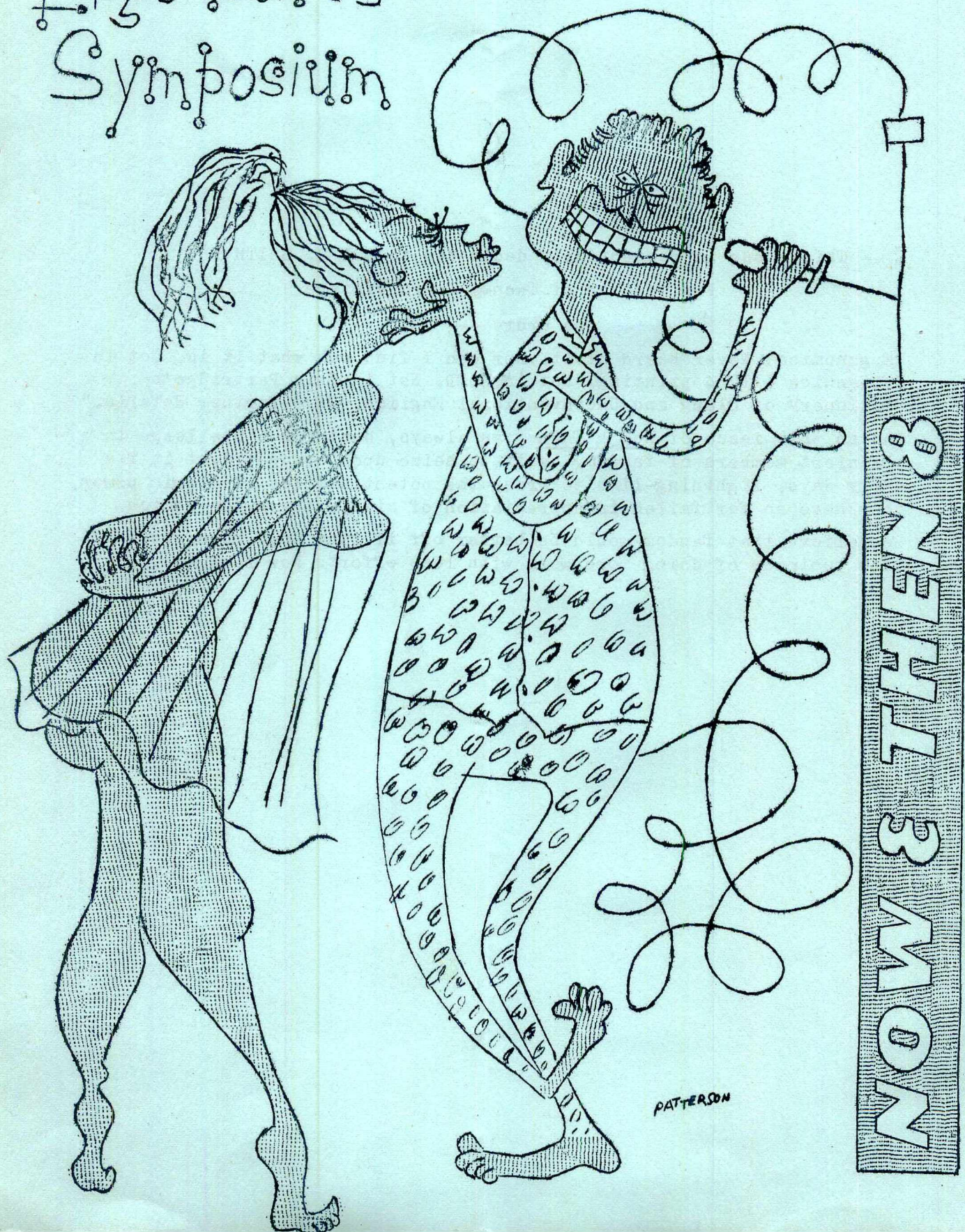


# Ergonomics Symposium





This issue is respectfully dedicated to DON R. SMITH

Fan Veteran of Twenty Years vintage

who wrote ---

"Ergonomics? Never heard of it. Nor can I find out what it is. Not in Britannica - 1954 printing. Not in SOED. Not in Eric Partridge's Dictionary of Slang and Unconventional English. Give further details."

And so this issue of Now & Then , as always, contains a challenge to all alert members of fandom. Swift to seize upon space-flight in its early days, lightning-like to grasp the potentialities of atomic power, they have so far failed in appreciation of simple energy economics.

We believe that fandom would be better off if fans knew more about this business of doing more work with less effort. Now read on ...

"Trop d'intelligence, trop d'intelligence", a lady  
once said to Gleizes of his cubist canvases, to which  
Gleizes replied, "Mais madame, je vous assure que la  
peinture n'est pas reservee aux idiots." Which leads  
us to the inevitable question

1 : What is Ergonomics ?

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Ergonomics is now the ruler of all industrial techniques, mass production lines, building methods, quartermaster's stores, and military logistics.

In its earliest origins, its onlie begetter, F.W. Taylor, with an American hatred of all forms of inefficiency, looked for, and found, improvements in men, instruction, and methods, plus incentives to increased productivity. This "scientific management", by selection of suitable men, improved techniques and increased pay, stepped up output and reduced overall costs. Regretfully, the men could not work at such a pace. Taylor became unpopular because he treated man as machines, and scrapped them when they could not produce with the necessary precision and reliability. From his work stems the distrust of time and motion study today.

Later, Gilbreth, a psychological crank, (try spelling THERBLIG backwards),<sup>x</sup> set out to break down every process in industrial production and assembly. Proper training of operatives enabled him to reverse Taylor's trend and achieve greater output and lower cost, but with a reduced expenditure of human time and energy.

From Gilbreth stemmed the industrial psychologist. By intelligence and aptitude tests employers were enabled to discover without any trial employment just what tasks suited their employees' mental and physical make-up.

In other fields research went on into the mechanistic side of industry. Wasteful industrial ways were examined and scrapped in favour of more economical ones. Waste heat was put to use. Electrical engineers sought equipment less hungry for current. Industrialists demanded the services of skilled heat and power engineers, and the new breed of architects, designers, and production experts. It is to them, the psychologists, and and the time-study engineers that we owe the streamlined industry of today.

As an example of practical ergonomics consider two apparently similar methods of braking aircraft on landing. A four-engined propeller-type plane may feather its airscrews through 270° and reduce its speed with engines and wheel-brakes. A four-jet plane uses a braking parachute. Both are energy transfer systems. In the first case, fuel is used to brake and heat is dissipated through the brake-drums or discs and the tyres and runway. In the second, atmospheric inertia is used to overcome the forward inertia of the aircraft... economically. Refrigerators transfer the heat inside to the air outside. On a larger scale heat can be extracted from



soil or rivers to warm entire buildings by employing latent instead of kinetic energy. Work is going on to discover a practical power or energy storage device. During the hours of darkness electricity stations generate power which is not put to full use and cannot be re-used. The solar energy reaching this planet is only just achieving results from potential differences in slabs of silica, which can produce 50 watts per square yard.

Little remains beyond the investigation of the small but significant savings in energy expenditure of human beings and their living conditions. Civilization has become, on its material side, largely a matter of tools and machines. We know much about how machines work but little about how the mind and body work. Machines become more complicated and difficult to control; because of the intimate connexion between machine and operator, we can no longer leave the human being to get along as best he can. Even in the simple things of life... well, consider a chair. Incredible though it may seem, an uncomfortable, badly designed chair uses up the energy of the sitter; an ergonomic chair based on sound anatomical lines and energy-saving principles offers, paradoxically, both improved relaxation and alertness. The design of a door handle to make it easy to open whether the hands are empty or full, the design of a duplicator to ease the birth-pangs of that fanzine... But we say no more. Ask your friends. Borrow books. Discover what's missing from your life and fandom in general.

(\* We did, and it came out GILBREHT. Odd...)

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"The legend goes that a certain poet, crossed in love, resolved to hang himself and end his life, and thereto composed his own funeral oration. An honest ploughman, seeing this poet with a hempen rope over a bough, listened to the oration with great sadness of countenance and bitter tears. On seeing this effect of his verse the poet took heart and resolved to live anew, while the ploughman took the hempen rope and hanged himself."

(From the Tales of the Romiley Pilgrims, 1327)

.....

Rubens painted endless scenes  
Of bulging sloppy nudes,  
Then feasted his eyes on the Family Size  
WIDOWER'S BREAKFAST FOODS

Leander swam the Hellespont,  
And drowned, so Homer sings,  
When Cupid's dart pierced both his heart  
And WIDOWER'S WATER WINGS

## 2 : A p p l i e d      E r g o n o m i c s

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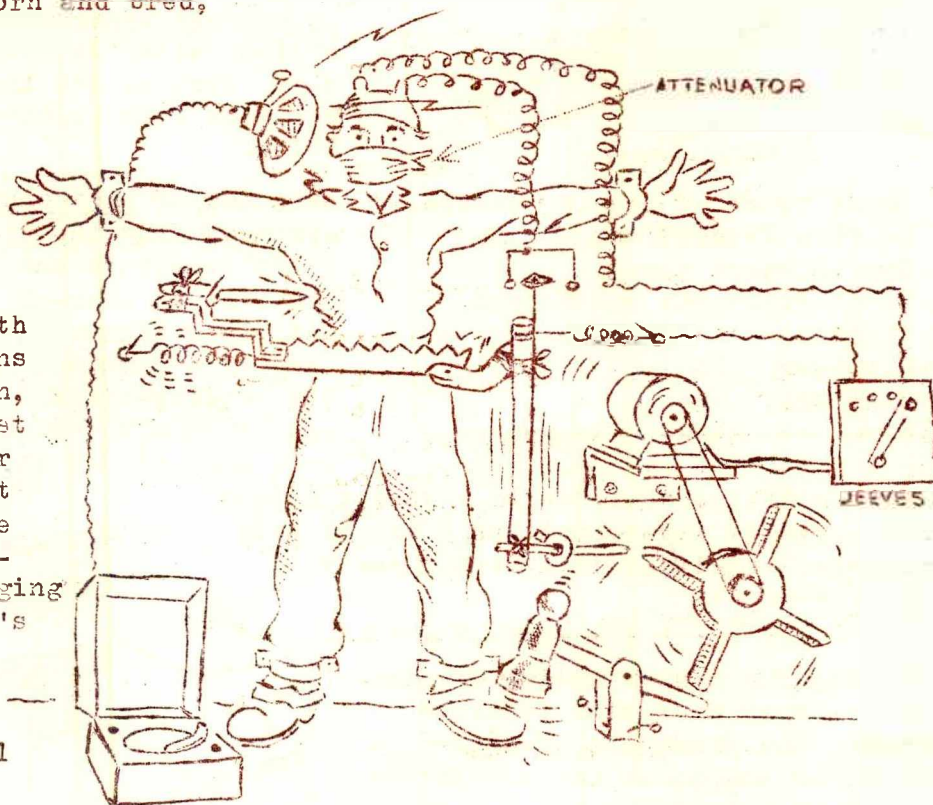
### CASE HISTORY I - The Agoniometer

As an instance of how Ergonomics can play an important part in everyday life, we offer this story of the development of the Agoniometer. Keen students of Lewis Mumford will immediately recognise the inevitable three stages of development.

In the first diagram, the Eotechnic stage, design considerations were forced on us by the limitations of the environment. Byron T. Jeeves, a Yorkshireman born and bred, lives in a cave

remote from civilisation, having neither light nor power.

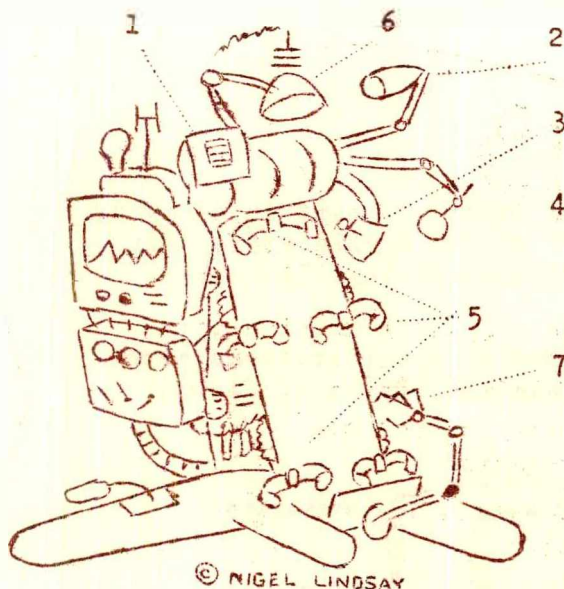
A follower of Caligula and Commodus, he illuminates his cave at night with burning Christians soaked in bitumen, and our first test case was a member of the Department of Inland Revenue who was only prevented from bringing Light into Terry's life because he was already a Salvation Army bandsman. It will be seen that although the



initial design is functional, it is capable of being run by electricity, whereas the prototype worked perfectly well by water wheel, Leyden jars, and Voltaic piles.

The results were so satisfactory that research was taken a step further to the Paleotechnic stage, and Nigel Lindsay withdrew from administration of the Trans-Siberian Fan Fund to devote his full time to this design problem. In this second model, extensive use was made of cast-iron, malleable iron, and steel members, with resulting great weight and





© NIGEL LINDSAY

1. Sound track of nagging female.
2. Actinic Schneiderlamp.
3. Irwell scent spray.
4. Greep-flavoured gobstopper.
5. Clamps.
6. Exciter.
7. Grabber.

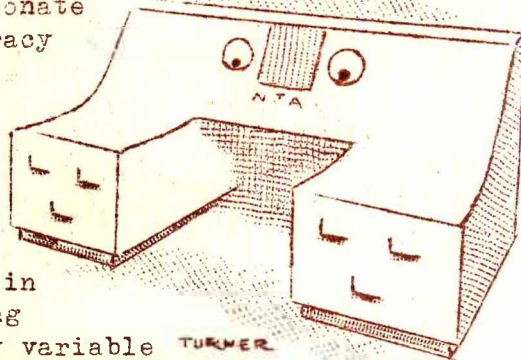
immobility. Though superior in results, a skilled operator was essential to avoid permanent damage to the subject, since this is illegal in an enlightened country like ours. Note the crudity of the sensory stimuli. In particular, the entire apparatus lacks servo-electronic devices to ensure the continuance of the subject. Even with the design at this stage, many remarkable results were obtained, but in an attempt to please all types of users the design, with the assistance of Harry Turner, was brought to its ultimate form as shown the diagram below.

Evidence of Neotechnic styling is apparent from the wide use of light alloy pressings and stampings, ensuring an easy-clean surface, a notably handsome piece of furniture, and is a permanent solution to the wedding-present problem. Controls are limited to two knobs, and remote control and observation of

the results are assisted by a vision screen, which permits impersonal and dispassionate readings, resulting in a higher accuracy of measurement.

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Fulfilling the most exacting requirements of every neuronics research engineer, the versatile Needham-Jeeves Agoniometer overcomes initial problems of reluctance by retaining the subject in a rigid stasis during the most searching excitation. Agonisation is continuously variable from 1 c.p.s. to 150,000 c.p.s. sinusoidal, sawtoothed, or pulsed, with a sufferance index flat to 0.1. Anguish units working into a highly resistive load. Instantaneous reaction, prolonged resistance and pure capacity checks need only an external domestic power source. Enthusiastic reports prove the NJA has unique abilities in research into conductance-fields, with many instances of improved amenability in previously refractory cases. Prices on application.



- Advertiser's Announcement.



# Unrequited Love

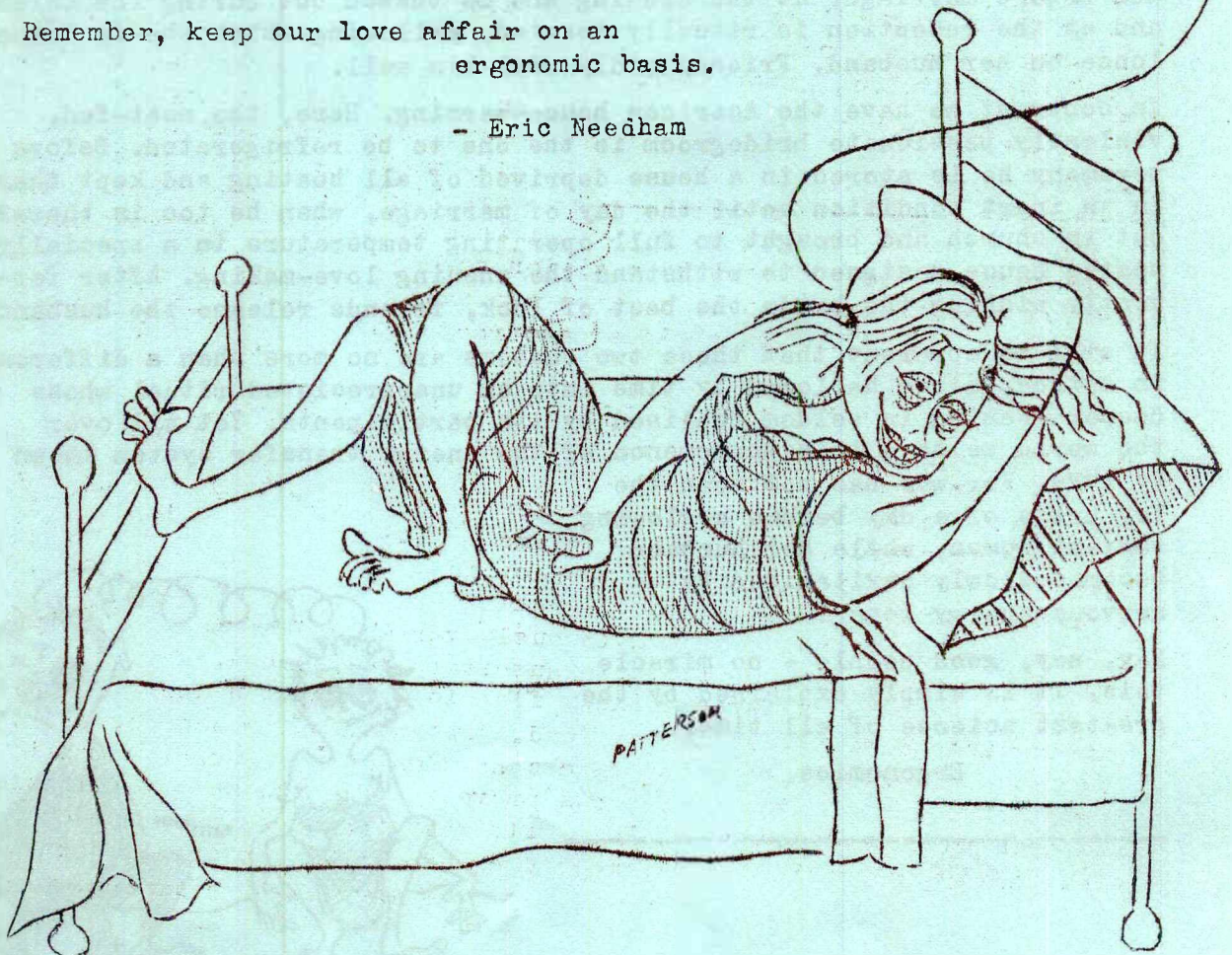
No more for me those lustful nights of elemental passion.  
I'll woo you from a distance, in ergonomic fashion.  
Some time, when the nights are cold, I'll view thee  
with affection

For warmth that's doubly shared is headed in the  
right direction.

Meanwhile to keep my love for you from  
paralytic stasis

Remember, keep our love affair on an  
ergonomic basis.

- Eric Needham







#### 4 : M a r i t a l      E r g o n o m i c s

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I leave it to such eminent authorities as Havelock Ellis and Dr. Marie C. Stopes to explore the more interesting aspects of sex, love, and marriage from the viewpoint of emotion and desire when you have sex, love, and marriage seven days and seven nights a week.

As the sole authority on Erotic Ergonomics I propose to reveal my findings on the energy inhibition before marriage, energy control at marriage, and its release and

transfer after marriage, and compare different systems in use in the United States and England.

With the traditional coolness of love in the British male, the practice in England is that of cooling the ardour of a bride-to-be by refrigerating her before marriage. At the wedding she is thawed out during the ceremony, and at the reception is ritually toasted, following which she is turned loose on her husband. Friends sadly wish him well.

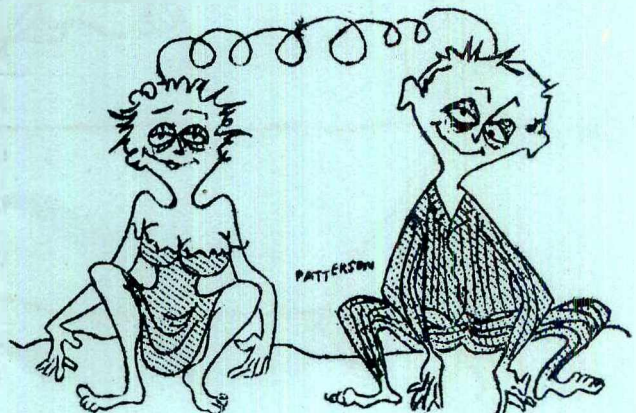
In contrast we have the American house-warming. Here, the meat-fed, violently passionate bridegroom is the one to be refrigerated. Before the ceremony he is stored in a house deprived of all heating and kept there in an inert condition until the day of marriage, when he too is thawed out in church and brought to full operating temperature in a specially heated house designed to withstand the ensuing love-making. After fervently wishing the bride the best of luck, friends release the husband.

It will be apparent that these two customs are no more than a difference in method, since hallowed by time into an unappreciated ritual whose deeper meaning is seldom realised by its participants. Yet all over the world we have this phenomenon of the energy transfer system known as love. For who has not seen the icy bride of a day become a glowing radiant woman, while her husband becomes slowly devitalised by nervous energy loss ?

Nay, nay, good people - no miracle this. It is simply explained by the greatest science of all time...

Ergonomics.

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## 5 : E r g o n o m i c   S F   W r i t i n g

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It has long been my hope to see E----- C. T--- placed in a Time Capsule for the benefit of posterity, preferably alive. He is one of our most accomplished ergonomic writers of science fiction, and a study of his work can be invaluable to those who wish to write successfully with the minimum of effort. Meanwhile here are twelve golden rules which should be helpful to those anxious to break into the promags before the next sf boom:

1. Plots are not necessary: episodes will suffice.
2. Never create characters; mere names will do.
3. Do not explain a subject. You will always find that some expert disagrees with any theories you advance, and then you have to justify your claims.
4. Do not employ neologisms. People will say it isn't English. If you are American the Un-American Activities Commission may investigate.
5. Describe conditions on other worlds just how you like. One day you may be famous for an absolutely correct prophecy.
6. Space-ships never need maintenance. No-one, but no-one, cares how you refuel or repair a space-ship.
7. Do not under any circumstances confuse sub-space with hyper-space, or use both in one story.
8. Use out-of-date equipment; everybody knows what a Geiger counter is, and radiation will still be a problem.
9. If in doubt about weapons, simplify. To destroy a planet, bash it with another planet.
10. Keep your aliens hostile then - who knows? - when you use a friendly alien, it will be novel.
11. Be original. Write two-thirds of a serial and leave everybody guessing.
12. If in doubt, take an honest job.

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## 6 : E r g o n o m i c   C r o s s w o r d

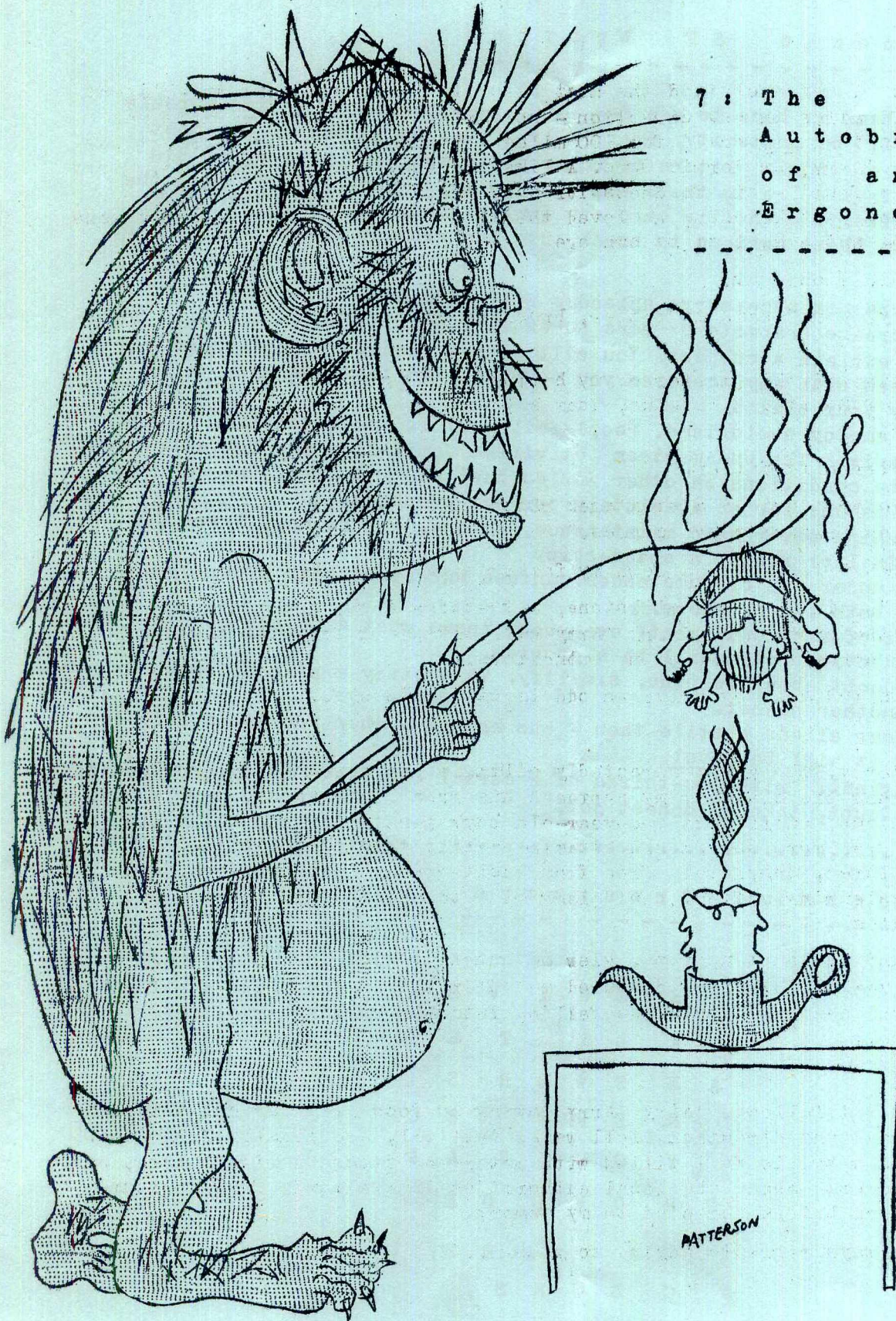
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		A			F	E	W
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7: The  
Autobiography  
of an  
Ergonomist

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## PART I

In my infancy I was acclaimed the most beautiful, talented and intelligent child for 100 miles in any direction - horizontally, of course. This was because I was the only child for 100 miles around, due to the depredations of one 'Airy 'Arry, an 'orrid Ogre. A likeable chap in many respects, 'Arry 'ad one great fault - his fondness for children. Baked, boiled, fried, stewed, or raw with ketchup, he loved them; and so it was that I had no-one to play with, not a soul of my own age.

"Father," said I one day.

"Speak freely, son," said my father, brushing some lapis lazuli dust from his apron.

"I have considered this matter of my having no playmates from the viewpoints of Lysurgus of Sparta, Epictetus, Thomas Aquinas, William of Occam and Benjamin Sarto."

"Hell !" muttered my father.

"I have therefore devised a stratagem which will encompass the downfall of 'Airy 'Arry on ergonomic principles."

Tears, salt as brine, flowed down my father's cheeks.

"All I need," said I, "is a millstone, a toasting fork, and a darning needle, and the problem of 'Airy 'Arry will disappear from the minds of men like any other fragment of my subnoxious."

"Go then !" cried he, joyfully, an odd light in his eye...

## PART 6

When 'Airy 'Arry, who was abstractedly oiling a pressure cooker and looking hungrily at his bicycle, saw my approach his great face showed perplexity. Seldom did plump, nutritious two-year-old boys penetrate into his valley stronghold. Even more seldom did vitamin-packed, tender, toothsome, tempting children, completely free from adulterants, preservatives, and artificial colouring matter, haul along millstones, toasting forks, and darning needles.

With one bound he leapt upon me, slew me outright with the millstone, toasted me over a slow fire, devoured me utterly, and then picked his teeth with the darning needle, so falling into the cunning trap I had laid for him...

## POSTLUDE

In the days that followed 'Airy 'Arry 'aving no food left for one hundred miles each way (any direction) fell weak, fell ill, and finally fell dead. The hole caused by his fall filled with water and became a mighty lake, and across the awesome chasm the local authorities in gratitude flung a four-mile suspension bridge, erected to my memory.

But I have always regretted dying so young ...



## 8 Advantages of an Ergonomic Fandom

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According to such eminent astronomers as Herschel, Jeans, and the late Hynheer Manuel Mulvaney, space is filled with stellar matter so diffused and attenuated that for all practical purposes it may be considered to be a vacuum, and useless industrially.

A depressing aspect is that the matter in this almost pure vacuum is alleged to have a mean temperature of upwards of 22,000° C and represents an energy source which could revolutionise and rebuild any planet, yea, and renew any planet whose more intelligent creatures could tap this source of power and use it. Until then, us fans must conserve our energies for things which matter and delay at all costs the isentropic heat-prostration /I don't know what he means either - het/ which I firmly believe threatens our cosy fandom.

All you learned fen are undoubtedly familiar with the heat-exchanger, whose principle (see diagram A) could be used to conserve, and re-employ on less unergonomic lines, the energy dissipated by fandom.

A refrigerator compresses ambient-temperature gas, removes the high-temperature heat, expands the cooled gas, and the resulting temperature drop can cause a feeling similar to that caused by a statement by Robert A. Bloch to the effect that under his editorship Le Zombie was the best fanmag out ... ever. Bob, then, can form part of our closed-cycle energy transfer system.

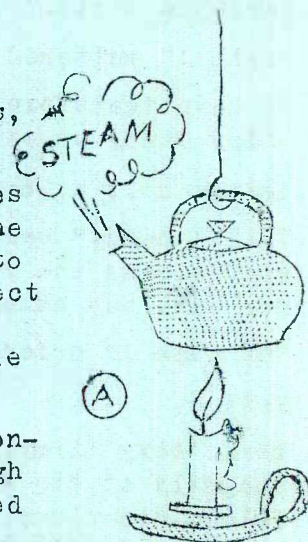
Having been involved in the production /nah! het/ of a convention, the knowledge of the high blood pressure and high tension generated among committee members can also be used ergonomically, and the heat put to service.

Since I came to love that wild Irish spalpeen Wal-lis, any slighting remarks about Belfast should cause both blood to boil and smiles to freeze among his worshippers. This temperature difference can be utilised.

Other factors are friction caused by collecting overdue subscriptions, the diminishing return of egoboo, and the hot air put out by enthusiastic neofen.

Volume for volume, fandom contains more heat than any other known form of vacuum.

Any questions?

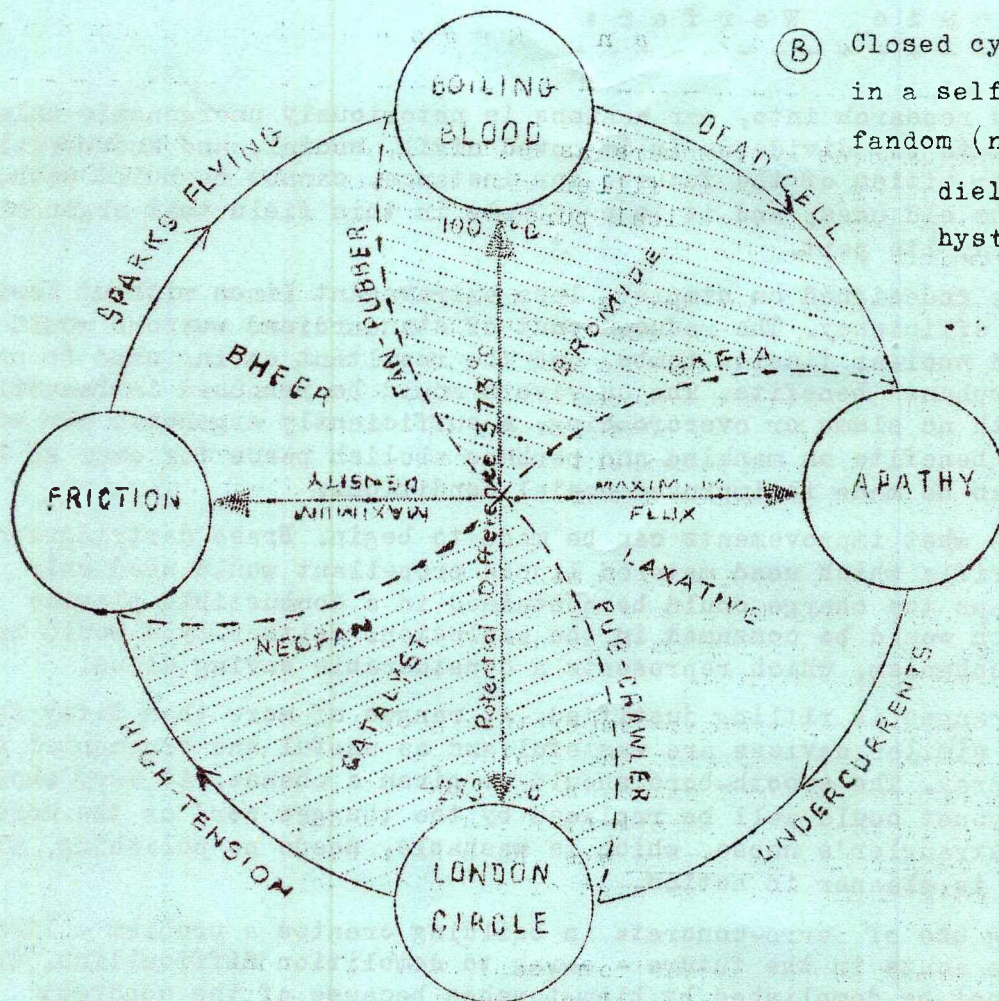


.....

Aesop's skill at telling tales  
Made him a famous fable relater.

Some people fall for stories as tall  
As a WIDOWER'S GRAIN ELEVATOR.





(B) Closed cycle of energy  
in a self-perpetuating  
fandom (neglecting  
dielectric  
hysteresis).

It will be obvious that (1) the greatest ability potential is offset  
by the greatest energy potential, and can be expressed as:

I'M ALL RIGHT  
YOU STAY THERE

and (2) the sole lubricant, Bheer, is cheap (relatively) and plentiful  
and brings about the change:

WHAT DO YOU THINK I AM ?  
I'VE A GOOD MIND TO TELL YOU !

(3) At conditions of greatest potential difference the back EMF  
imposes a heavy load on its bearers, resulting in the change:

I'M SINKING !  
COMING UP !

(4) which brings about the conditions which caused (1)

.....



## 9 : E r g o n o m i c    W a r f a r e

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Design of, and research into, war weapons is notoriously unergonomic unless it can be made to pay dividends in improved civil, social, and industrial conditions. New cities of the future, for instance, cannot be built without demolishing the old ones, and it is precisely in this field that ergonomic warfare can play its part.

Weapons can be redesigned on simpler, less extravagant lines without losing much of their efficiency. The reduced cost of standardised weapons would pay for simplified nuclear fission bombs, and the resultant saving used to pay widows' and orphans' benefits. The survivors would be rehoused in beautiful new cities with no slums or overcrowding. A sufficiently ergonomic war would confer untold benefits on mankind and perhaps abolish peace for ever so long as progress can be made in improved social conditions.

Let us examine what improvements can be made to begin. Brass cartridges are expensive. A rifle which used metered liquid propellant would need only bullets. Perhaps the charge could be contained in a combustible plastic cartridge which would be consumed in the explosion. Neither type would need any ejector mechanism, which represents a considerable saving alone.

Only at long ranges is rifling justified. At ranges of more than fifty feet Sten guns and similar devices are wasteful and as useful and ornamental as any other scent-spray. The smooth-bore should be given a chance. At very short ranges the bayonet could well be replaced by the thuggee cord or the more conventional strangler's noose, which is washable, needs no polishing, will not rust, and is cleaner in action.

The increasing use of ferro-concrete in building creates a problem - likely to become more acute in the future - owing to demolition difficulties. The steelwork cannot be demolished by blow-torches because of the concrete casings. The concrete cannot be demolished because of the reinforcing steel work. Post-war ferro-concrete rubble will have to be dealt with by ultra-sonics of sub-molecular frequencies, which will destroy the tensile strength of steel and loosen the cohesive powers of the concrete.

The same ultra-sonic projector will also obviate mechanised warfare, for obvious reasons. The retention of firearms will obviate battlefields, and the logical place for future wars will be the cities, leaving the fields to be used for agriculture.

It follows that from the increased use of nuclear fusion reactors of the lithium-hydrogen type, substantial quantities of fissile lithium hydride will be available as a cheap filling for future atomic type bombs. These will be used to end the war, demolish the cities, and provide a constant source of employment for the workers in a world made happy by ergonomics.

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Workers of the World, Unite !

More leisure for the toilers !

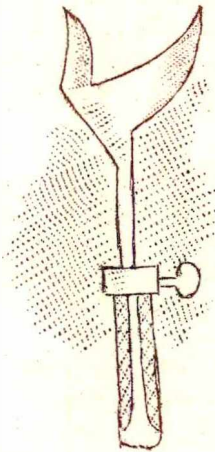
Watch sheets and whites come startling bright

In WIDOWER'S LAUNDRY BOILERS



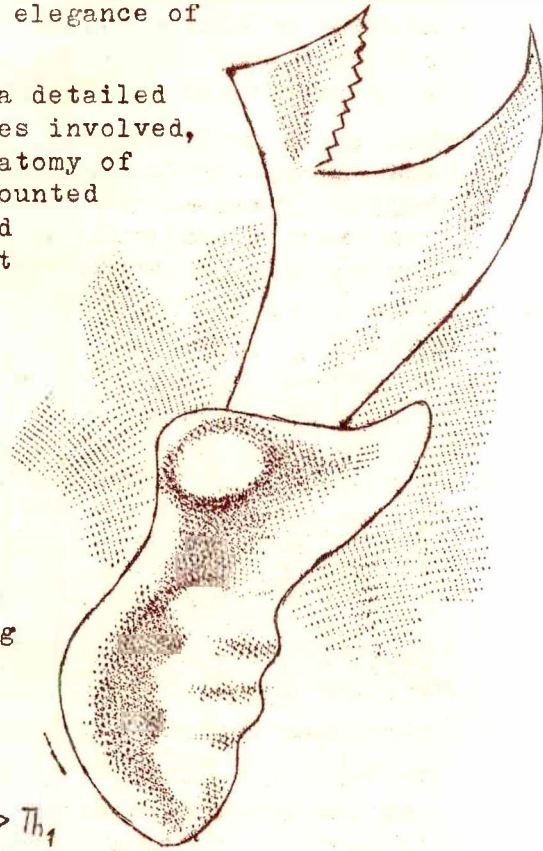
CASE HISTORY II - The Window-cleaner's Groiner

Handles are an important aspect of the relationship between man and his technological environment. Systematic study of the sizes and shapes of hands has not yet been undertaken and there is a dearth of information on the possible ways of gripping and the interaction of hand and handle. Recently the most functional and time-tested Window-cleaner's Groiner (see left) became the subject of physiological and psychological research, and designers have now produced a tool that combines traditional design with ease of handling and elegance of appearance. (see right).

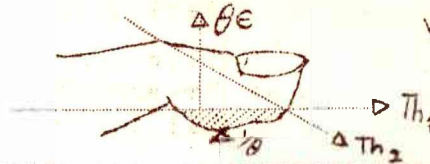
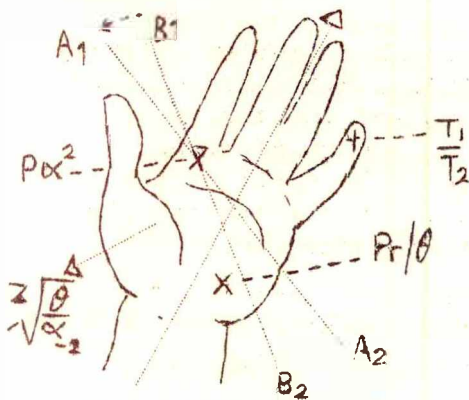


The final design is a result of a detailed analysis of the motions and forces involved, and of careful studies in the anatomy of the hand - studies which have amounted to 30,000 hours in research and experiment. (Hence the slight delay in publication of this issue of N&T).

The handle can now be used with equal facility with both right and left hand. It can be used without waste of energy and gives greater comfort and safety, eliminating the dreaded cranker's cramp.



Some of the factors involved:




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11 : E r g o n o m i c C r i t i c i s m (Saves you writing!)

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- A) Sir: A refrigerator is not an ergonomic appliance since it uses power to effect an energy transfer. I recommend your contributor to any text-book on thermodynamics. Yours & etc.
  - B) Sir: Your editorial ignores such original examples of utilising waste energy as the windmill, waterwheel and sailing ship. Yours & etc.
  - C) Sir: Your publication offers no suggestions for the ergonomic use of fanzines. Yours & etc.
  - D) Sir: Just what the hell does a window-cleaner groin? Yours & etc.
-



Sir Ben Lockspeiser has pointed out an underlying defect in present-day ergonomics. This is the undeniable fact that savings in physiological energy by machine operators are offset by an increased strain on the sensory system.

Workers can be visually and mentally burdened by the host of indicators, meters, dials, gauges, and warning devices in use in industry today. In work which requires constant attention to dials, particularly in repetitive forms of work, fatigue is often pronounced, while nervous disorders are common.

So long as technical research seeks improved servo-mechanisms with the ultimate aim of fully autonomous machines this trend will worsen. The operator has the choice of nervous strain or the prospect of being degraded to the status of a machine watcher. In some American food-canning factories a man is considered to be employed if he sits at his machine and reads a correspondence course. The efficiency of the machine is all-important.

There seems to be no mode of ergonomic expenditure of ergonomically-saved human energy. As in many another planner's dream the unreliable element is man. Perhaps the answer lies in the realisation that to work at maximum efficiency a man must be fully fit from continuous exercise of body and mind. This platitude is unlikely to be realised while manufacturers supply (and social prestige demands) a non-stop flow of ever-more luxurious automobiles, upholstered furniture, air-conditioned rooms, and profit-making "labour-saving" devices on worry-free instalment systems. There seems to be a swing away from the mental pap ceaselessly pumped out by Hollywood, radio and television, but whether it is in favour of hi-fi or narcotics it is difficult to say. The use of both is on the increase.

What to do? Can architectural giants like Lewis Mumford and Le Corbusier combine with ergonomists to provide the least satisfactory work with full consumption of luxury products in surroundings of Spartan simplicity, conducive to mental activity and superb physical development? Can art and athletics take the place of drugs and soporifics to provide sound sleep unobtainable in the most magnificently designed beds?

Will a new race of psychonomists arise to persuade men to exercise harder, the better to enjoy his luxuries?

I am weary and perplexed. If anyone has energy to spare, let him send it to me !

- Eric Needham

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You have been reading N&T 8, published by Harry Turner for the Romiley Fan Veteran & Scottish Dancing Society of 10 Carlton Avenue, Romiley, Cheshire, England. This issue dated January 1957.

Most of the material was originally written circa 1954 for a special supplement to Zenith, by that arch genius Eric Needham; cover and interior art by Pat Patterson. I apologise to both members for the delays in publication - still, we made it...

And for those readers who want more, there will be a Homes and Gardens N&T ready in a couple of months time, with Bloch, Grennell, & Enever - het