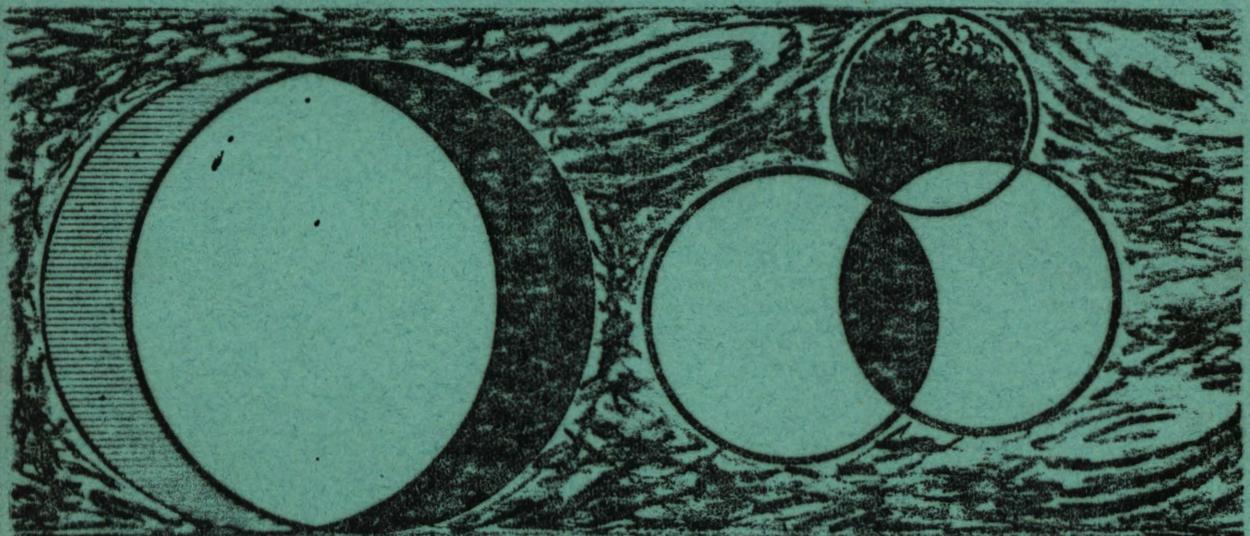
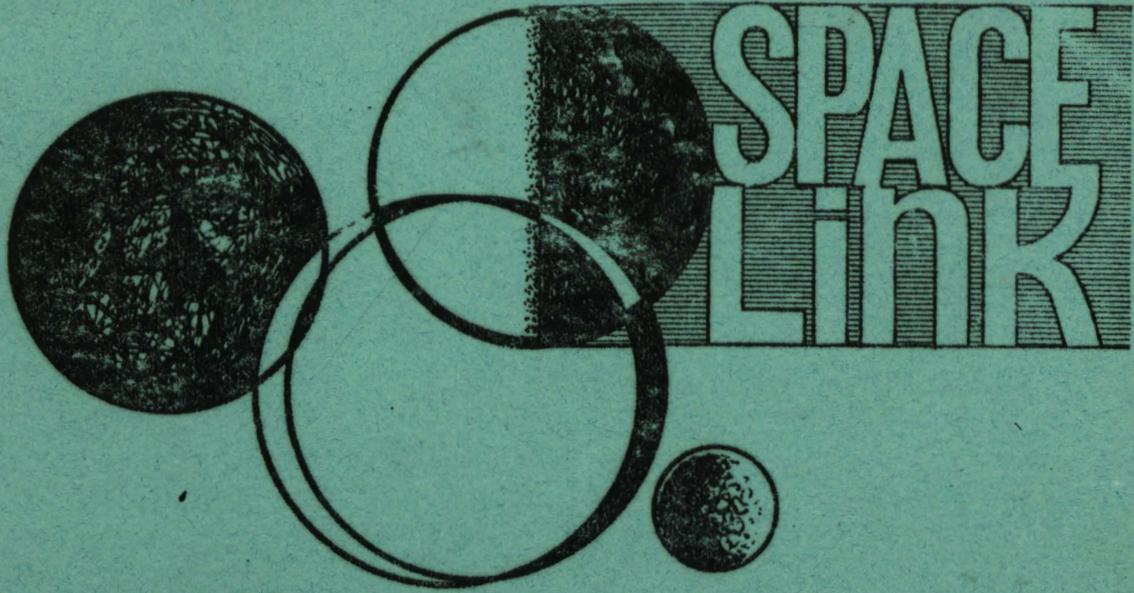


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COMMUNICATION WITH OTHER WORLDS by Willy Ley.

(first published in 'Mechanix Illustrated', 1947)

Here is a problem that rarely occurs to the average man: yet a great scientist solved it one century ago.

Before long Earthmen are going to Mars. On Mars they may find civilized beings of one form or another. These beings will have a language utterly different from those of Earth. How can there be talk? How can there be understanding? How can communication be begun? Here lies a special problem.

The first suggestion of how we might communicate with other worlds was made just one century ago. It was not made by some wild-eyed crackpot, but by one of the very great men in the history of science. He was the top mathematician of his time and possible of all time - Karl Friedrich Gauss.

Of the other planets of our Solar System, Gauss said, the two which are closest to us, Venus and Mars, seem to resemble Earth very much. If they do they might harbour life, he continued, and if they harbour life they might harbour intelligent life forms, the equivalent of man on Earth. The way to find out is to send them a signal which proves to them that we are intelligent and which invites them to reply, to prove their own existence and intelligence. Of course our signal will have to be of such a nature that it cannot be taken for an accident of nature. A gigantic beacon, for example, might be considered only a volcanic eruption. Our signal will also have to be one which has meaning to them as well as to us. A gigantic mound which forms the letters A B C would mean something to us, for example, but not a thing to a Martian or a Venusian; it would even be meaningless to most Chinamen.

Gauss, pondering this problem, came to the conclusion that our signal had to be a mathematical figure and nothing else, and he selected the one made famous by Pythagoras, the triangle with a square over each side, proof that the square of the hypotenuse equals in area the sum of the other two squares. If the Martians or Venusians are intelligent enough to have progressed to simple geometry they must know this figure, and it must mean the same to them as it does to us.

The next problem was how to produce a mathematical figure of

the necessary size, and here Gauss had a brilliant idea. He suggested making it of dark pine forests planted in the Siberian tundra in strips several miles wide and up to a hundred miles long. The interior of the triangle and the squares would be planted with wheat, for contrast. Aside from its mathematical meaning, such a design could never be accidental - for nobody would plant things in such a crazy pattern with so much waste of space unless there was a good reason for it.

Gauss's idea may never be carried out now, for it looks as if we will land a rocket ship on Mars or Venus first. Suppose our interplanetary explorers encounter intelligent life on Mars - creatures at just about our level of progress (of necessity we would have progressed somewhat farther, or else they would visit us) and having about the same set of sense organs. How will we communicate with them? First we will want to "get across" the simple fact that we are visitors from Earth. We will not be able to talk to them. We might never be able to talk to them, because they may not be capable of emitting articulate sounds. How can we - assuming that they can see and are intelligent - explain our place of origin to them?

The answer is to have a prepared manuscript, something like a letter of introduction, written in such a way that they will have to understand it if only they study it carefully. The language of this letter? Partly mathematics, mostly pictures.

The first page will be an introduction to our mathematical symbols. It will begin with a single dot with the figure 1 next to it, then show two dots with the figure 2, then three with the figure 3, and so on. This will give them the digits from 1 to 9 and the symbol for 0.

Next will be examples introducing the plus and minus signs. The figures used for the examples have to fulfil two conditions: be simple, and permit cross-checking to see whether the ideas which the alien intelligence derives from them are correct or not. Fractions and decimal fractions, squares and cubes and roots will then be shown. All this can be made very clear. Then the powers, going beyond the cube of a figure to show that we are used to abstract things too, since there is actually no higher power than the cube in solid geometry.

The powers of ten would then follow, to show how our system

$$\cdot\cdot + \cdot\cdot = \cdot\cdot\cdot$$

$$3 + 4 = 7$$

$$10 - 4 = 6$$

$$3 \times 7 = 21$$

$$16 \div 8 = 2$$

$$10 - 4 + 3 = 9$$

$$\square = \boxed{1} = 1^2 = 1$$

$$\boxplus = \boxed{2} = 2^2 = 4$$

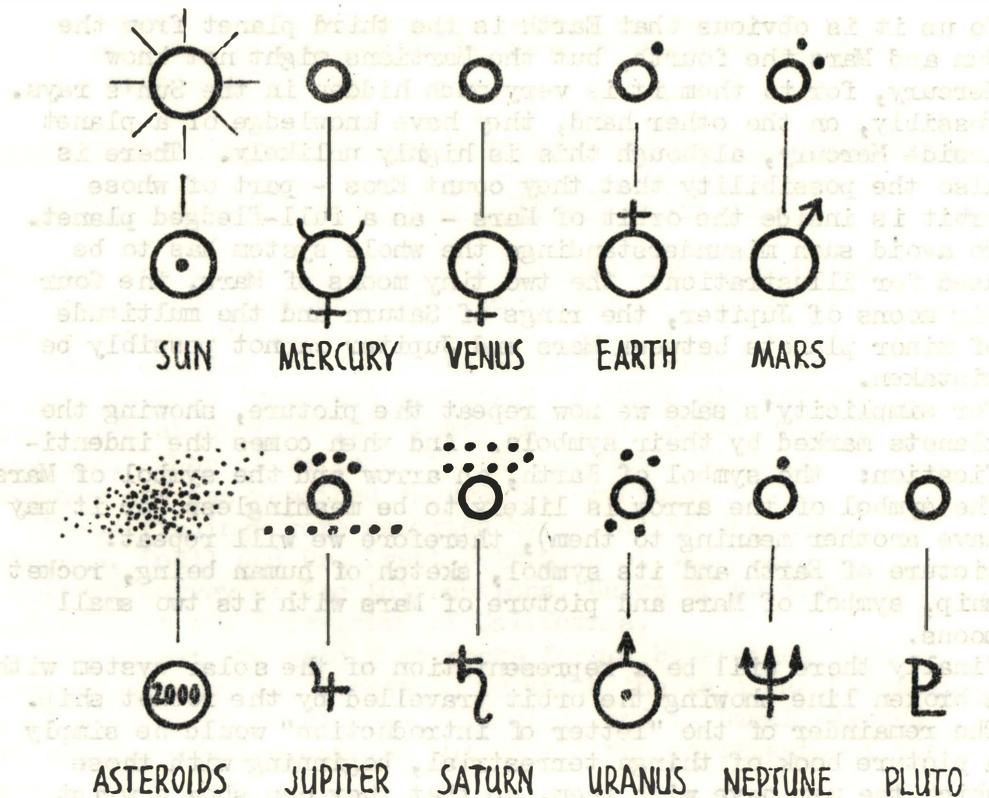
$$\boxtimes = \boxed{3} = 3^2 = 9$$

SUGGESTED INTRODUCTION OF
MATHEMATICAL SYMBOLS TO
INTELLIGENT EXTRATERRESTRIAL
BEINGS.

of numbers operates. Since we could also have chosen the 12 as the basis for our numerals there will be a picture of a man with both hands spread, to show that we chose the ten because of our biological accident of having ten fingers.

The main purpose so far is not the establishment of our own intelligence (the rocket ship would be sufficient proof of that) but to explain our method of notation, required for denoting our place of origin.

For that it is further necessary to establish our system of measurement, and since the metric system is by far the best,



Symbols which should help identify us to beings of other planets
in the Solar System.

we use that. We start with a picture of Earth, with one meridian. Then is pictured the meridian alone; then the meridian stretched out and marked 40,000 km. Then, as a cross check, the picture of Earth once more, with equator marked and a meridian from equator to one pole marked 10,000 km.

Then comes a picture of the Sun, and one planet with one moon and, farther on, another planet with two moons. Each has its distance marked in kilometers. After this, a picture of the Sun with the planets in succession - marked at first by figures in circles. Here a potential misunderstanding lurks.

"LIFE IN A "MARS LABORATORY"

Dr. S.M. SIEGEL, an experimental biologist, has found that some Earth plants and animals can survive in his laboratory, which simulates conditions believed to exist on the planet Mars.

Despite his audacity in venturing into space, Man is a frail animal who thrives only when he can live normally in his surroundings of the moment.

Even now, when he stands on the mere fringes of space exploration, his efforts are accompanied by hazards and stresses. When he ventures into the depths of the Solar System, we foresee even greater dangers.

In spite of the unknowns of interplanetary flight, ingenuity, plus an enormous amount of money will see the United States well launched into space during the waning decades of this century.

After a manned station on the Moon has been established, the close ties to Earth must be cut and separation will be measured in millions of miles and long months of travel.

The chances of misadventure will increase.

If Mars were made of solid gold, the shipping cost would price it out of competition with Earthly supplies of gold. Yet, if we can attain the Moon, and find there the rewards which come when new doors are opened to science, we neither will, nor can, be content to stop there.

In the vastness that lies between Earth and the next nearest possible planetary system, Mars alone may harbour active life at a complex evolutionary level.

No scientist can argue from evidence, for or against intelligent life on Mars. Indeed, the evidence for life of any sort is very circumstantial.

Seasonal changes of colour in the dark areas - which are grey, brown or even blue, but never earthly green - together with suggestions of simple bio-organic products, and even the resistance of the dark areas to milleniums of dust storms, suggest familiar vegetational patterns.

As an experimental biologist, I want to pose questions in terms of the capabilities possessed by life as we know it.

Is the nearly complete lack of oxygen prohibitive?

Poisonous organisms such as *Clostridium botulinum* can obtain all the energy required for essential cellular processes with no oxygen whatsoever.

Is a shortage of atmospheric moisture prohibitive? One need only look to the deserts and high mountains of earth where life, although not dense, is far from scarce.

Surely severe periods of freezing to -20°C for 12 hours - such as on the mildest Martian day - cannot eliminate life, when freeze-drying is so effective a technique for preserving certain bacteria. Controlled freezing is capable of preserving certain cells and tissues of mammals.

Three recent books outlined the Mars environment: "The Red and Green Planet" by Strughold, "The Physics of the Planet Mars" by deVacouleurs, and "The Atmosphere of the Planets" by Kuiper and his colleagues. None of the conditions listed therein can seriously eliminate even life forms familiar on Earth.

Our laboratory has been seeking additional answers to these questions, partly under a NASA contract.

Extending boundaries.

We are trying to learn whether complex organisms - seed plants, fungi and invertebrates, for example - can withstand the conditions of the Martian environment. These experiments have pushed aside the conventional boundaries of ecology and created whole new sciences of environmental and stress biology.

Environment has become a new tool for the study of physiological behaviour, biochemical plasticity and genetic potentiality.

Our small Mars simulator laboratory contains 97 per cent nitrogen and 3 per cent carbon dioxide at a dewpoint of -60°C . At 4 p.m. daily, the lights are turned out and the 12-hour night begins, reaching and holding a temperature of -20°C . (The Earth's atmosphere is 21 per cent oxygen).

We have devised other small chambers for handling plants and animals under desired atmospheric or water conditions.

One of our earliest objects of study was the common garden bean. When grown in five per cent oxygen, seeds produced healthy plants. However, they had drastically modified sugar, protein, oil and enzyme composition.



A kangaroo rat scampers around his laboratory jar while breathing 100 per cent oxygen during a three-day test.

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Above all, life is tenacious and persistent. This fact alone gives us every reason to cast off our preconceptions, and to look and learn, and be careful.

Earthbound as most of us are now, we can nevertheless contribute in many ways toward preparation for the day when we gain access to the best Mars "simulator" of them all - the planet Mars.

Credit - Science Horizons.

THE KEELY ENIGMA

by K.J. Ball of IWUFOIS.

John Ernest Worrall Keely was born in Philadelphia, U.S.A., in 1827. As a young man he was employed as a carpenter, and played in a small orchestra in his leisure time and also exhibited amazing dexterity with card tricks and other aspects of sleight-of-hand manipulation. Like many young men of his time he deeply longed for adventure, and eventually spent three years in the Rockies with a band of fur trappers. Badly wounded by an Indian arrow, he returned home to the beginning of a most astonishing career which constantly promised so much, yet, in the final analysis, fulfilled comparatively little.

He had a very engaging nature coupled with a magnetic personality and remarkable versatility, and, although he had little formal education, he quite easily made friends with mechanics and professors alike and so acquired smatterings of the fundamental principles of both science and machinery. This was an age of rapid industrial expansion, and there existed a great need for controlled power - water power was totally inadequate to cope with industrial development, and, although steam power could cope with the situation as it then was, it was not an ideal solution. The paramount demand was for some cheap source of energy to develop the industrial strength of a nation just awakening to a realisation of its own potential.

In 1873, Keely first came into prominence by claiming to have tapped the great new source of power that was required. Quite naturally, the universal initial question was "What is this source of power?" Unfortunately, Keely's answer was disappointingly and exasperatingly vague: "I have been working on a device which disintegrates the etheric force which controls the atomic constitution of matter, and I have been able to apply this force through my motor by means of induced harmonic vibrations". When more detailed explanations were requested, his questioners were literally showered by a barrage of theories and explanations which contradicted the scientific views of the time. He then proceeded to give convincing demonstrations in which witnesses, including scientists and newspapermen, saw his machine tear a two-inch hauser into shreds, and drive a one-inch lead ball through two heavy oak planks. Keely assured them that they were witnessing the powers of a hydro-pneumatic-

THE MYSTERY OF THE MAZURIAN LAKES

by Antoni W. Szachnowski
Chairman Anglo-Polish U.F.O.
Research Club.

The "Land of a Thousand Lakes" - this district is called. In fact there are more than 2,700 lakes of various sizes and shapes. Their waters - teeming with fish - surround numerous islands, which are a veritable paradise for bird-watchers.

The lakes are scattered amidst postglacial hills and wrapped in magnificent forests, all rich in wild-life, beauty and ... mystery.

Fairy-tales of fallen Gods, legends about submerged temples, stories of cruel deeds perpetrated by Teutonic Knights - haunt them.

The recent happenings contributed also to the tales of mystery. They concern Hitler's subterranean headquarters in the forest, five kilometres from the town Ketrzyn. In that place there was the unsuccessful attempt at the 'Führers' life with a bomb.

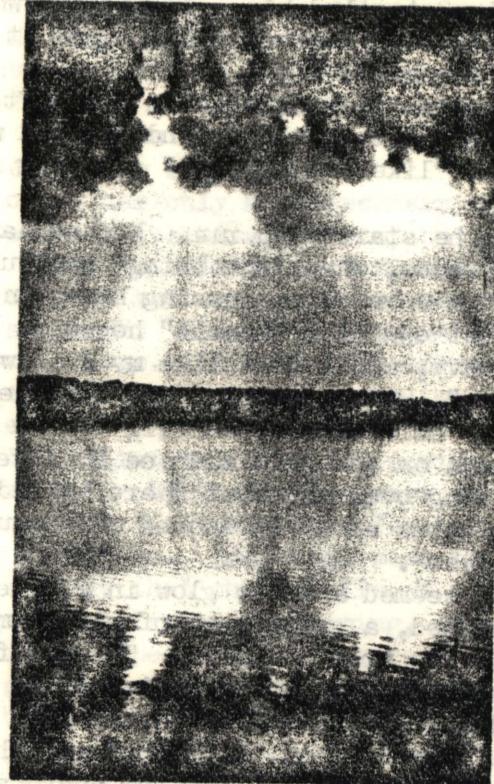
The Germans flooded it completely before retreating. The local stories insist, that these waters cover the secret of a terrifying weapon which was being developed there at the time.

As if all this was not enough - in the last few years 'flying saucers' have added their dash of mystery. In the years 1956/57 some strange objects flew over Iidzbark, Ketrzyn, Gizycko. Then in 1959/60 came a wave of 'flaming balls' over the same localities.

News reached us recently that 'weird globular objects' appeared again last summer. Only this time they hovered over various lakes in the vicinity of Morag, Olsztyn, and Ruciane.

From all known saucerian incidents in the Mazurian Lakes District - one is particularly striking. A frightful experience of Mr. Aleksy M. Jakimowicz on the night of 25/26th October 1959. He was returning to his home town - Gizycko - from a visit to his relatives living at Wegorzewo.

He got a 'lift' for a good part of the way, and then took a short cut on foot across the woods and fields. It was rather late, about 1.30 a.m., when - on approaching the outskirts of Gizycko - he noticed an unusual pulsating light in the sky. It was to his right - over the Lake Mamry. Mystified, he stopped to have a good look. The light was



Sunset over Lake Mamry
(Surface area 110 sq. Kilometres)

stationary, round, and 'almost as big as the moon' (i.e. apparent size). But the moon shone from a different direction - partly hidden by the cloud. The light was yellowish, at times very bright - then getting dimmer and then brightening again... 'just as if somebody was turning the wick in a lamp - up and down'. He thought it all very strange - for he knew that was not an aeroplane. It did not move and there was no sound. All he could hear was the wind blowing through the dry leaves and the distant barking of dogs.

Then a new noise startled him. In his own words: "It was a swoosh and whistle. Not very loud - yet it set my teeth on edge and really shook me."

However, this noise was coming from his left-hand side. He glanced quickly in that direction and noticed with alarm a flaming object ... "like a huge egg," speeding from the East downwards.

Now terrified, he started to run. He had hardly moved more than 30 or 40 paces, when 'the thing' was just over the tree-tops. He felt a wave of oppressing heat, and then a lack of air. "I just couldn't breathe" he said. "My head was spinning and heavy, and I felt like my skin was about to burst at any moment." He was gasping and had the taste of blood in his mouth. Half choked, he fell to the ground but still managed to turn on one side and see this yellow-orange flaming object passing over the spot where he had been only about one or two minutes ago. It looked more round now and was "as big as a house".

The air around seemed also to glow in a blue-green like colour. When it passed, a great gush of wind came in the wake and it was easy to breathe again. The air felt just like after a big thunderstorm. Jakimowicz found now that his nose was bleeding, and that's why he had the taste of blood in his mouth. The object, now looking much smaller, was above the lake - moving still further away, and upwards.

Jakimowicz stood up and although bruised and shaken, started to run again towards the town. However, after a while he stopped and looked back. He could see two small, round and yellowish lights high in the sky. They were speeding in a North-westerly direction - one a short distance in front of the other. When he reached the first houses and looked again, both lights disappeared completely.

All the dogs in the area were barking frantically. In many houses lights went on, a few windows opened and people peered down the street, but by now - there was nothing to be seen.

... This account was supplied by Dr. W.N. His full name is known to me but he has asked me to promise not to disclose it. He has good reasons.

Dr. W.N. possesses high university degrees, is a renowned specialist in forestry and the timber industry, and holds a responsible official position. During a tour of inspection of forests and saw-mills in that area, he heard jokes about a

man who thought he was being chased by a Sputnik.

As Dr. W.N. read things in the press about U.F.O's he became interested and traced these rumours to Mr. Jakimowicz. The latter, a 26-years old labourer of peasant stock - was working at the saw-mills in the summer and in the forest during the tree-felling season.

Mr. Jakimowicz has only an elementary education; he is rather stolid and not over-imaginative, but possesses natural common-sense. There is nothing foolish about him or hysterical. He does not read much and certainly had never heard or read about "flying saucers". His story brought him nothing but jibes from his fellow-workers. In fact this adventure made him so unhappy that he left the town and lived in a different part of the province.

When Dr. W.N. first met him, Jakimowicz was not keen to talk about it at all. Only after earnest persuading, he reluctantly described the incident. Then he answered many very searching questions. They both went to the actual spot and it became evident that the details of his story (descriptions of topography, directions, timing, etc.) conformed completely with the aspects of the terrain. What is more - the place brought back to Mr. Jakimowicz such vivid impressions that it could be plainly seen he was still scared.

Dr. W.N. discreetly conducted further investigations, and has found a considerable amount of independent corroborative evidence. That night other people also saw "a huge flaming ball" swooping over Lake Mamry.

(Mr. Szachnowski has kindly offered to supply further news of UFO interest from Eastern Europe and we look forward to publishing material which has not appeared elsewhere. Ed.)

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MAN IN PLANE 'TALKS' WITH HIS MIND

The world's first experiments to show whether telepathy can be used for communicating with spacemen in orbit has been carried out in secret over Britain.

A man believed to have special powers attempted to transmit mental messages from a Britannia flying five miles up between London and Glasgow on Tuesday night.

More than 25 people throughout Britain tried to receive the messages.

Some messages were "transmitted" while the sender was under hypnosis to test the belief that telepathy occurs more readily in that state.

The messages were of three types:-

Cards bearing a single symbol

Pictures in black and white and colour

Objects imagined by the sender

The receivers tried to draw or describe the image which appeared in their minds at the time.

Result will be known in a few days.

by Chapman Pincher
Daily Express
28.5.64.

oo

POWER TOOL FOR WEIGHTLESS SPACE TRAVELLERS

A power tool, designed for assembly and repair work in space has been successfully tested in the United States under simulated conditions.

Ordinary tools are useless for weightless space travellers. If an astronaut went outside his spacecraft and tried to turn a nut with a wrench, he would succeed only in spinning himself. On Earth a worker's own weight against the ground braces him.

The battery-powered tool which astronauts will use, eliminates what engineers call "reactive torque", the twisting force which tends to turn the tool in the opposite direction from which the nut is being turned. To achieve this, engineers developed a design in which motor and case rotate on ball bearings within the tool handle and the zero reaction is transferred through a spring loaded mechanism to the working end of the tool.

Credit 'Science Horizons'

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JAPANESE ASTRONOMERS SAW PINK PATCH ON MOON

A recent "New Scientist" gives news of exciting happenings on the Moon, observed by Japanese astronomers, which would appear to give some corroboration to the report by American astronomers at Flagstaff Observatory, of reddish patches in the region of the brilliant crater Aristarchus observed last year.

T. Sato, astronomer at the Rakurakuen Planetarium at Hiroshima sent the fresh report of colour. The observation was not made by Sato himself, but by seven young Japanese astronomers using the 10 in. reflector at Rakurakuen. On 28 December 1963 (UT date) they were carrying out observations in preparation for the lunar eclipse on 30 December. Until 15 hr. 05m. UT, nothing strange was seen, then at 15.55 one of the observers Y. Yamada, noted a large, distinct pink patch covering the southern part of Aristarchus, which was

