "yes." My tongue dried; my hands sweated. The harder I tried, the tighter my teeth pushed at one another. I strained and tortured with random thinking, to no avail.

Finally, noting my difficulty -- and possibly expecting it -- the Grammer spoke again, saying, "If you approve, give me the number of regular solids which can be used to fill all of space without overlap and without leaving a hole of any size. If you do not approve, tell me the number of heavy-atom isotopes required to guild the sprassy acid molecule."

Instantly, mentally clarified, I conceived of the Platonian solids, and I was in control of me again! "Five," I said.

In spite of the fact that I knew that the Grammer had memorized key statements of be used in this manner, so that he could communicate with specialists like me, and that he didn't have the vaguest idea what he was talking about, I was relieved, for he was a person with obvious empathy.

Yet I also felt superior to him on this one point. For nearly 8000 years, since the time of Pythagoras around 500 B.C., man has known of the five regular polyhedrons.

The Grammer nodded his head again and proceeded to sketch out symbols on a piece of plastic. I watched and saw a swift-forming diagram of an unknown -- at least to me -- molecule of very little complexity. The hydrogen atom occurred only once. Interlocking energy bonds were used to depict hallways and branches. The normal energy nucleus was depicted in three dimensions. It had been so long since I had used only three dimensions in depicting molecules that I felt somewhat lost until suddenly I recognized that the hydrogen atom was my goal and the nitrogen atom which was depicted as being in a single state of excitement was our present location. I could follow this map!

I reached almost instinctively for my computer. It was foolish, but I had to know if the old Grammer's genetic roadmap was a permissible molecule within the energy ranges permitted for life. I found, not too surprisingly, that the probability of such a molecule existing at all was about equal to the probability of ordinary drinking water being generated in the interior of a G type star, by the container full, in the container itself! Still, I had had to know.

I was soon faced with the prospect of staring at bare walls throughout the whole trip, as my cubicle was bare of any forms of stimulating features or instruments. I could develop my own interesting problems as means of intellectual pleasure, or I could spend my leisure time reviewing the features of life-forms stored in my portable memory unit. I suspect that the number of life forms recorded in considerable detail amounted to about 5×10^6 , which promised to keep me amused for a while. The cross-indexing features were perhaps another order of magnitude, or so, larger.

I randomly requested any form of life that might be found in the constellation of Canes Venatici. The planet to which I was assigned in this region of space was known as Stian of a star called Etry. My randomly selected planet from the same constellation was called Vanatta of the star Uni. The unit did not contain source history of the names, but the life forms were quite interesting in themselves.



Vanatta life seemed to be predicated upon the replicative principle that "life comes in threes." For some reason yet to be discovered, each genetic pattern replicated itself three times. The consequences were not entirely predictable. In certain instances, where the life level was equivalent to one-celled life on our planet -- life level twenty -- a kind of amorphous "soup" was described. Whereas, for level six and our equivalent of mammals, life replicated in "threes" in a very odd way. There were six life forms superficially similar and which seemed to produce a set of mammal-like forms numbering twenty-seven different shapes, sizes and varieties. Yet -- and this was the real oddity -- any combination of three mammals -- the "original" six or the total twenty-seven superficially distinct -- could interbreed and produce, at random it would seem, any one of the other twenty-seven or "original" similar six.

Whenever the life form was removed from influence of its sun, it expired. Evidently the relationship with their sun's energy was critical; yet nothing about the sun's output had yet been identified as being unique.

I was about to request specific information on the composition of the sun, the planet's atmosphere, density, radiation distribution and chemical distribution when a spidery-like Antarean poked its leathery head in my doorway.

Bred for space, Antareans were the Masters' space servants. The Antarean generally knew everything there was to know about space travel and its problems. Some Histories seemed to think that they were the original discoverers of contiguous space-time such a marvelous discovery having led to their absorption into the symbiote pool for the benefit of Masters.

As with all of Master's ships, we were outfitted with several forms of propulsion system. Some forms took advantage of the "equal and opposite reaction." Other forms were concerned with travel in special spaces. Polarity, gravity and mass situations, each had their own special tool of propulsion. For star travel, however, the Antarean established one-to-one correspondence with a contained energy system which mirrored the stress and strains of space. By some sort of multi-leveled logic, beyond my genetics to understand, they created themselves -- that is, the ship -- in several places at the same time. Symbolically it was something like, "If I am not there₁, there₂, there₄, . . . there_n" By making n large enough and tying each "there_n" to the mirrored energy system, the ship was certain to be at the location desired as well as many other places. Then, by applying a limited contrapositive to the animated hypothesis, one arrived where one wished to be. That is, "If I am not there₁, there₂, there₄, . . . , there_n, then I am there₃."

The Antarean beckoned for me to come. I left my baggage, except for my gold star, and followed, The Antarean proceeded me into the lounge, where I was surprised to see a large number of humans. I also recognized the Master Carrier and the Personal Attendant, the same I'd seen at the spaceport entrance. Then I received an enormous shock by delightful surprise, the greatest in my ten-year-old span!

There, with all orifices dangling toward the feed pan was a live Master!

Immediately upon our entering the Master's "scanning" began. I sensed with every cell of my beingness an aliveness beyond description. It was as though each cell of me was resonating at the same frequency, and as though I'd become more than just me. I *knew* my basic purpose in life. I *knew* I was Genetic. Without the study of life and its endless permutations, I *knew* that life would become meaningless. I also *knew* without equivocation that Master was *Master*, and I but a small, meek, propitiatory servant to the desires -- any desires -- of the Master. I *knew* that life could not be tolerated in any other way!

The Master's scanning was continuous on each person or life form in the room. Yet I was soon able to separate in my mind, me from the Master.

The Master beckoned to me with one of its beautiful, odorous and long tentacles. With extreme joy I complied, walking directly toward the Master. When the Master bid me to halt, I did so with extreme joy. I'm sure that had the Master beckoned me to jump into open space, I'd have complied with equal joy.

No form of mind control was involved. I, as well as every other being in the known volume of space



occupied by the Master race, was a product of prior genetic screening. In my case, I was the product of 205 screenings. Life just could *not* be thought of any other way, than with extreme joy, to do whatever Masters bid.

IV

Although Grammers were present, Masters had no need for their services, since they were the only untrained life form which could converse equally well with all other life forms. We sensed or felt desires and impulses which at first experience we tended to identify with our own personalities. Very soon, however, we were all of us able to separate out the "me" from the Master's messages.

"You are young for an advanced Genetic," the Master communicated to me.

Its eye band, a solid circular width of light-sensitive tissue capping off the periphery of its ventral side, changed to deep green.

I made no reply, as the Master had not requested that I speak. I would not have known the social amenities in any case.

"I selected your ancestors of the 97th screening. The male and female whose protoplasm I caused to be joined were each responsible for great services to us. The female discovered biological means for increasing the diversion of genes in those egg and sperm combinations which were to be subject to later screening and which increased the probability of selecting a desirable set of traits earlier in the screening process. The male had extremely good memory. But the male also had one recessive gene which was contraindicated for our purpose."

The Master spoke matter-of-factly, and I followed the Master's remarks with great interest, for it not only blended in with my world of genetics, but it was the very first bit of knowledge I had regarding the forebearers from which I was selected.

"That male," the Master continued just as stolidly, "was responsible for codifying the rules of genetics in such a way that a computer could be programmed to contain the intrinsic structure of all of this science."

The Master paused long enough to instruct the Carrier to lower it slightly, so that its sucking orifice could better reach the nutrients in its food pan.

Then, continuing, the Master said, "You used the end product of his research during most of your training cycle whenever you placed a species' pertinent characteristics into your computer and the computer extrapolated, by purely logical means, the implications of your factors, producing therefrom a simulated life model."

I was reminded of the time when I discovered, by means of this very process, the basic construction common to all Masters, and the genetic features which enabled them to dominate all other life forms. I began to shake with a hidden fear that my precious and somewhat accidental success would be misconstrued by the Master. Either the Master did not receive my memories, or chose to ignore it, as it reached for its food pan and finished sucking after waving it to a slightly higher level.

Now, facing me direct again, it said, "The male had to be killed, of course. The recessive genes contained elements of independence which could not be trustworthy under all conditions. I'm sure that successive generations have eliminated the undesirable traits."

As the Carrier moved forward with the Master, I was urged to follow behind. It beckoned me to a chair by a simple table, and, for the first time, it addressed its Personal Attendant.

"Get this male food of his kind. Also see that he has access to all parts of this ship. His mission is valuable to us. He must learn and grow so that he can better serve us. His type needs freedom and much stimuli to mature in the direction we have chosen for him."

The Master turned to all with his final statement, saying, "Let no one hinder his learning!"

My eyes must have glowed much like the Master's own eye band. Although I was a genius Genetic, I had



not really expected any kind of special treatment. And here, at age ten, I actually experienced being addressed by a live Master and had also been told that my "mission is valuable to the Masters." While it is true that all life survives only because of value to Masters, *my mission was* especially valuable!

This glorious moment was my first strong feeling that wanted to communicate to others outside of my specialty. But failing this, I mentally crosslinked about 15,000 variants of the DNA molecule, taking their naturally occurring spiral form and stretching it by means of imaginary polarity at several intermediate points along each longitudinal axis, involuting the "strings" of contact and extrapolating to 27,000 places each of my mentally mocked-up mutative effects on the final life forms.

The Master watched and sensed me with, I suppose, a contentment that only a Master can know for having achieved a successful culmination of long, successive screenings.

The Master was to travel only as far as one of the planets of Etry star, during which time I bent to my study of life forms found in my computer memory. Overall I was greatly contented, fulfilling my life's basic purpose.

We spent a day or so at several planets where I enjoyed actually meeting different life forms, although none exhibited great complexity, as they were all logical outcomes. Perhaps, I thought, my learning rate will not be very much expedited by this trip into "reality," that last a term I'd invented. Meanwhile the Antareans had prepared us for our contiguous move to Stian.

The key to application of contiguous space travel resides in how well the energy ball duplicates the dominant sources of energy points in space. Occasionally there is imperfection of the mirrored universe, and even unpredictable changes in the universe itself may cause the ship to arrive at some place totally unselected by anyone. The incidence of such an occurrence is extremely tiny, but for us, this day, it happened.

The Master's eye band turned bright pink.

The Antareans scurried about in profound study, with equally profound concern.

I was aloof from the bustle, because any space which contained a Master was my home.

The Antareans used several different ones of the propulsion systems, to carry us to a planet which seemed adequately situated to support our kind of life forms, although it was mostly smelly swamp.

They guided us to the top of a small rising where the Master, surrounded almost entirely by Protectors with their full panoply of weapons, was guided to the edges of the swampy water.

Histories tell that this race of Protectors had the most formidable and progressively long period of battle for survival of any species on record. One look at their nearly robot-like behavior, coupled with their nearly mechanistic weapons of offense or defense, would support this view. They are the chief race used for protection by the Masters, and probably rightfully so.

As the Master intently studied the swamp, it soon became clear that the Master was screening every possible life form to determine if genes potentially dangerous to Masters were present. Its first defensive task would be to find life forms of level four or higher, which is the beginning level for directed acts of non-survival to Masters as a species. As I had been directed to be present during this screening, the Master turned to me and resonated, "Go to the chief Antarean and request all pertinent data now known of this planet and its environment. Have all the data made available to you, and thereafter you must deduce for me the probability of level four life and its most probable whereabouts."

The Antareans were thorough, having all of the requested information catalogued and easily available for my human sensors. I'd already surmised the broad features of the probable path to life on this planet, but I was glad to get the detailed data packaged with such precision.

I set up the proper coding on my symbiotic computer and between us we easily resolved the most likely



patterns, which I carried to the Master, and for the first time spoke to it, saying, "There are two and only two most probable sequences derivable from the gross data surrounding us. Level four life must exist in air or in the water. Since the Antareans have successfully surveyed the whole planet prior to setdown, only the later possibility remains probable.

My analysis had surely been evident to the Master from the very beginning, and so I continued with, "In the past 250,000 years, homeostatic balances have been tending toward exposing more soils and less water. However the rate of change has caused the waters to absorb a greater than usual amount of organic materials. These, in turn, have caused most all of the water to be muddied throughout the planet. If level four beings are to exist, they would not yet have adapted to their environment of little light, which is the ultimate source for all major life forms. They would, therefore, exist wherever the water is the clearest. Presumably along the edges of underwater currents.

"Furthermore," I continued, "they will unquestionably have some means of making light -- probably through utilization and domestication of underseas luminescent creatures. If the Antareans can make the proper chemical or infrared survey of large areas, distinguishing between that of the planet as distinct from unusual statistical anomalies -- inhomogeneities of light sources -- we will most probably find them at these anomalous clusters, if they exist at all."

The Antareans did locate several hundred sources of unusual light activity along the edges of underwater currents.

More importantly, for the first time in my life I had been useful to a master! My eyes danced, my steps were lighter, and I now knew what the concept 'pleasure of living' implied.

Ours was not a contact vessel so our mechanical probes were rather ineffective in searching out the new life form. After many unsuccessful trials the Master sent several Protectors down into the murky water in jury-rigged pressure suits. However, even the Protectors were eluded. Evidently only the Master, with its special sensors, could "feel" alien presence.

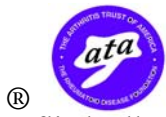
The Master decided to descend with the Protectors, and while I don't know what happened down below, neither does any one else who remained on the surface. The surviving Protector knows, but he cannot tell us. After what seemed a long time period waiting anxiously at the water's surface, an enormous geyser shot high upward. This violent font could only have come from a Protector's weapon, and geysers continued for a very long time. Then, suddenly, the water's surface as far as eye could see turned inky black. All plant life at the water's surface turned black and shrivled on contact with whatever was rising upward. It was similar to spraying acid on the leaf of a plant, and just as disastrous.

The burned, blackened area grew in size, and near the center of the black, a Protector, holding onto the small underseas vehicle of the Master, pushed to the surface in great haste. The outer suit of the Protector was charred and also blackened.

A blackened, small feeding orifice dropped from a pitted hole in the Master's vessel.

We were all grateful that the Master's life was spared. It stayed in a state of extreme terror for nearly forty-five days, as we orbited around the swampy planet waiting for rational directives. The Master would go nowhere within the ship without a covey of Protectors surrounding it during that fearful state.

At last the Master called in the chief Antarean and directly asked the best way to return to our portion of the universe. The Antarean's answer, as though prepared in advance, was immediate. It seems that any space-exploring vehicle faces a similar problem to ours in greater or lesser detail whenever it ventures into new, unexplored space. The Antarean described an application of the inverse of the contra-positive, which gave, "If I am there₃, then I am not there₁, there₂, there₄, . . . , there_n." This worked if one had only one correct energy image configuration from the known universe defined for the energy bowl. In practice, though, it seemed to operate more like the positive feedback of a butterfly species trying to fly to a brilliant flame. We



"butterflied" all over the universe before we successfully located a known segment, from which we were able to reconfigure our energy matrix.

I'd gained considerable practical experience from the trip in ways that I could not place to logical construct. I couldn't help but wonder about the events I'd witnessed. Why hadn't the Master asked the Antarean how to get home at the first? Why was it so important to contact the new life forms? Was it actually necessary for the Master's survival to destroy the planet, as we had done before departing?

I concluded, rightly or wrongly, that (1) Masters are not prime causes in the universe, (2) Only a relatively small portion of our universe is controlled by the Master race, (3) Masters can be immobilized by terror, are cowardly and can be injured, even killed, (4) Masters are not very intelligent -- but then my early DNA projections accidentally formulated projected that fact, (5) I love Masters, and would serve them to death, as did some of the brave Protectors!

V

I was again ushered to the Master's side, before my departure at the planet Stian. The Carrier held it in such a way that it's charred and blackened food orifice tube dangled into a small cup filled with medicated fluids.

Again I was exhilarated by the Master's scan.

"Your race," it began, "has a penchant for creative work in the biological sciences. Thousands of years ago we Masters determined to seek out a race such as yours. By careful selection and breeding, you have become the first of the line who, we believe, will be capable of serving us in a very special way."

The Personal Attendant removed some sort of decoration or instrument from the roundness which composed the ventral portion of the Master. My mouth was dry and my hands moist as I struggled to absorb the implications of my being special, and also being one of many yet to come.

The Master continued, "We Masters have a very special problem. As you have most probably learned, while the volume of our living space increases as the cube of the radius of our expansion, our birth rate is now constant, since we utilize the whole planetary surface for reproduction. But the rate of increase virtually halts any reasonable expansion of space control. Since it is the Masters' place to rule all life, this problems must be solved!"

I thought of Vanatta's peculiar life forms which came in threes and speculated about the similar relationship between Vanatta's inability to propagate away from her sun and propagation limitations for the Master race.

"A Master will discuss this problem with you in great detail upon your completion of advanced training," the Master concluded.

Wherever I traveled, the Master's orders that I have complete cooperation preceded me. Stian's life forms were simple variants of carbon, nitrogen, hydrogen and phosphorus. I checked gross form predictions from primary molecular structures at levels twenty, seven, four and two. No significant deviations from factual findings could be discerned. The very highest life form was level two -- a form that was weak in science but growing a sound technological base. The Stian itself was a highly chitinous form with clusters of clawlike fingers located in such a way that opposition of fingers was guaranteed for nearly every desired direction.

The Stians were neither friendly nor unfriendly, but simply behaved in ways that were directed by the Masters.

My living quarters was all that could be desired for comfort and convenience. More comfortable, certainly, than my training cubicle. This fact made me feel important, and resolved to even better do the Master's bidding.



All I was doing was too easy. I wanted to alter my plans and go directly to Vanatta, but couldn't quite justify this feeling with a proper reason. I guess that's what formed the basis to my mood, which, if not in outright conflict, was a kind of joyful brooding, if the two terms may properly be used together. Lacking a Master's way of scanning immediately to the core of the matter, I began to sense an incompleteness in my own ability to face up to the simple problem of learning. Yet, I was Genius, wasn't I? I held a solution to my own feelings somewhere, and must only look for it.

Eventually I was able to phrase the problem in terms of my own speciality. Teachers probably viewed my trip as "advanced" only in the sense of helping me to *verify* that the basic structures of genetic knowledge are sound. With their end in view, I had been guided through an itinerary which would sample various hypotheses. Whereas, I viewed "advanced" from the viewpoint of facing and solving more and more challenging problems and *adding to* the structure of genetic science. My growth in Genetics was in the facing of unknowns, like Vanatta, not in verifying that which I already knew existed!

Finally formulating the obvious conflict of terms led me to at once schedule my trip to Vanatta, whence a ship filled with Antarean crew members and a communications Grammer were assigned to for my use.

VI

I knew from Vanatta's 2.4 density, as well as its gaseous envelope opaque to all but ultraviolet, that life molecules here would tend to be both lighter and heavier in weight. Lighter because initial chance meetings of chemical elements would be favored for the lighter elements. Heavier, because each life molecule would need an opaque protective shield to prevent the ultraviolet radiation from disrupting the bonds which hold together the larger, complex molecules. I also knew that neither of these two effects were sufficient to cause the atypical behavior of Vanatta's life forms.

At Vanatta's spaceport I grabbed my tiny package of personal possessions, quickly walking to the cubicle with the rainbow colors. There the Grammer proved to be another human like myself. When I proffered my yellow star -- sign of the Genetic -- he nodded and began speaking, saying, "Your arrival has been expected. Become comfortable and look at the enclosed list of specifications. I've been instructed by the Masters to insure that you have every possible form of cooperation. Their overriding command is peculiar within my experience. Naturally I, as well as all others here on Vanatta, will do everything the Masters have asked of us."

Once again I was impressed by the positive sense of order and purpose brought by the Masters to all planets within their sphere of influence. We were all of us, of every life form, fortunate to be guided by such beneficent beings.

The Grammer continued, saying, "When you've reviewed these preliminary specifications for your scientific needs, and possibly have made further selections, I'll give you a brief summary of services which are available to you."

I looked at the list. Much to my surprise the compilation was that of a complete, first class laboratory.

In my own view, my own stature and importance rose higher.

I found it easy to vocalize the need to change the location of the laboratory from the city's heart to a more remote area, as what I had partially formulated would require an environment of less limited means. The Grammer, tall and gnarled, accepted my request with characteristic patience.

I was fitted with an Antarean spacesuit so that I could move easily from one environmental space to another, and then, much to my greater surprise, the Grammer stated that he was assigning himself to me for the duration of my stay.

I learned to call the Grammer as "Grammer" and he directed our track vehicle to a suitable living quarters for the time being. There, tingling with a greatly stirred excitement, I fell asleep with some difficulty, my last thought being of a mixed nature and consisting of the special problems that Vanatta posed, yet so exciting



to a Genetic, and also of the nature of the relationship I'd now have in working closely with a human Grammer, for, although I'd known humans during my educational period, I'd not been close to anyone or any life form. Would this relatively young -- perhaps 25 years of age -- Grammer exhibit traits of human behavior unknown to my DNA projections? Would the strange concept of "affection" be reborn during our close relationship? And what was its biochemical nature, if it did arise?

None of the Histories or Teachers had prepared me for this experience.

The Grammer and I rode a second track vehicle to a cubicle in the City of Uni which contained the equivalent of Vanatta's civil service. Here, encumbered by our spacesuits, we were escorted to a large wall map showing the contours of the planet as well as traffic tributaries. Interpreted by Grammer, I learned that the network did not depict any pattern of "threes" as the DNA projections might have led me to believe.

Grammer memorized the main features of the traffic flows and between the two of us we were able to locate several geographical positions which seemed to fit my requirements.

I knew that Vanatta had no large ocean or lake systems but that pools of condensed vapors formed at the foot of most hills. Since Vanatta consisted mostly of rolling hills, most of its terrain was sprinkled with these condensations. I wanted to locate near one of these. I also wanted to be far enough away from the indigenous species so that our experimental privacy could be protected, but also wanted to be close enough to study them, and their biotes.

We searched with the aid of a hovercraft until we found a location that seemed suitable.

I expected to return to my living quarters to await the construction of some sort of primitive structure, but again the actions of the Grammer surprised me. He spoke via radio several swift syllables, and the ordered work had begun. Within fifteen minutes larger hovercraft were carrying pre-assembled components which, when pieced together, quickly, within several hours, formed the nucleus of my laboratory. Within three hours my new laboratory was complete, as though the Masters had anticipated every essential requirement, and every specialty had been standing by to fulfill the Master's order.

VII

At first I was optimistic about solving the genetic problem posed by Vanatta life. At ten years of age, wasn't I the end product of a long line of humans bred for the sole purpose of being genius Genetic? But nearly five years had passed before I began to make real progress. My ten year-old optimism (and inexperienced, and yes! egotism) soon devolved to a pattern of careful scientific thinking, and as time passed, I learned to challenge more and more basic tenets taught to me by my former teachers, and my unshakeable, always right, teaching machine. My reformulated concepts always appeared to me, at least, to be basic and simpler!

I learned what "affection" meant, as Grammer and I became close, in the human affinity sense, and he became one of my most valuable assistant in all that I endeavored to perform. Grammer's personality was always unreadable, a characteristic expression of his genes, just as my genetic heritage was expressed through me, but I knew, and he knew, that we shared something fine in common.

The equivalent of one-celled life (or one-celled colony life) was found in an amorphous form on Vanatta. Between this life level twenty and the next level of nineteen, there was a jump which could not be accounted for by any theory. Explanations for this gap are, I felt, the key to explaining, or at least leading to an explanation of, the reason why Vanatta's life forms could not be reproduced away from their own sun.

Unlike our earth colonies, level twenty life here was not true cellular life, and therefore it had failed to produce the equivalent of our colony specializations.

One-celled life, like the Chlamydomonas, begin the process on Earth, the source of humans. Pandorina was composed of eight cells embedded in a spherical matrix of jellylike material, yet none of these eight were much different from Chlamydomonas. The combined beating of their flagella cause the entire colony to act



®
in unison for locomotion.

Another form, the Pleodorina, is composed of many more cells clustered in the shape of a hollow sphere; aside from the increased number of cells there is little difference between this one and Pandorina.

One striking difference, however, is that the smaller cells, the soma, are sterile for reproduction purposes, while the larger are not. So at this level some specialization has begun.

A much larger aggregate is the Volvox, a beautiful hollow spherical colony consisting of several thousand cells. Again these resemble the Chlamydomonas in most respects, although there are tiny bridges between individuals which tend to lock them together more securely than the loose jelly or other forms.

Almost all of the cells are alike, although there are some that are larger and have a different appearance. These are reproductive cells. Some are bundles of small bodies, the sperm or male cells, while others are large ovoid egg cells. These special sex cells reproduce the colony by a sexual process where the sperm are released into water, where they swim to and unite with the egg. This union subsequently becomes a zygote which overwinters in a heavy-walled casing.

Other reproductive cells merely divide and move into the hollow of the sphere where they become small colonies, known as daughter colonies. These eventually burst out, destroying the mother and becoming adult colonies themselves.

Two important events occur in this gradual association of cells: First, similar cells aggregate into a mass which apparently survives better. That is, there is strength in union. Second, division of labor is initiated among the cells, some becoming sterile and functioning only in locomotion, whereas others retain the primitive condition of colony reproduction. From here, differentiation of the soma cells continues in various directions toward greater and greater complexity, and thus up the long trail to such highly intricate forms as Masters and their servants.

Contrariwise, Vanatta life had jumped from life-like chemicals at level twenty to relatively high forms of life. Vanatta had these key peculiarities for me to untangle:

1. Life would not reproduce beyond its own sun.
2. Level twenty life consisted of a homogeneous, soupy, life-like chemical.
3. From level twenty, life jumped to level six with no apparent intermediate steps.
4. Level six life consisted of six basic similar patterns, any three of which could reproduce its own kind as well as twenty-seven other apparently unrelated patterns.
5. All thirty-three forms could reproduce, by reproduction in "threes," to produce any of the others in an unknown or unpredictable manner.

After the first two years I decided that it was not just the Masters who were ignorant of facts, but that many Genetics were also ignorant, including me. On being told that Vanatta life was incapable of being reproduced beyond its sun, we had all assumed that the sun's influence was a requisite to their form of propagation, perhaps containing some mysterious, hitherto unrecorded energy. Did life really find it impossible to reproduce away from its own sun? Or was the problem absence of supporting symbiotes requisite for the breeding process?

I found the answer, and compared my intelligence unfavorably against that of my beloved Masters!

Grammer and I established a basic Vanatta ecology for support of a small Vanatta mammal called the Bra. After several months of close observation in a closed environment we shipped three Bra to another solar system. In due course the Bras had brought forth three apparently unrelated mammals, none of which were to be found on our supposedly complete list of thirty-three.

Hindsight is easier than foresight, still I, genius Genetic, deserved every criticism, for fumbling and having created my first serious research error. Never again would I be willing to blindly accept statements or axioms of biological truths of the kind that "everyone knows." Everyone knew that Vanatta life could not



reproduce beyond its own star, yet the truth lay somewhere in the ecology of the life form, not in the peculiarities of the star!

VIII

My success created reverberation throughout the space of the Masters.

When they arrived, ten Masters scanned Grammer and me simultaneously. I shivered both with fear and anticipation. I was buoyed by the personal attention of so many Masters, yet my ever-searching and almost automatic thought process probed and classified the Masters' similarity of appearance.

Master was a small ball-like object with trailing feeding orifices, slender, tapered and simple of construction. The light-sensitive tissue forming a small circle around the crest of their orblike bodies faded through pink, red, green and blue, reflecting, I believed, the state of emotions. Each had the same color, neutral gray, laced delicately with a twin diamond-shaped pattern where was found the primary sensing organ for their scanning functions.

Each Master was attended by a Carrier, a Personal Attendant and six or seven other specialities. Nearly 100 life forms of one kind or another trailed behind or held the Masters or fed them. This was an impressive example of cooperation between otherwise alien life forms.

One Master spoke to me, saying, "You have been well bred for your job. Therefore, what you do is pleasurable.

"We Masters have waited many generations for the promise of a solution to our own breeding problem, and its space limitations. We've come to commend you for your efforts on our behalf."

Fearful that my beloved Masters had jumped to the wrong conclusion, I hastily said, "But I have not solved Vanatta's problems, Master."

The speaking Master's eye band turned bright pink, as it replied with, "You've bred Bras outside of this solar system, haven't you?"

"Yes," I replied, "but all I've shown is that the life of higher forms depends in some manner on its own lower forms. And that these forms are not equivalent to others found elsewhere on the planet, or to their progenitors."

I also tried a new approach, saying, "Masters, I cannot explain what I must, but before I can accomplish my basic life's purpose I must finish my training here on Vanatta. I am only now beginning to mature in this respect."

They reluctantly, it seemed, acceded to my request to postpone work on their reproduction problem, and so once again Grammer and I were left to our work.

I made slow but continuous progress in untangling Vanatta's problem, which I now knew was the precursor to the greatest of the Master's problems.

Grammer meanwhile enjoyed music, reading, and, of course, his professional Grammer computer banks. We would sit beside the music computer and listen with great pleasure to the various permutations and combinations formed by pleasant sounds. I also especially enjoyed sitting next to Grammer where the feeling of companionship had now grown, but had long been denied most of our species. This feeling was not generated from disloyalty to the Master's, because that would have been an impossible concept for either of us to entertain, and besides, we were doing the Master's bidding each and every waking period.

IX

My second breakthrough occurred when I compared the nucleus of any of Vanatta's life forms at each level back against that of Earth's evolutionary cell. Of course this kind of comparison had been made before, but the conclusions reached had not been correct.

I noted that all of Vanatta's life forms except the lowest "soupy" level twenty, contained more than one



set of genes, and "breeding of three" phenomena was related to the fact. This puzzled me until I ran across a remote reference back in the twentieth century of two British (whatever that is) scientists, Dr. Henry Harris and Dr. John F. Watkins, who had demonstrated that cells from different animals, including man, can be fused and the new hybrid cells are able to live and multiply. gametogenesis it was called.

At that time, on the planet my species had evolved, living combinations of hybrid cells were formed from species as diverse as hens and rabbits, and men and mice. I remembered this information well not only because it marked a significant milestone in genetic research, but because I would normally be exposed to all available information, whether important or trivial, in the course of my training. I could even remember that Dr. Harris reported his work in a publication known as *Discovery* in April 1966. I was never taught what a "magazine" was, however.

A close study of the "soupy" level twenty life forms revealed the interesting information that there were perhaps several million different types of complete genes scattered throughout as many different cells. The DNA, which contains the coded heritable information which is passed on from generation to generation, and RNA, which is the "messenger" carrying these codes, each contributed their own unique effect upon the cell body. A given cell found in this "soupy" mixture would often contain as many as ten different gene structures. Since each structure could "tell" the cell body what to do without interference from other unlike structures, life necessarily retained its primitive flavor. Under such unintegrated conditions, life could not develop beyond this stage! Since there are no incompatible mechanisms, like those which result in the destruction of tissue or organ grafts exchanged between different individuals, the composite cells carry out life functions in an apparently integrated manner. The instructions which the genes of one "species" in the hybrid cell transmit are understood and acted upon by the cytoplasm of other "species."

The vehicle for this activity on Vanatta was twofold: A peculiar form of virus which appeared to be pervasive, endlessly, throughout the texture of Vanatta's atmospheric blanket was weakened or killed by the strong ultraviolet radiation extant throughout Vanatta daylight hours. The dead or weakened viral material generally found itself mixed or diffused throughout the ecological system -- particularly whenever condensation of Vanatta's gaseous blanket occurred. The viral material, although dead, in turn performed in almost exactly the same manner as in Dr. Harris's original work. He exposed dead virus to cells of different species. The cells clumped together. The membranes dissolved at the points of contact and their cytoplasm merged. When the nuclei of different cells merged, the new cell contained several nuclei of different species which was called a heterokaryon. The cell remained alive and continued to function, synthesizing DNA and RNA. Sometimes the nuclei fused to form a larger nucleus, and sometimes they divided to form several daughter cells. Here on Vanatta, primitive cells evolving from their own chance encounters, when in contact with this peculiar virus, dissolved at their points of contact, and the result was a primitive hybrid life form.

The problem of "threes" was evidently solved. Yet the mystery of the great jump from level twenty to level six remained.

During the following year I greatly increased my challenges to the principles which make up genetic science. I also greatly increased my disdain for the absoluteness of any theory, which, I guess, is a way of reporting that I matured as a genetic scientist.

I also learned several new things from Grammer. Grammer had actually once talked to a female of our species. While it was true that the natural evolutionary path for our species required two forms for reproduction, the Masters had long ago instituted a bank of ova and plasma from which they supplied their technicians and which sufficed for their needs. Since growth of the fertilized ovum was carefully controlled by the technicians until "birth," no need for such ancient concepts as "mother" or "father" existed, according to Grammer.

I was such a baby. From birth onward I was subject to either nurses who were trained to provide for only the ordinary processes necessary to biological growth; or I was subject to the Teachers. The concept of



® "female" did not enter my thinking, except as a component of biological functions.

However, the closer I approached fifteen, the more interest I seemed to spontaneously feel on the subject of femaleness.

It was clear that Grammer had long had such an interest. His eyes held a moment of wistfulness whenever we discussed the experiences he'd had communicating for a female, and even his posture changed noticeably.

Grammer had been ordered to accompany a group of Protectors on his final education trip throughout Master's space. Their destination was a planet which, while deep in Master's space, had not been contacted for many years, and, in fact, many had thought to be of non-existence, but was only the effect of misplaced records.

Ent, by name, was fit for Human species' use, including both its flora and fauna. It had been colonized by Masters with human metal miners to serve as the raw material source for copper. A Protector ship, returning from duties having to do with expanding the boundaries of Master's space, accidentally rediscovered the planet. But, as I've said, according to the Antarean space catalogue, Ent was a rediscovery.

The first ship that landed was attacked without warning by level one humans. Except for the Protector's shield's, all would have been pulverized when the first nuclear bomb exploded. Subsequent police action by the Protectors soon and easily decimated the population, leaving only a small, hard-core group hiding in shelters beneath main cities. Eventually the Protectors succeeded in introducing a non-lethal gas into these caverns, thus capturing all of the remaining humans intact. These humans were predominately unscreened females and children of both sexes. The children, of course, were put to death instantly, since the Masters did not need any more raw stock of their type for future screening. The women were saved for the time being for interrogation.

Grammer had been given the job of questioning the women and of translating for the Protectors. He learned that generations ago, a Master had entered a deep copper mine which also contained strata of radioactivity. Although much of the mining work was automated, this Master had the unusual desire to experience life under tons of earth crust. He, his Carrier and his Personal Attendant followed the automated tracks without being aware of the radiation hazard. The Master had his unusual "picnic" below surface, and then later returned to his regular home cubicle and lived life normal to all outward appearances.

As the years passed, the Master's ability to scan deteriorated swiftly. When the Master thought he was scanning and "reading" certain characteristics, these were either false readings, or distorted, misdirected readings. Because of the faulty screening, a group of human species' deviants, antipathic to the peaceful order of the Masters, was accidentally born, survived, and multiplied.

Eventually the Master was killed by these deviants.

Grammer retold this story to me many times. Each time he would finish with a description of a "cute little blue-eyed, brown-haired," female who seemed to affect him in some very unusual patterns. Why he should feel so pumped up with hormones about purely hereditary traits as "blue eyes," "brown hair," "red lips," "nice figure," and so on, I did not then understand, but I did fully comprehend his loss of companionship.

After many months of interrogations, Grammer was present when all remaining life on Ent was destroyed. I believe his moody disposition must stem from that day.

X

For what seemed the billionth time, but was probably only several thousand times, I fed varying axioms about the nature of life into my computer. These axioms opposed in some manner the fundamentals of life as I'd been taught.

This day, nearly five years from my initial arrival on Vanatta, I challenged the derivable consequences of the first goal of life -- to survive!

Life usually can be thought of as requiring an accretion of life to life. That is life begets life, and if the



quantity of life it begets is not greater by some small fraction at least, life does not survive in that form.

I challenged this assumption in a very slight way. When life increases, space is consumed. But this attribute is considered a secondary manifestation of the fact that life begets life and increases in *number*. That fact that a 1.1% annually compounded increase in numbers of life units results in, say 1.1% compounded increase in space utilization is definitely *not* considered a basic postulate upon which to build a science called genetics. One doesn't postulate that the major goal of life is to consume space!

Yet the consequences of "to survive," when taken in context of the Vanatta problem, led directly to consideration of this new axiom. In turn, consequences of the acceptance of this as a fundamental axiom led directly to my final solution of the Vanatta problem.

According to Histories, many years ago a human group called the Pythagoreans tried to reduce the whole universe to number and geometry. One of the problems which they developed was to imagine a plane figure which could be used repetitively in the plane to fill all of the plane and leave no points unfilled and without overlap. One such figure turned out to be an equilateral triangle.

Another problem was to find a three-dimensional figure which could be used repetitively to fill all of space. One such figure is the tetrahedron; another is the cube. only five regular solid figures have this property.

In the recorded past of Vanatta, chance combinations of chromosomal materials finally provided a three-way structure which was truly integrated at more than the primitive level necessary to sustain life for an individual cell. Even my advanced science of genetics, aided by my almost all-knowing computer, would be hard pressed to predict the many potential life forms which each nuclei, of the resulting hybrid cells, might have propagated if directed by the course of normal evolution.

Chance combinations had produced a particular family of gene structures which not only sustained level six life, but whose configuration provided an internal protective sheath which prevented additional nuclei from entering their successful form of hybridization. The sheath followed an elementary rule of "filling all of space" thus enabling the cell to protect itself under siege of the viral material so peculiar to Vanatta.

The consequence of this protection was that three nuclei were free to pursue their own joint evolutionary path throughout the ages. This combination, and only this combination, could have been responsible for higher levels consisting of thirty-three "varieties."

Naturally, too, "breeding" was required in "three," for, unless all three components were present to share chromosomal materials, no life was possible except in rudimentary form. Vanatta life was truly hybridized yet could only breed true as a hybrid!

Grammer and I had solved the problem of Vanatta!

I was fifteen years of age. I was now much more confident of my problem-solving abilities!

XI

I believe that all of the servants of the Masters are raised in a sheltered environment. Mine was particularly so. But even if this were not true, there would be no need for guards or special personnel trained to protect other beings, except for the Protectors, of course. Crime was unknown, consequently prisons were unneeded. Each being had his place in the well organized structure of the Master Race, and if the being did not fulfill his allotted function a new personality was reared as a replacement. This, naturally, was one of the great benefits which the Master Race had given to other beings including humanity -- peace and order!

Grammer and I finished packing our vital records and other needs in preparation for departure to the planet of the Masters, a place that neither of us had ever heard discussed before. In the normal course of this kind of travel preparation we would have relayed our request to the proper travel specialist, who in turn would prepare our schedule in some detail. This time, oddly, none of the travel specialists could give us any idea where the Master home star was, nor could they prepare our schedule.

Grammer carried out the bulk of our communications, as that was his duty. But even he began to despair



when by evening we were still no closer to our objective. It began to appear that we were going to have to locate a Master, and present our petty problem to it.

We had reached an impasse, had gone back to our living quarters to rest and think, when with no thought to the unusualness of receiving a visitor, we were summoned to the door. With shocking speed, we were both surrounded by several dozen Protectors and they, with efficient, professional detachment, forced us both into our environmental coverings. Our final destination turned out to be an antiseptically clean cell, one for each of us.

Although we were well watered and fed and bedded properly each day, Grammer could raise no single word from any guard. I, of course, could not have formulated anything understandable to such people.

It was a lonely period. I missed associating with Grammer. I became despondent, lost my appetite and also weight, and soon my waking periods blended into each other and into sleeping periods. I vegetated!

Arousal and consciousness returned to me almost immediately upon my sensing the Master's usual protective scanning process. Strangely, during the process, my analytical functions fixed itself upon the Master's Carrier -- measuring the height from the floor to the position in which the Master was carried -- and then upon the usual retinue which trailed behind the Master.

The Master who entered my cell looked exactly like all of the other Masters I had seen.

The Master spoke, saying, "I have already talked to Grammer. I understand that you've completed your studies on Vanatta and are now ready to help us with our problem."

"Yes," I replied with great surprise.

"We Masters are so important to the continuity of an orderly rule in all the universe, and we are so few that we must find the means to protect the sole source of our breeding. We did not distrust you, since it's obvious through scanning that you and Grammer have been bred true and loyal, and you always shall be loyal. But we long ago learned from the Protectors several ways by which our beneficial rule can be placed in jeopardy."

As I was receiving an explanation for our rude treatment, I listened carefully, hoping to hear a rational explanation.

The Master continued. "On rare occasions, Masters become sick through accident or radiation in which case our scanning sense becomes unreliable. The product of such an unfortunate experience might be the birth and growth of life inimical to our kind. If any such knew the source of our birth, they could easily destroy us. Also, as you know, there are areas of the universe at the far boundaries of the Master's rule where races live that have not received the benefit of our kind. Should these races accidentally learn of our birth-source from others, even though of good intention, they, too, might destroy our race."

The explanation seemed to explain much, except why Grammer and I had been placed incommunicado.

The Master said, "A visit to our home planet is a one-way trip. There are certain operations that must be performed on your brain."

My first impulse was fear, that any operation to my brain might endanger the very faculties which the Master needed to solve its problem. I was soon relieved, however, with the Master's next words, saying "We insert a small cartridge of explosive at the base of your occipital bone. If, by some unusual chance, you are fifty miles or further away from the planet's surface, secret carrier waves will automatically explode the cartridge."

Upon a signal from the Master, the Personal Attendant brought a rose-colored, scented water near to one of his orifices. A small amount of the water was taken in and discharged. Only a slight change in color to the eye band could be observed during this activity.

"Oh yes!" the Master continued. "We congratulate you on your successful solution to Vanatta's problem. We eagerly await similar fine solutions on our home planet."

I never did hear a rational reason for our detention.



The Masters were frightened, paranoid, lovable life forms!

XII

On first awakening from the operating table my compulsion to analyze came alive first. But, strangely, I did not think of my duty to the Masters, but instead thought, "How pretty are those eyes!"

The Surgeon who installed the safety capsule in my brain had pure black hair, gray eyes sprinkled with gold, and beautiful curving smile. It was a female of my species. Her laugh made me laugh. and her frowns made me want to frown. I tingled strangely whenever she touched me while performing her routine chores. Now I began to understand about Grammer's feelings toward such purely hereditary traits as eyes, lips and cheeks!

What a strange unscientific phenomena!

As I said, she was a Surgeon, and knew some little genetics. Within limits we could communicate, but with even greater surprise we found other ways of communicating through other man made symbols. She seemed to respond to my unspoken feelings, too.

Blessed, now with both Grammer and Surg -- as I called her -- we all returned to my allotted work for the Masters with renewed energy.

My initial view of Ed, the Master's planet, was by standard track car, small vehicles that moved on tracks everywhere. At Grammer's suggestion, I had requested and got Surg assigned as a member of my research team, our first order of business to view and review the complete planetary surface.

Everywhere, too, were life forms from many different planets, each with a specific function attending to Masters' needs. Such was my importance to the overall plan of the Master's that I, too, had every kind of servitor awaiting my bidding. A fernlike species planned our Ed trip. Two other Communicators relayed my language to that of the serving species. I couldn't help but idly wonder why the Master race, itself, did not perform this function as most surely they could easily scan and sense on either species.

Ed was disappointing, as it was nothing more than cubicle after cubicle, from pole to pole. Now it was easy to understand where the basic pattern of cubicles and simplified track cars originated. They had been exported from Ed to all other Master-dominated planets. Still, I'd have bet they were not original with our beloved Masters, who were genetically incapable of any kind of constructive thought.

As there seemed to be no obvious advantage from selecting any particular location, we chose at random and began the building of an organization and suppliers with the aid of our many helpers.

Several weeks after our arrival, Protectors met us with the request to accompany them. Again no questions were answered, and we were summoned in the Directing Hall of the Masters.

The Hall of Masters was mis-named, as it was not a hall at all, but simply another standardized cubicle arranged internally in such manner that nearly any sort of life form could move in or out while waiting on the Master's pleasure. Where before I'd been fortunate to see as many as ten Masters with perhaps ten or fifteen personal attendants each, here I viewed each Master with as many as fifty attendants each. There were 400 personal attendants weaving in and out or standing about waiting on the significant wave of orifice or screened message from one or another of the eight ruling Masters.

The hall became silent as the Protectors guided Grammer, Surg and me inward. The one with the most wrinkled balls of gray flesh I'd ever seen was the leading spokesman. I assumed that the structure and appearance represented cross-linking of cellular molecules which comes with age. This Master must have been very old, indeed, as I noted the slow motion of its dangling orifices as it motioned for its Carrier to lower it closer to my speaking level. Also, its eye band was predominately ridged instead of smoother as found in the younger Masters.

I relaxed with great pleasure under the careful scanning of this oldster. It spoke at last, saying,



"Congratulations on your Vanatta success. We expect equally fine research from you here on Ed. We are the governing body for life everywhere!

"Our species' problem has concerned us for many ages. We look forward to its solution. Can you give us an expected date for a solution?"

I was already in semi-shock from the near presence of these august, beneficent and powerful beings. These were the beings that ruled all of civilized space, causing thousands of species to live in peace and harmony. By birth and training, instinctively, I knew I was in the presence of the greatest of all life forms!

But more than that, I was deeply honored, being asked to present a near-God with a date to solution of its problems! I could not speak, and I never would have properly recovered had it not been for the special scanning ability of the aged Master. It recognized my frozen status and immediately changed its communications, saying, "You are a specially prepared servant of the Masters. Your job will be completed expeditiously, we're sure. I am decreeing that, except for the direct will of the Master, your every wish shall have first priority in all things.

"As you already know, it is impossible to continue our planned control of space when the volume of space increases as the cube of the radius of our expansion, but our breeding area is limited by the surface of our world, a constant. When you have solved our problem, we'll expect then to be able to expand into all space in orderly manner, which is, of course, our destiny."

It paused long enough to dip the tips of each of its eight orifices into eight differently colored bowls of scented water. It was almost mesmerizing to watch eight different attendants scurry in and out with the bowls.

Continuing, the Master said, "Even though you're a perfectly loyal researcher, we feel that it is necessary to charge you with an official statement as to your duties on our behalf. You are therefore instructed -- indeed, commanded -- *to improve our race!*"

I was overwhelmed by such an overriding command! It was also reinforced by the Master's dominating scanning ability. I shook and my mind's thoughts scattered in chaos that repeated DNA sequences over and over. It was a sacred command, a personal assignment of great scope and integrity. I must not fail!

XIII

The application of modern technology to the optimization of production of Masters on Ed was amazingly efficient. With the exception of a small percentage of cubicles, all other Ed cubicles consisted of nearly automated breeding vats for the Masters. Their breeding limitation was approximately that of the area of the surface of Ed -- a square factor -- since nearly of the planet was covered by their breeding vats.

Each breeding cubicle consisted of a large water pool about 12 feet deep. In the pool was a balanced biotic community, and all the necessary ingredients for supporting Ed's equivalent of atoms, algae, amoeba, protozoa, and other essential life forms were present up to, and including, the worm fish. Each form of life was there to contribute in its own way a necessary ecological balance, thus providing an environment proper for the growth of the wormfish. The wormfish was the necessary host for the Master!

Each of the Master's fertile cells contained a single flagellum which lay in a fold of the outer membrane throughout its length. It formed an undulating membrane which was effective in propelling the tiny cell through blood or other body fluids. Millions of these fertile cells were introduced to the closed ecology supporting the worm fish, and inevitable encounters by the cells with the fish resulted in the supplying of a proper host for the Master cells. Each fertile cell found its way to the internal organs of the wormfish. Perhaps two hundred cells could be nourished in all. The blood of the fish acted as both source of food and convenient sewage disposal.

The flagellum on locating a suitable spot changed to a rasped hook which once driven into several of the wormfish cells, could not be easily withdrawn. Hanging by this hook, each fertile Master cell began its growth and transformation at the expense of the wormfish.

First a tight membrane was constructed around itself, impervious to all except food of the proper chemical



and physical properties. Second, within this membrane, the cell nucleus began to grow in size. A light fiber strand of nerve material extended from each chromosomal protruberance to form eight rudimentary protentacles. Other than modification of other chromosomal materials to form brain tissue and a circular, light-sensitive band, the only other two major growths were the development of extremely primitive muscular tissue and a very primitive pro-stomach.

With fourteen days of growth, the first fertile cell reaches a kind of maturity. The membrane cracks open, and the living but miniature Master swims out. Through the use of its unique scanning sense it immediately locates and kills every other Master cell hanging from the wormfish. This one miniature Master then swims to the major control locations of the wormfish's brain, and here the Master establishes both home and control over the activities of the fish, pending its further growth. When a point is reached where the "tumor" aggravates the host beyond biological tolerances, the Master, with profound foresight, arranges to be evacuated just prior to the host's death.

In its new environment, consisting chiefly of water and dissolved minerals, the Master finds no competition. It absorbs its nourishment in the same manner as before, using water instead of blood, and dissolved minerals and minute organic matter instead of the complex structure of the host's blood.

No intelligence is discerned in the little Master until it reaches sufficient size to store energy molecules, and at this time it instinctively leaves its water environment where servants of the Masters begin its formal training, a program dedicated solely to how to be master of the universe!

Histories were unable to relate on how this cycle had begun, changing from primitiveness to sophisticated care-taking. That key sequence was lost in the ancient history of the race prior to the time their were Histories.

Had my assignment been the elementary one of simply increasing the rate of breeding, I could have been through in a matter of months. I often speculated as to why others had not attempted to transplant the requisite bio-system on other planets in other solar systems. Was it their characteristic paranoia which prevented them from seeking obvious solutions? Or was it simply the Master's characteristic self-inflated ego which prevented them from viewing themselves from other than special, or difficult? Whatever the reason, I was thankful that my Masters had determined to expand my role. But this huge, gigantic, overwhelming task, "To improve the Master race!" held fathomless difficulties.

What constitutes "improvement" of a race?

Certainly, from the human viewpoint the need for companionship, the eternal struggle to solve problems and the extreme adaptability of our genetic plasma to historical change are all pluses.

But what of the tremendous computing ability of the Antareans which permits them to dominate space? Or their stress-free exo-skeleton, so cleverly designed to compensate for rapid and varied gravity changes? What about the long-lived, nearly classic example of the adaptability of insects found everywhere? Or the tremendous weapons-forming and fighting ability of the Protectors? Which of the nearly endless characteristics possible to life, as it is found in billions of parsecs of space, should be acquired by our Masters? Which, too, of the characteristics now dominant in the Masters should be retained and which masked?

While I redoubled our efforts, and used the very highest of technical skills, the greatest of computer technology (for projecting possible characteristics from change of DNA to final adult life form), and applied the highest of loyalty to our duty, I was soon convinced that a genetic genius, such as myself, was not, after all, very bright! It is one thing to merely solve a technical problem, but another thing entirely to define "best" characteristics for the future life of the whole race. Especially difficult was such choice because I knew the Masters were virtually perfect in themselves.

It was somewhere during this part of my thinking when both Surg and Grammer became ill, and nothing I could do on planet Ed would solve their problem. I appealed to the Masters, who brought in a Medic from another solar system, along with a strange Grammer. After three days, the new Grammer reported, saying, "We're terribly sorry, but the Medic has no knowledge to effect a cure. Other than intravenous feeding, there



is nothing more the Medic can do."

My secure world spun! Never since the days of my imprisonment on Vanatta had I ever experienced such despondency, alternating with a false exuberance. I was not rational. Yet the struggle to survive which must lie dormant in all human seed awoke to push me to greater and greater heights of rationalization. I rationalized that since I was only competent in the field of genetics, I would help in the only way I knew how, by applying my knowledge to their sickness. This was much like saying that since I was an expert bricklayer, I would lay bricks, expertly, until their sickness was gone!

Each was in a deep coma. I selected samples of both Surg's and Grammer's cells. The first look at the chromosomal materials made me doubt my senses, and I rationalized further, thinking, *Perhaps it is but a clumsy laboratory error*. Their genes were nearly identical. There were twice too many of them. I tried sample after sample, with always the same results.

About the time I began to doubt my own training, I, too, passed into unconsciousness!

Three weeks passed before I regained consciousness, to learn that Surg and Grammer had regained awareness before I. Surg was standing over me, and my first thought, strangely, was on her great beauty. She was feeding me, and saying, "Good morning! Can you discuss the nature of true hypothalamic replacement or the parsing of a verb?"

My answer, given spontaneously, surprised even me. I said, "Why, yes, I can!"

Why was I not tongue-tied? Why was I not restricted to thoughts of my specialty?

For the first time in my short life I was able to contemplate with ease and understanding subject matter not necessarily related to mine. It even seemed natural to think in the areas of medicine or communications. Prior to this sickness, I spoke only through disguise, deception or strained actuality.

I was appalled at the subjective changes that had ensued, and even more appalled when I learned of similar changes in Grammer and Surg. We were like three school children who have just learned that holidays are forthcoming. Or, better yet, we were like three deaf-blind-mutes who have suddenly been given the gift of hearing, sight and speech. Three new worlds to explore, each of comfortable fit, like homeworld -- yet each new, novel and infinite in nature! For each of us could understand and communicate within the framework of one another's major competence.

Somehow we had each been improved as individuals! Was this "accident" the clue to improving the Master race?

We set to work, and this time I was not too surprised to find that the chromosomal material from cells of each of us were very similar to one another. Here was an obvious source of our change. Through screening by Masters each of us was the product of extremely fine selection for attributes desired by the Masters. But the very process of this fine screening caused each of us to be wise idiots, since cross communication skills were lost. Yet, obviously, any species like human would consider such a characteristic as the ability to understand one another as basic. Through some yet to be deciphered fluke related to our joint illnesses, we had become hybridized so that gene material of each was found in the cells of each other. Our cytoplasmic tissue was capable of responding to the joint, yet integrated, directions from each new nucleus. We had become, through accident, a hybridized polyploid!

Sometimes gametes possess a diploid instead of the usual haploid number in some cases even three, four or five extra sets. Organisms possessing more than the diploid number are called polyploids. They may be larger and more vigorous than the usual diploid, hence polyploids are often deliberately generated -- especially in the plant world. Polyploid flowers are usually larger than normal ones. Very little was known about polyploidy in animals, probably because it occurred so infrequently. We were three living examples of the possibility of induced heterokaryonization within the same species!



Working as an even tighter knit team, we traced the source to a viral infection that had followed us from Vanatta. This was the very same virus that on Vanatta caused the dissolving membrane of cells thus opening a cellular door for other nuclei and consequent hetrokaryonization.

We cultured the virus in a safe, protected environment, also taking precautions to sterilize everything else, and then we set out again to improve the Masters!

XIV

I soon realized that our past approach was wrong, and that only on the philosophical plane could the Master's ends and goals be met. Certainly life, which was so successful that it was the master of all within its biosphere, was already "improved." For if the basic "to survive" were the only criteria for life, the Master race had met this goal on its first trial. It had never had a second trial in life!

It took no genetic genius to realize that the capacity to adapt was almost nil in the Masters race. If any improvement was needed by them, it was in that direction.

Secondly, Masters needed hundreds of thousands of supporting life forms merely to allow them to be comfortable. Additional billions -- perhaps more -- were destroyed just to insure their own dominance. Was this economical for either Masters or other nature? Perhaps this could be a further direction for their improvement, to reduce their dependence on others.

Finally, despite the tremendous gift which nature had bestowed to the Masters -- the gift to know one's neighbor well -- the Master remained an unsocial form of life. Their socialbility could be improved, too.,

Having thought all this through, both the means and the coded improvement goals were scientifically prepared for completion of our assignment. I prepared large quantities of Vanatta's special hybridizing virus while Surg and Grammer sought for and received some rare human protoplasm which had been laboratory-grown prior to Earth's first visit by the Master race. No prior screening had pre-selected genetic materials from this tissue culture, an unusual sample, indeed.

Now the work became one of straight genetic engineering.

Just prior to the introduction of fertile Master cells to their breeding tanks, I mixed the Vanatta viral materials as well as growths of human protoplasm. As was to be expected, each fertile cell wall dissolved at its point of contact with the attenuated virus, and, as a consequence, each human cell introduced its nucleus into the fertile cell. I didn't expect a human cell to exist under the pending environment, therefore those cells which received the nucleus of the Master cell were unimportant.

The newly hybridized cells were dumped into each breeding vat throughout Ed, where, predictably, a new kind of behavior would ensue. Fortunately most of the planetwide equipment was automated, and the whole could be completed in a short time, especially with all the planet's resources for help.

Our second phase began with the identification and treatment of all nutrients used by the Masters. Since this consisted of only eight colors of water saturated with different mixtures of anions and cations required for sustaining Master metabolism, we found no obstacle in adding this to our hybridizing mixture.

Our third phase consisted of preparing and shipping small packages of this same mixture along with proper instructions for its introduction to Master nutrients everywhere. The protectors and their ships formed a continuous workshift so that each Master received its fair share.

Our work was at last done. There remained only the clerical task of following up on the predicted progress of this great racial improvement program. Perhaps our lifetime would not see its end. But I was sure that someone among my distant descendants would know its end -- and remember its beginning. For I was determined to leave sufficient notes so that posterity would know what to look for as well as to explain why so many different life forms are scattered throughout such a large volume of space.

XV

The complete obedience of all life forms within the Master's biosphere, as well as the great efficiency with which each form served the Master's will, combined to enable us to rapidly service everyone of the



Master race. While I wasn't absolutely sure of the end results in the case of adult hybridizing of human characteristics with Master characteristics, as early training as well as pre-conditioning of intellect served to partially mask biological predictions, I was sure of the results in Ed's breeding tanks.

I had selected human characteristics long known to be dominant in shielding psi phenomena, and just as with the three of us, the first effect on each Master was a coma. My induced organelles served to effectively hide the ability of each Master to screen. I had reasoned that the very ability which most contributed to the successful domination of other life forms was also the same characteristic which prevented Masters from improving their race. For, without ability to screen, need arose to seek out other solutions to survival problems. With need for other solutions to survival came opportunity for adaptation of successful mutations. With adaptation of successful mutations came "improvement." And I was sure that "improvement" could only be measured in terms of successful capacity to adapt.

This, then, in simple form was my chief reason for hybridizing undifferentiated, unscreened, human protoplasm with Master protoplasm.

Each adult Master responded in a similar manner to one another once their screening mechanism was shielded and consciousness returned. Each rolled into a small ball and shivered endlessly. Often its tentacles would combine together and form a hook which was repeatedly stabbed into the air, as if in search of a wormfish. They each seemed to regress back to their very earliest stage.

I wasn't too concerned over this behavior, for no Master would die, and each would continue to be cared for. There was always the strong chance that the Master's conditioning and early training would find an accommodation with his new human counterpart, thus giving the Master the pleasure of empathy for one's own kind as well as all of life.

And while disorganization was bound to occur in the Master's biosphere, by the Master's overriding orders, I had to take the long view. As Ed was center of the Master's sovereignty, and as we were given the highest of priority, in effect my orders were the Master's orders, although the coming and consequential disorganization did seem to be a high price to pay for Master's improvement. We would know truth many generations hence.

The first major departure from normal behavior by the tiny Master cell clinging within the wormfish's blood system was that, instead of killing all other Master cells not yet hatched from its protective cocoon, the most advanced directed itself immediately to the nerve control structure of the fish.

Each Master unit, in its turn, behaved similarly. Such confused multiple control of operations within the wormfish caused the Master to leave the fish at an earlier age, with all of its scanning abilities inoperative. The proportion of surviving Master cells was greater. So many immature Masters attempting to live in the same tank caused great conflict, the first the Master race had ever experienced.

But the conflict also resulted in their first opportunity-step on the evolutionary ladder. I could not predict whether or not the Masters would organize into family units versus their environment, or by the development of more analytical, brighter thinking power, or whether the problems would be solved by succumbing to them. Such outcomes could only be known in the distant future.

I had provided the only reasonable answer to my beloved Master's directive, to improve their race! I'd also succeeded in temporizing their feelings toward other life forms by introducing genes from one of the species having the greatest affinity toward all other life forms -- my human species!

As the rulers behind the rulers, Grammer, Surg and I were able to complete our work without happenstance. While all were concerned about the Master's "sickness" -- as it came to be known -- none would voluntarily interfere with their Master's prior command which placed our desires ahead of all else unless directly countermanded by a Master. Protectors continued to protect the "sick" Masters. Grammers continued to aid in interpreting meanings. Medics and Researchers continued their normal functions. Bred



and trained for duties under complete loyalty to the will of the Master, none were other than docile during this great emergency.

We knew, though, that before long, without specific guidance from the Master race, there would soon be chaos. It was not our intent to wait out chaos on the planet Ed.

As my job was completed, and I could not longer serve my Masters until, and if, in the far distant, unpredictable future, the Master should overcome his evolutionary obstacles. As I well knew, the likelihood of this happening was very remote. For every successful race which reaches toward the stars there are perhaps a trillion or so that succumb along the way. Yet, in the final analysis, there could be no other way! Regardless of the postulates which are known to be true for bio-molecular engineering, the universe of reality proves always and ever larger. No ultimate intelligence would ever reach such wisdom or size that it could create by mental construct and symbolism -- the tools of science -- complete and accurate pictures of any part of reality. This right belongs to a Supreme Being!

So I did in my compassion and love for the Master race only that which could be done to satisfy their command. I started them again on the long, evolutionary road of trial and error -- but with a difference.

This time they had a human helper along the way. One who had already been over the path and found it successfully. Who knows? Perhaps their chances are far better than my feeble science can predict!

With such thoughts in mind, I prepared for our departure. We removed the buried explosives from our bodies and turned off the signal which could trigger the device on any of Ed's non-indigenous species.

No longer bound by the limitations and need to twist and torture our thoughts through other persons for minor gains in communications, we sought out and selected a planet which was Earthlike in many ways. It was already seeded with a small human colony at technological level one. Here, we decided to ride out the forthcoming chaos.

Perhaps Grammer would find here another human soulmate, at least that was Surg's and my prayer. With all the future ahead of us, and nothing to serve but our own whims -- and with only a twinge of regret for our glorious Masters -- how truly great the future appeared!

Should we tackle the problems of longevity, thus making even the future our tool? Or perhaps the nature and use of psi functions, removing the masking elements from our genetic structures, or even that of all intelligent species, thus opening the door to a multispecies unity?

Surge and I, however, had our own private goals, and within it, I hoped our first child would have Surg's eyes and hair color -- purely hereditary as they may be!

