<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Typology and the Autonomy of Mind</td>
<td>Donald C. Webster</td>
</tr>
<tr>
<td>Philip's Fourth Year</td>
<td>Iris M. Owen</td>
</tr>
<tr>
<td>Production of &quot;Electronic Voices&quot; by a Group Practised in Psychokinesis</td>
<td>Frank J. Riley</td>
</tr>
<tr>
<td>Tape-recorded, Low-amplitude Psychokinesis</td>
<td>Raymond Bayless</td>
</tr>
<tr>
<td>The Cult of Pyramid Power</td>
<td>Ruth M. Flynn</td>
</tr>
<tr>
<td>An Empirical Study of Biorhythm in Humans</td>
<td>Joel L. Whitton</td>
</tr>
<tr>
<td>Are More Babies Born at the Full Moon?</td>
<td>Peter W. Gribble</td>
</tr>
<tr>
<td>Quantitative Fluctuations in Kirlian Finger-tip Coronas</td>
<td>Dale Simmons</td>
</tr>
<tr>
<td>Geometrical-Statistical Patterning in the Field of Authorship</td>
<td>Geoffrey J. D. E. Archbold</td>
</tr>
</tbody>
</table>

NEW HORIZONS RESEARCH FOUNDATION
P.O. Box 427, Station F, Toronto, Ontario, Canada M4Y 2L8
Copyright 1977 by New Horizons
The NEW HORIZONS RESEARCH FOUNDATION is a non-profit organization whose purpose is to promote research on the frontiers of science and disseminate information.

DIRECTORS:  President: DONALD C. WEBSTER

Secretary: JOHN A. PATERSON

PATRON: WILLIAM E. McQUESTION

Executive Director; Editor of Journal:  A. R. G. OWEN

The TORONTO SOCIETY FOR PSYCHICAL RESEARCH is a voluntary society and non-profit organization whose purpose, as defined in its constitution is "to explore and interpret those presumptively paranormal events commonly described as extrasensory perception and psychic phenomena."

OFFICERS: President ............................................. Allen Spraggett

Chairman of Executive Council .......... Prof. A. R. G. Owen

Chairman of Research Committee .......... Dr. Joel L. Whitton

Chairman of Medical Committee .......... Dr. Frank P. McInnis

Secretary-Treasurer .............................. Iris M. Owen

The journal New Horizons is published by the NEW HORIZONS RESEARCH FOUNDATION and includes reports on some of the investigations made by the Foundation or by persons working in close association with it. It does not, in general, invite papers from other persons, but will give careful consideration to manuscripts by Canadian authors.

However, regardless of authorship, New Horizons is prepared to publish experimental results which it deems to be new and important.

The opinions expressed in papers and in the Editorial are those of the authors alone and may not be regarded as corporate views expressed by either organization.
EDITORIAL

After seven years of the New Horizons Research Foundation, and in the eighth issue of its Journal, which is now happily receiving a considerable measure of international recognition (see NEWS AND VIEWS) it is pleasant and appropriate to print as a keynote paper the article Human Typology and the Autonomy of Mind by the Founder and chief patron of the New Horizons Research Foundation, its President, Donald C. Webster, who provided the principal and original inspiration for the aims of the institute and is a prime architect of its philosophy.

Mr. Webster's paper is a welcome corrective to the simplistic descriptions of Man and his behaviour, whether private, economic, or political, that have been handed down to us in their original naivety from the eighteenth and nineteenth centuries. The many strands that Mr. Webster has drawn together in an illuminating way fall, as he says, into two principal areas. One is the autonomy and efficacy of mind—the ability of the mind to affect other minds and to operate on matter via what are as yet, hidden channels. Exploration of this aspect of reality is perhaps the form of research for which the Foundation and its Journal have become best known internationally, but it is not the only one to which the Foundation attaches importance, or to which it devotes effort.

No one who wishes to understand our world (let alone improve it) whether from an economic, political, or social point of view, may safely (as our ancestors were apt to do) ignore the fact that people differ from one another in their modes of perceiving, thinking and doing. Once this has been noted, it is easy to acknowledge its truth and practical relevance to all fields of human activity, unless one is unfortunate enough to be constrained in one's thinking by a totalitarian or a behaviourist brand of philosophy. To uncover precise causes of human variations—genetic, congenital, environmental, cultural or educational—is, of course, no easy task. However, although governmental, industrial, and university laboratories, well endowed with scientific personnel and finance, are engaged in this quest, there is always room for the small institute or voluntary worker to make a discovery, and the reader will find, even in this single issue of New Horizons, several papers (Whitton, Gribble, Simmons), which seek to analyze various cyclic or anomalous factors in human life.

As we have chosen this to be a moment appropriate for historical evaluation, it may not be out of place to say that, back in 1970 at the inception of the New Horizons Foundation, the ideas on human variation and typology outlined in Mr. Webster's paper played an important and ultimately decisive role in designing the strategy adopted by the Foundation's Directors in order to solve the rather difficult problem of how a small institute could produce results sufficient to make an impact on the modern world.

The solution, which now seems to be showing itself to be a sound one, consisted in what would appear to be a new organizational form—a symbiotic relationship between an institute (the New Horizons Foundation proper), and an entirely voluntary association, the Toronto Society for Psychical Research. In this way people with different types of creativity can be brought together for cooperative and complementary thought and action, as described by Donald Webster.

A very interesting outcome has been the remarkable stamina and cohesion and inventiveness of some of the self-selected research teams. For example,
the present paper "Philip's Fourth Year" registers the fact that the Philip research is now one of the longest experiments ever performed (in any branch of science) with something like 200 sessions, each of two hours duration, which makes one wish that there was a word stronger than "repeatable", once considered the ultimate goal for parapsychological methodology. Another example of patience rewarded is Frank Riley's paper on "electronic voices". It is important to stress, as Mr. Riley does, that the recorded "voices" did not occur spontaneously "out of the blue" but in a methodologically immaculate situation set up to test one precise hypothesis—namely that the Philip group, if they set their minds to it, could produce an "electronic voice" phenomenon. The background to the experiments reported (themselves fifteen sessions and 30 hours!) is several years of work, not only by the Philip group, but by Mr. Riley, the "Lilith" group, and its successor, the Voice-Phenomenon Research Group. It is a pleasure to publish simultaneously another paper on psychokinetic production of taped sound, including some voices, by our respected friend Raymond Bayless of Los Angeles, one of the earliest pioneers of the electronic voice phenomenon, whose work is, in our view, characterized by its care, patience, and experimental insight.

The papers mentioned are exciting because they point to the existence of powers of the human mind. However, like Nehemiah of old, we believe it is as much our duty to tear down as to build up. We think therefore that Ruth Flynn's paper, which on the basis of actual experiment negatives the new claim as to the growth-promoting power of pyramids, it is important as any other in our Journal. It should be noted that the peddlers of pyramids have the custom that whenever any of their claims disproved experimentally they invent new ones—when they lose a round, they change the rules of the game! It should be noted also that an award at the Ontario Science Fair, open to all the schools of a Province of eight million, is not lightly given. Competitors have to survive eliminating rounds; at the Final they are each quizzed for 30 to 60 minutes by five professional scientists as to the scientific method they have applied. The award is based on the soundness of their methods, not on the particular results obtained. Would that every "pyramidologist" and hawker of amulets might be subject to a like examination!

Besides "Pyramidology" there is currently another form of pseudo-scientific commercialism which consists in the marketing of biorhythm charts and calculators and treatises on their use. As will be seen from Dr. Whitton's review of the literature it is clear that most of the claims are rather fanciful and are based on practically no serious investigation. To remedy this we undertook our own research. Though only a pilot experiment it was somewhat laborious but worthwhile in that it shows that some people have no detectable rhythms, while the considerable proportion who do show rhythms have different and almost individual cyclicities.

It is pleasing to have an antiquarian paper once again. On balance, it seems to the editor that Professor Archbold's diagrams represent an entirely new type of literary cryptogram, perhaps motivated by the extraordinary reverence shown in the ancient world to the closely intertwined subjects of mathematics, geometry and star-worship, as his next paper will indicate.

Three papers have been held over for lack of space: "The Problem of UFO Reports" by Iris M. Owen, "Can Humans Detect Weak Magnetic Fields?" by Joel L. Whitton and Stephen A. Cook, and "Xenoglossia and Xenography: a Case Study" by Joel L. Whitton. Photo copies will however be supplied post free on receipt of a payment of one dollar per paper.
NEWS AND VIEWS

Award to New Horizons Editor

In the course of its General Assembly in the Hall of the University of Berne on 22 February 1977, the Swiss Association for Parapsychology (President Dr. T. Locher) resolved to award to Professor A. R. G. Owen, the First Prize 1977, amounting to 1500 francs, in honour of his research on hauntings, his investigation of the phenomena of Matthew Manning, his authorship of the book *Hysteria, Hypnosis and Healing*, and his editorship of the journal, *New Horizons*. This award was made on the recommendation of an international jury of five members.

In 1963 Dr. Owen received the Treatise Award of the Parapsychology Foundation on the recommendation of an international panel (also of five members).

In 1965 he received the William McDougall Award for Distinguished Work in Parapsychology in recognition of "an outstanding publication in parapsychological research", his book, *Can We Explain the Poltergeist?*, on the recommendation of the staff of the Parapsychology Laboratory at Duke University.

Dr. Owen was formerly a member of the Council of the Society for Psychical Research, President of the Cambridge University Society for Psychical Research, and Secretary of the Perrott-Warrick Committee for Psychical Research, Trinity College, Cambridge, England.

Views

Under CANADA, in "Reports from other Countries" the commentator (George Zorab) in the Journal of the Society for Psychical Research (Vol. 49, No. 771, March 1977), taking as his point of departure the paper "Paramorphic Table Rappings: Acoustic Analysis" by Dr. Joel J. Whitton (the present Chairman of Research, formerly Chairman of the Executive Council, T.S.P.R.) said:

It must be admitted that the Toronto Society for Psychical Research... is at the moment in various ways in the forefront of modern parapsychological investigation, especially in its use of old-time techniques combined with the most modern registering apparatus. This combination has brought about a number of very important discoveries in our field. The latest one is the establishment of the "paramorphic" nature of raps, distinguishing the authentic, paranormal rappings, so characteristic of last century's spiritualistic period, from fraudulently produced normal ones.

Mr. Zorab then discussed various aspects of paramorphic raps and "Philip" type phenomena.

---

Research by Professor J. B. Hasted

The Directors of the New Horizons Research Foundation are pleased to announce the award of a grant to Professor John B. Hasted, M.A., D.Phil. (Oxon), Head of the Department of Physics, Birkbeck College, University of London, England, for expenses to be incurred during the present year in a program of research on metal-bending by British and European subjects. Professor Hasted writes:

A program of regular observations of the metal-bending phenomena produced by about a dozen subjects has been undertaken; most of the sessions take place in the homes of the subjects, to which portable equipment is carried. It has proved possible to observe strain pulses at gauges embedded in metal specimens not being touched by the subjects. These observations give clues as to the distribution of the bending forces, and also as to their spectrum in the time domain. Attention is also being paid to the paramorphic aspects of the phenomenon—softening of the metal and structural changes.

Although most of the subjects are children, whose ability may only be temporary, there are emerging in Britain a small number of young adults who are motivated to develop by conscious application any talents they may possess. The experiments designed for the children are being offered to these subjects also. For completeness of phenomenological description spontaneously occurring phenomena such as ostensible P.K., teleportation, electric fields, luminosities, and any subjective experiences of the persons concerned, will be logged. As a rule such happenings, because they do not represent the specific hypotheses under test (which relate to metal-bending), will be placed in the record for their heuristic value to future research.

Professor Hasted is a scientist of exceptional distinction having published 140 papers in physics, chemistry, geophysics and biochemistry. He has recently turned his attention to phenomena of the Geller type and has published the following papers:


---

Note re the paper Human Typology, pages 5-10 this Journal.

With regard to the equinoctial precession, curiously $25,920 = 72 \times 360$. The factor 72 is near to the traditional estimate of the human lifespan as "three score years and ten." The factor 360 enumerates the degrees in a complete circle as introduced by the Babylonians. It may derive from the fact noted by Gerald Hawkins in Beyond Stonehenge that 720, i.e. twice 360, diameters of the rising or setting sun fit into the complete circumference of the horizon.
Human Typology and the Autonomy of Mind
DONALD C. WEBSTER

There are two developments in the world, which, although not really new, have become the object of a recent resurgence of interest. These two ideas weigh heavily on the side of determinism in the age old conundrum of free will versus determinism as the guiding force in human affairs. They both imply that we are less free totally to control our own lives than modern educators and psychologists would have us believe.

One area is the whole field of human typology, that is, the possibility that individuals may be actually born with a predisposition to a particular character and personality slot. The other area is the growing mood that mind and brain may indeed be separate entities; that the mind may be able to interact with other minds; that it may be able to provide a navigational fix on the future and that it may be able to dominate and materially affect animate and inanimate matter. To do this, it may shift in some unknown way into another dimension which appears to exist side by side with the one directly perceived by our senses in which we feel we exist.

Typology, as an assessment or category of human nature, has had a long history, and it is difficult not to pick up a book or newspaper without finding allusions to it. Collective typologies are well known. In politics there are Whigs and Tories, left and right; even nations seem to have broad typological labels: Germany (teutonic), Britain (reasonable), France (intellectual), Japan (rationalistic), Italy (emotional). Aldous Huxley’s final novel, Island, deals in an amusing way with two contrasting societies exemplifying the two main sides of human nature. In Florence during the time of the Medici, there were three clearly defined groups. The Bigi (Greys) who were stolid Medici establishment people, the Arrabiata (Crazies) the Terrorist interlopers backed by the Duke of Milan, and the Piagoni (Whiners) the followers of the messianic Savonarola. The German military men recognized different types of people and invented the use of line and staff classifications to utilize the different types more effectively. They then proceeded to set up a “General Staff” unheard of before in military affairs, which allowed them to run rampant over their neighbours three times in three generations. Subsequently, this use of line and staff has been copied by most large business organizations.

Different types of people display different attitudes, and in our world of institutions and organizations such institutions are directed by differing kinds of authority, moral authority, sapiential authority, charismatic authority, persuasive authority (charm), and structural authority (that is, the man who has actually been placed in charge whether by election, appointment or birth) come into play, depending on the nature of the man. These varieties of authority were first explored in T. T. Paterson’s book Management Theory, published ten years ago. It was one of the few books dealing with business education which really looked at the organization from the human point of view. Complementary types work best in a management group, and often the strong outward-going sales oriented manager or president will choose an introverted meticulous man for his Number Two. Thus the strange and
often unsettling cycle in organizations when the top man retires and his Number Two, an entirely different personality type, takes over.

The viewpoint of the "behaviourists" in psychology is generally considered to be waning. In an indirect way this enhances the concept of typology. Arthur Koestler has catalogued behaviourism as one of the "four pillars of unwisdom". The interpretation of man as an automaton, malleable by environment, mentally unable to overrule his external programming, is losing its lustre. Like Freud's followers the behaviourists have taken a valid but small aspect of Man and enlarged it to such an extent that Man's real and complex nature has been eclipsed by these two simplistic schools of thought. As the tide of behaviourism ebbs, hitherto little known books on the important role of instinct are being taken seriously. One example is *A Stroll Through the Worlds of Animals and Men* by Jakob Von Uexkull. Also, books by well-known authors such as Konrad Lorenz, Robert Ardrey and Nicholas Tinbergen are being reprinted and reread.

There have been some unusual attempts at trying to fathom the basis of typology by relating it to astrology and to heredity. Plato in his *New Republic* mentions that conception at different phases of the moon creates different categories such as soldiers, statesmen and sophists. Michael Gauquelin in his book *The Scientific Basis of Astrology* tells how he collected the details on births (time and place) and careers of 25,000 people in Europe. He found that executives, soldiers and athletes were somewhat more likely to be born at the rise or zenith of Mars than at other times. The birth of actors, journalists, playwrights or ministers tended, however, to be associated with the rising of Jupiter. But writers, politicians and prime-ministers were more likely to be born at Moonrise. The births of scientists and doctors were favoured by the rise of Saturn and also by the rise or zenith of Mars but were not related to Jupiter or the Moon. Dr. Jonas of Czechoslovakia in his career as a writer and practising gynaecologist has been able to relate the sex of the child to the phase of the moon at conception.

In *The Lonely Crowd* David Reismann's "inner directed" and "other directed" men probably sprung from Carl Jung's typology of extrovert and introvert. However, Jung went considerably further when, mandala-like, he subdivided Man into four general, not mutually exclusive, categories. His emotional, sensation, intuitive, and thinking classification has led to some exciting work by Humphry Osmond collaborating with John Osmundsen and Jerome Agel in a book *Understanding Understanding* published in 1974. In this book Osmond begins by talking about people having different worlds or different modes of perception and how perception is changed by drugs, madness, hypnosis as well as elation, fear and many other moods. Two people who hear or see exactly the same thing often cannot agree afterwards. Osmond believes that he and his associates were the first to adopt Van Uexkull's idea of the "umwelt" to psychiatry. That is, the proposition that the self-worlds or experiential worlds (umwelts) of most creatures are different. Utilizing Jung's four basic types, Osmond has gone further and clearly defined 16 separate types. Only a limited number of these 16 sets of characteristics seem to be allocated to any one person at birth. There is always room for self-improvement and development of the non-dominant characteristic, but in times of crises or need, the early traits come to the fore and maintain their primary function. The basic types are: thinking, sensation, intuition and feeling which in turn are made up into eight: thinking/sensation, sensation/thinking, thinking/intuition, intuition/thinking, feeling/sensation, sensation/
feeling and feeling/intuition, intuition/feeling. When these eight are subdi-
vided into extrovert or introvert, 16 categories result.

The supposition is also expressed that perhaps we humans can be divided
into time zones just as we are distinct in spatial terms (tall, short, fat) and
have varying spatial needs (Latin like talking nose to nose, while Northerners
need an interval of a foot or more). The feeling man would have his roots in
the past, sees the present in terms of the past, values human emotions and is
usually a collector of anything from old match boxes to Impressionistic
art. The sensation man, standing firmly astride the present, is hyperacute,
a marvellous manipulator of men, a good administrator but doesn’t really
know where he came from or where he is going. The intuitive is frozen in
the future, forgets his raincoat in airports, seems usually to be aloof or
detached, but has a sound feel for the shape of things to come; his hunches
are more often right than wrong. The thinking man is not a victim of any
one time zone and having only a slight appreciation of any zone is forced
to use logic and rational arguments to maintain his place in the world.

If we begin to think of people as being different and with labels of
thinking/sensation, thinking/intuition, feeling/sensation and feeling/intuition
and so on, then it becomes easier to enter into each other’s “umwelt” and
understand the other point of view. Perhaps, cadres of 4 to 8 to 16 people
could be set up which would function in a non-overlapping way where all
points of view could be brought to bear on a set of problems.

It doesn’t seem too far fetched to believe that we are born with broadly
forged psychological characteristics (with room for free will) just as we have
brown or blue eyes and red, brown, black, white or yellow skin.

Knowing oneself is no doubt something that man has yet to accomplish
in any degree, but knowing one’s neighbour would usher in an era of harmony
from which the world might never recover!

The other gradual movement to a more harmonious behaviour of man
could come about with better exercising of the powers of the mind. Even a
one level quantum jump in understanding the mind could provoke a blossom-
ing of interdependence hitherto only seen in the world for short-term periods
and usually on a geographically limited basis.

Very little is actually known about the mind. Scientists and medically aware
thinkers have been pointing this out for a long time. However, evidence is
appearing suggesting that (a) mind and brain are two distinct entities, (b) mind
may be able to dominate matter or at least relegate matter to its rightful place,
as shown by modern physics, of impermanence, (c) mind may even have
preceded brain in the evolution of the species. If this is so, then Darwinian
evolution as a comprehensive theory would have to be moved aside in the
same manner as Newtonian mechanics has been moved aside to make room
for a more all-encompassing theory.

Dr. Wilder Penfield, the great Montreal neurosurgeon, in his book The
Mystery of the Mind published in 1975, examines the activity of the brain as
gleaned from his several thousand neurosurgical operations. In particular, he
examines his last 1132 patients and analyzes the results of his operations
which were carried out with the patient fully conscious and able to comment
on what he saw, heard and felt. Penfield concludes that mind and brain are
most probably separate and that all his medical evidence leads to such a
remarkable conclusion. While the brain is the hardware, the mind is the
software or even the programmer! He feels, as Hippocrates said, “The brain
is messenger to consciousness”, or in fact that the brain connects the body to
the mind. He cautions that the final answer must await the resolution of the question of the type of energy which causes the mind to function. Although it is not yet detected, he challenges, "But the mind has energy. The form of that energy is different from that of the neuronal potentials that travel the axone pathways". That is, not an energy which we can at this time comprehend or measure.

Penfield suggests that during one's lifetime, while the three billion brain cells slowly wink out and the body gradually becomes brittle, loses resilience and decays, the mind on the other hand seems to expand. Possibly this phenomenon has even led Penfield to write this book where his ideas have taken a radically new turn. Ten years ago, Penfield believed in a mechanistic view of the mind/brain and even refused to consider or examine hypnosis, LSD effects and other altered states of consciousness.

It would be interesting to examine the efforts of artists, poets and writers in their later years. They may well have something in common if in fact the mind does continue to expand and more strongly influence the brain. The paintings of Turner's late period were, at the time, said to be unfinished and blurred, and now they are considered mystical. Shakespeare's last work, *The Tempest*, is rife with omens, precognition, and a wide variety of occult happenings. Balzac alluded more and more to astral travel, ectoplasm, psychometry and telepathy in his later novels, and Melville's *Pierre*, his second to last book, portrays the symbiosis of insanity and mysticism.

For thousands of years, what are known as "the martial arts" have made use of unexplained mental capacities to achieve their ends, and mind over matter is a natural course of events. Aikido combines the practice of psychokinesis to disarm or destroy opponents; Karate endows parts of the body with protective force fields for striking; and Chinese boxing allows the practitioner to transmit resonance to the third brick in a pile, so that it breaks while the upper two remain whole. Training in the martial arts includes meditation, study of the occult, long periods of concentration so that unusual or seldom visible aspects of the mind are brought into use.

The reappearance of interest in psychic phenomena, brought about by masses of people experimenting with altered states of consciousness (ASC), by the eruption of dozens of young men and boys who can bend metal objects at will in the fashion of Uri Geller, and by the prevailing state of disarray of the world of physics, demonstrates an awareness of the importance of the mind function and a willingness to grapple with it. "Noetics" is the new name for the study of mind sciences. Arthur Koestler's *Ghost in the Machine* is now being taken seriously. There are so many methods to achieve ASC, that an interested person can usually either find a practitioner close at hand and choose a method which is suitable to him. In the West, it was LSD and related hallucinogens that started everything off but now a vast compendium is available. Biofeedback of alpha and theta brain waves, sitting and swinging in a modern version of a witch's cradle. Yoga, martial arts, mantras and meditation, sensory deprivation, stroboscopic lights and the Sufi dances of the whirling dervishes are some of the more formidable.

The most unexpected turn of events is the appearance of such people as Uri Geller in New York, Matthew Manning in the U.K. and Jean-Paul Girard in Paris, who can bend and structurally affect metals, and move objects about in the presence of experienced and reliable witnesses. Professor John Hasted, Head of the Department of Physics at Birkbeck College in London University, has been carefully experimenting with a handful of young English
schoolboys and schoolgirls, who can, to a lesser extent, do the same things. Three years of work have shown that the forces act in an extraordinary way. There appears to be a sort of invisible arm travelling about the room, and providing stress pulses to whatever it encounters, often two or three instruments at the same time. With some children, the arm acts as though it was rotating, twisting wires together and sometimes forming a metal strip into a twist or a helix.

Hasted believes that the forces are likely to be explained by an interaction of the unconscious mind with the way in which quantum theory, the cornerstone of physics, is formulated to account for the properties of the metal (but plastics can also be bent!) There is even a formulation in terms of "simultaneous universes", each occupying an identical portion of Hilbert space, and each differing slightly from the others, and without mutual physical interaction. The unconscious mind passes from one to the next, and the metal bends in a series of tiny jerks.

Other physicists, who have observed metal bending and related occurrences, have been active in propounding explanations. Professor David Bohm has proposed that all matter is a form of thought. This has its roots in Werner Heisenberg's idea that the observer by simply observing plays a strong role in the experiment. Professor Brian Josephson, F.R.S., the Nobel Laureate in Physics from Cambridge, has been fascinated by Carlos Casteneda's writings on Don Juan and has leaned on them in his examination of the problem. Casteneda writes about his apprenticeship with the Mexican sorcerer, Don Juan, during which time appearances and material reality became separate. Don Juan implied that there were separate simultaneous existences which is what Josephson feels is scientifically credible. In a paper given in Toronto, he stated that it was quite possible that mind could dominate matter and in fact mind may even have preceded matter in the world as we know it. The "exclusion principle" enunciated by the quantum physicist Wolfgang Pauli states that only one electron can occupy a single orbit about the nucleus of an atom at the same time. This mathematical symmetry implies a sense of order in the very small, just as the 25,920 year cycle of the heavens suggests a recurrent pattern in the very large. If mind is an independent faculty of man and if it can alter matter, then it can quite possibly be in touch with the very small and the very large. In this way, it could be part of an overall pattern so complex that freedom of action would be exercisable but amongst a rather loose weave of interacting patterns, cycles and immutable laws.

The interest that Carl Jung had in such a loose weave of inter-connections was so great that he devoted a book and many articles to his novel principle of "synchronicity". In his foreword to the Richard Wilhem version of the I Ching he held forth against causality and in favour of influence of mind over matter and vice-versa: "... a curious principle that I have termed synchronicity, a concept that formulates a point of view diametrically opposed to that of causality. Since the latter is merely a working hypothesis of how events evolve one out of another whereas synchronicity takes the coincidence of events in space and time as meaning something more than mere chance, namely, a peculiar interdependence of objective events among themselves as well as with the subjective (psychic) states of the observer or observers".

In early 1977 Francis Crick (the well-known Nobel prize winner for his work on the structure of the DNA) along with three scientific associates Brenner, Klug and Picczenick published a startling idea in the journal Origin of Life. They suggested that the process of natural selection as defined by
Darwin takes place at the molecular level long before organisms develop and begin reacting to their environment. Such an idea would have to be explained by a theory of evolution of the mind or mind-energy field, which not only was directing the physical evolution of the species, but anticipating this evolution in advance of the need, even according to a certain plan. Furthermore, these DNA sequences in an organism resist outside efforts to recode them suggesting a set prearranged blueprint of evolution.

 Luck and chance are defined in Webster's dictionary (1975) as “events happening by mere chance not as the result of effort or merit”. Nevertheless, such events may be not as random as one would think. Napoleon always proclaimed he would rather have lucky generals than good generals. The continued success of some wildcat oil drillers in Texas defies reasonable cause and effect. If synchronicity is invoked, then luck may come to an individual who is extraordinarily sensitive to both the seen and unseen world about him. In the days when mind/brain was considered only a productive appendage of Man, stewing up a cauldron of new ideas and new juxtapositions, Aldous Huxley always had the healthy doubt that perhaps mind/brain was really transmissive; that it really acted not as a chemical factory but rather as a radio set. Andre Malraux came to the same conclusion that mind/brain was to a degree transmissive in The Voices of Silence, his exhaustive comparison of the repeated similarities of artistic works throughout the Ages.

Superstitions of the past may constitute the science of the future; perhaps today this process is being speeded up, and we are entering a new stage of advancement of knowledge. This advancement is prodded by the realization that the intellect utilizing cause and effect is not the only method which can push back the haze of unknowing. Stuart Holroyd's latest book Psi and Consciousness Explosion talks about the new dimensions to be emphasized and quotes a study by Stanford Research Institute in which scientists and scholars together suggest the climate of the future: “an emphasis on cooperation over competition, ecological interdependence over exploitation, psychological-spiritual growth over material acquisition and an integration of intuitive knowledge processes with more rational modes”. It is these intuitive knowledge processes, stirred up by examination of the inner self, that may result in a major jump in understanding.

If, in the years to come, evidence keeps accumulating that mind is in fact separate from the brain and emits a peculiar field of influence over solid matter, then the idea that mind preceded matter and is supreme as an arbitor of this terrestrial species known as Man, will come more into focus. It will allow all thinkers to again advance towards the frontiers of knowledge on a broader front. Science and intellect will be moved off the centre of the stage and will become the backdrop instead of the essence of a new modern form of alchemy interacting with consciousness. Western medicine will undergo a transformation akin to the practice in China today where the ancient medicines of moxibustion, herbs and acupuncture exist side by side with X-rays, drugs and surgery. Paranormal healing, psychic surgery, prayer and colour therapy might all be part of the medical curriculum for new doctors.

It is quite possible that in the future, the world and matter will become less finite and will form a part of consciousness. It may be that Salvador Dali was correct when, in answer to a question about the future of the world, he said, “il sera mou et poilu”. Also it may be necessary to invert Jean Jacques Rousseau’s famous tenet and say instead, “Man is in chains but everywhere is deluded into thinking he is free.”

New Horizons Research Foundation 30 January 1977
"Philip's" Fourth Year

IRIS M. OWEN

ABSTRACT: The most recent developments in the "Philip" type research are described.

The first report of the 'Philip' experiment appeared in New Horizons, Vol. 1, No. 3 (January 1974). It was the preliminary report on what has turned out to be a long and complicated experiment, which is still ongoing. The experiment started in September 1972, but results were not obtained until the summer of 1973, when raps and table movements were obtained for the first time. The members of the group have shown remarkable tenacity and dedication, for in the course of four and a half years they have rarely missed meeting one Thursday evening for the purpose of the experiment. The group still consists of the original eight people who first invented 'Philip'.

In our last report (New Horizons, Vol. 2, No. 2, June 1976), we told of the visit to the Physics Department at Kent State University, and the experiments done there with Professor Wilbur Franklin. We also reported that we were able to produce other 'personalities' than Philip, and that the raps produced by the different personalities varied in 'character'; they were distinguishable from each other. Perhaps a good method of bringing our readers up-to-date would be to quote from the notes which are carefully made after each meeting.

On June 11th, 1976, I wrote, "Proceedings were recorded. Visitors from Waterloo-Wellington group who are attempting to reproduce experiment. These people joined the Philip group, (only five of Philip group present). We started with knocks in the card table, and later transferred to the metal sheet. Attempted to teach Philip to increase volume of raps on demand, saying 'louder' and then 'louder still' as the volume of noise increased. We had many good loud raps both in the table and metal. Waterloo-Wellington people all asked questions and obtained responses under their own hands".

On July 8th, 1976, the report reads, "A visitor from Massachusetts — Ben Green — a lively and interesting visitor. Three members of Philip group were away on holiday. Robin Owen joined the group, as did the visitor. As well as Philip we recorded Charles II, who gave rolling raps for laughs, and beat time to the singing."

On July 22nd we had two visitors from Cincinnati, and Dr. Whitton was present. On this night much table movement and good definitive raps.

On September 23rd I recorded, "We had an 'open evening' for various visitors and new members of the SPR. Some 15 visitors were present altogether, and at times all had an opportunity to join the group and receive raps under their own hands in answer to their questions. On this occasion for the first time Philip beat out a whole tune by himself, unaccompanied by the group."

In October Professor and Mrs. Josephson from Cambridge, England, joined the group, as did also Dr. Osis from New York, and Alex Tanous. By now Philip would perform a tune by himself on request.

In November the group agreed to do a television performance for the
Larry Solway show. This was at the request of the publishers of the book, *Conjuring up Philip*. Generally speaking the group do not like to take part in television shows, and will only consent to do so if a purpose is to be served, if the programme is educational, or if they wish to obtain a visual recording for themselves. This show lent itself to these purposes, a videotape was made of Philip playing his own tunes, and the program was properly and fairly presented. The host, Larry Solway, was a well informed person and, although sceptical, was fairminded. Incidentally we felt that he was nervous about the show. We did not meet him prior to being on camera, and were kept waiting some little time beforehand; this had the effect of irritating the members of the group who had given up valuable time for this event. As it turned out, the performance that 'Philip' put on was superb, including the beating out of the special tune. Larry Solway was obviously very startled, when he was asked to come and say “Hello” and, on doing so, a very loud rap was heard and felt under his hand. His sudden conversion from a previous scepticism, was very obvious. A footnote to the show was that, as the group were preparing to leave, Larry Solway emerged from his dressing room, where he had gone to change, saying, with some surprise and dismay, that he was covered with a rash, which indeed he was! He said that he had never had rashes or skin trouble, and he seemed quite disturbed about it. We wondered if his tension beforehand followed by the dramatic encounter with a paranormal physical phenomenon had precipitated this reaction.

About that time it was suggested that the Philip group take part in the experiments that were being done by other members of the TSPR on the 'Raudive Voice' effect. The group conducting this experiment, though they had been very regular and attentive to the research, had had little success so far, and were at this time trying out experiments with different people present. They wondered if the presence of the Philip group might produce results, or if 'Philip' could be persuaded to 'speak' on tape instead of rapping on the table. It seemed an interesting experiment and the group agreed to try. On this occasion the visitors were two members of the Raudive experimental group. Frank Riley, and Craig Knudsen, also Dr. Whitton. Mr. Charles Winter (a writer for the CBC educational programmes, who was collecting material for a program on parapsychology) and for part of the evening Mr. Willi Scharnholz, who had come with an introduction from Dr. Jule Eisenbud. Mr. Scharnholz had a reputation for being a psychic photographer, and was a friend of Ted Serios. He also claimed that, on occasion, he had himself produced the 'Raudive voice' effect, having heard the voice of his daughter, who was then in Germany appear on a tape. Microphones were hung above the table, and attached to the overhead pipes.

The Philip group entered the room, and sat around the table. A glass ashtray was on the table, and Sid removed this, remarking that 'Philip' does not like ashtrays on his table. He leaned over and placed it on the floor behind Sue's chair. All the visitors were on the other side of the table, Dr. Whitton putting on earphones to monitor the recording, and Mr. Riley and Mr. Knudsen fixing up the tape-recorder. Charles Winter was arranging his own tape recorder, and Mr. Scharnholz had joined the group at the table, sitting opposite to Sue. Just as the group started to 'speak' to Philip, this ashtray suddenly fell, from a point apparently in mid-air and landed immediately behind Frank Riley, just hitting the corner of his chair as it landed. It tangled in the wires from which the microphones were hanging and brought them down from the pipes. It was not observed leaving the floor as nobody
happened to be looking in that direction, but Dr. Whiltton saw it actually falling, as it crossed his immediate line of vision. The noise of the fall was heard by everyone, of course, and recorded. Certainly nobody picked it up and threw it, the room was fully lighted, Sue or Sidney would have had to turn around and lean down to pick it up, and this they certainly did not do, as the hands of everyone in the group were on the table. The visitors were at the opposite end of the room.

Subsequently, when the taped recordings of that evening were monitored it did indeed seem that there was a possibility that the group had captured the Raudive Voice phenomenon. Whispers were heard in response to questions put to Philip, especially questions put by Iris, who frequently acts as the main questioner. The whispers appeared to come in place of raps, although at times they coincided with raps. Mostly they were very brief, consisting of one or two words only, and mostly were not easily understood. However, a few of them were more distinct, on one occasion when Iris responded to a question by Charles Winter the whisper said clearly, “You’d be surprised”. The content of the whispers appeared to be similar to the content of ‘Philip’s’ replies. Naturally the group were pleased at what appeared to be a positive result but they also realised that this could only be regarded as a pilot experiment, and that a lot of discipline would need to be imposed on the group before it could be regarded as a reliable finding. For further details of this experiment and later results see the accompanying paper by Frank Riley and Dr. Joel Whitton.

Philip also continued during this period to play and beat time to various tunes, and his repertoire was increased considerably. Also, during February many of the answers came from metal objects in the room, and on one occasion a large number of ‘pings’ were made in a tin tray which had been rested on the overhead pipes. Pings also came from the metal edging of the table and from under the seats of the sitters’ metal chairs.

In March 1977 the group had a very interesting and fun evening. A number of researchers from Montreal had been attempting to reproduce the Philip experiment with a very good degree of success. Three different groups had been formed, two in a high school, and one in a college. Some members of each of these groups decided to visit Toronto and the Philip group, and eight people arrived altogether. The characters invented by the members of these groups had histories as colourful as that of Philip himself. The first one, invented by the school team, had been allowed to lapse, so to speak. “He” was an ancestor they had invented for their teacher. They had replaced him by “Sebastian”, an alchemist in the Middle Ages, who had discovered how to turn base metal into gold. Unfortunately he had met with an untimely end before he was able to write down his secret, and so now he was attempting to return and reveal the knowledge. The other character, named Axel, was a man from the future, who had discovered the secret of a wonderful cure for illness, but had been killed in an accident on his way to impart the news to his fiancée, and was now returning to this period of time to reveal the secret. Needless to say, Axel is French, as are our Montreal friends, and Axel responded to French songs and jokes. Until that evening Axel, although causing vibrations and movements in the table, had not answered questions by means of definitive raps. When the Philip and Axel groups joined together round the table both Philip and Axel responded to questions, each to their own members, and each in response to questions in their own language. Axel learned to tap out response to French tunes, as did Philip. One of the French
members knew several languages and Axel gave the correct response to questions put in Russian, Greek, and Roumanian, as well as in French. When the French students returned to Montreal they continued to get raps under their hands individually in response to questions, just as does the Philip group. The whole of that evening's proceedings were videotaped and tape-recorded. After using the table for some time the two groups (Philip and Axel) moved to using the metal sheet; very good 'pings' were obtained in response to questions and comments. It was very interesting that the 'personalities' of the two characters were so distinct to the two groups, each one immediately recognising which character, Philip or Axel, was answering. One of the most interesting aspects of this experiment is the fact that in some inexplicable way each personality seems to have his own characteristic way of rapping and answering questions.

On another occasion in March, with a young visitor, Philip demonstrated his ability to count — counting off the required number when requested to do so by this visitor.

The above, together with the paper (Riley, this Journal) concerning the Raudive Voice section of the research is a brief report on the actual experiment as it stands to date. In some ways we have learnt more from what we have done, but the main question still remains unanswered. We have not yet been able to ascertain how the raps occur in a physical sense; we have acquired more skill in controlling them, we can play tunes, count ahead, produce remote raps in the metal and furniture around, but we still do not understand how it is done. At Christmas time Mr. Colin Brookes-Smith generously sent us a piece of apparatus to try out, which may hopefully take us a step further, and we are currently studying this and beginning to make it. We will have something to tell you about this.

The experiment has aroused great interest in the parapsychological world, we have had many enquiries, and many visitors. (More than 40 visitors from abroad have had an opportunity during this last year to see for themselves at first hand, as well as many local friends). At least five books* published on parapsychological subjects during the last year have each devoted some pages to the Philip research, and many other groups have attempted the experiment. Some of them with great success. As well as the groups from Montreal and Waterloo-Wellington already mentioned, a telephone call from a friend in Sarnia (who takes a class in parapsychology at a Community College there) revealed that a group that she had started was also getting results. However, she complained to me, "Our raps are not very good, we get a lot of table movements, and we can dim the lights on request, but the raps are not always very loud", and she asked to come and visit us and share an evening with Philip.

Unfortunately, as we have said previously, without understanding of the physical nature of the raps it is difficult to sustain interest in the research. Enjoyable as the experiment is for a while, it is frustrating not to be able to

* M. H. Brown, P.K., Steinerbrooks, N.Y.
D. Greenburg, Something's There, Doubleday, N.Y.
L. LeShan, Alternate Realities, Evans, N.Y.C.
J. Mishlove, The Roots of Consciousness, Random House, N.Y.C.
take it further. It does seem that it is not difficult to produce the raps, we clearly understand and have proved that there is no 'spirit' behind the communications, the messages are from the group subconscious, but it is the physical force that we need to know more about.

Toronto Society for Physical Research

April 18, 1977
Production of “Electronic Voices” by a Group Practised in Psychokinesis

FRANK J. RILEY

ABSTRACT: The author describes a continuing experiment which has been explicitly designed to test the specific hypothesis that a group already practised in the production of audible actual acoustic sounds by psychokinesis can also intentionally produce “electronic voices” recorded on audiotape.

At each of a series of fifteen sittings, including one in a soundproofed electrically shielded room, a variety of sounds were recorded ranging from raps to spoken words, even though precautions were taken to obviate unrecorded inadvertent speech by the group. This is regarded merely as a pilot experiment, because it has not yet been ascertained whether the phenomenon is paranormal or instead is due to obscure but normal causes. Research continues.

1. Introduction

The “electronic voice” phenomenon was noted by Attila von Szalay in 1956 and first announced by Bayless in 1959. Later in 1959 Jurgenson announced his own (apparently independent) discovery of tape-recorded sounds (see Bayless, 1976; Smith 1977) which he called “electronic voices”. Subsequently they have often been referred to as “Jurgenson voices” or “Raudive voices” in reference to the two best-known of the very large number of investigators who have researched the phenomenon. Several theories have been advanced as to the nature of these sounds, and may be listed as follows:

(a) normal causes, such as selection with wishful thinking directed to stray pickup and random “electronic” noise; radio pickup in unshielded conditions; acoustic pickup due to lack of soundproofing; unnoticed inadvertent speaking or whispering by persons present;
(b) paranormal communications from the dead;
(c) psychokinesis by persons present.

It is fair to say that the majority of writers who have considered the problem subscribe either to (a) or to (b). Only a few have suggested (c) as a serious possibility. In respect of (c) the term psychokinesis is used in a broad and non-committal sense as comprehending any of a number of abstract possibilities such as the production of actual acoustic sounds of low amplitude audible to the tape-recorder but not to the ears (see Bayless, 1976, and this Journal), direct electrical effects on the tape-recorder, electronic circuits, and direct magnetic effects on the tape.

Several members of the T.S.P.R. were sufficiently stimulated by the controversy surrounding the “voices” (see Ellis, 1974) to commence their own research in May 1974. The first phase of their work was reported in 1976 (T.S.P.R. Voice-Phenomenon Group), when the group described the protocol and technical aspects of the recording and playback. All the methods previously reported in the “electronic-voice” literature were tried in a soundproofed recording studio, “A”. The results were quantitatively meagre in the
sense that in a total of some 200 hours experimentation only an extremely small number of voice-like sounds were found on the tapes at playback that were inexplicable in terms of actual noises produced inadvertently by the experimenters during their (essentially silent) sittings. However the residuum of unexplained “voices” provided a challenge which the writer and his T.S.P.R. colleagues felt should be faced up to.

2. Choice of a Hypothesis for Experimental Test

After discussion amongst ourselves and with the Research Committee of the T.S.P.R. it was decided as a consciously adopted policy to concentrate on examining one particular source for electronic voices, namely, (c) psychokinesis.

It should be said in parenthesis that in October 1976, as a partial test of the specific hypothesis that a person of “mediumistic” abilities, i.e. a “psychic sensitive,” was necessary and adequate as a catalyst or intermediary for production of voices, an experiment was specially performed with a sensitive “X” who has various paranormal talents, and who was visiting the T.S.P.R.. The Voice-Phenomenon Group and “X” and Dr. Joel Whitton had a one-hour sitting in a soundproofed and electrically shielded room “B” (to be described later). As a control, the taperecorder was kept running for two further hours in the empty and totally isolated room. Both tapes were completely blank on replay. As it is well known that the particular spectrum of attributes possessed by any individual psychic sensitive is highly individual, indeed “idiosyncratic” in the biological sense of that term, we do not claim any particular implication for this result. However it is worth recording for two reasons; the complete nullity of outcome in physically immaculate conditions provided a good control for the experiments subsequently carried out and which constitute the principal subject of this report; secondly, psychic sensitivity, however developed and authenticated, is not per se adequate for the production of “electronic voices”. Indeed this finding so far from being a disappointing one, is instead methodologically useful in the present context, because, as the reader will perceive in the sequel, it provided an exceptionally firm control for the experiments that followed.

It was decided, as a result of the discussions that have been mentioned, to work with the “Philip” group (see Owen, this Journal) because of their, now proven, psychokinetic ability as a group. To be quite explicit, the hypothesis under test was that some electronic voices that manifest themselves on tape are psychokinetically induced. Equally we could say that the hypothesis to be tested was that a group of living persons can also by conscious intention produce electronic tape-recorded voices. (Clearly, while this is a test of theory (c) — psychokinetic production of electronic voices by a group — it would not automatically negate (a), the possibility of honest error, or (b) the possibility of the action of disembodied minds as opposed to embodied minds, as being perhaps correct explanations for electronic voices in other contexts).

The hypothesis under test was clearly defined and understood to be as follows: that the “Philip” group could by conscious intention produce “electronic voices” on the tape either instead of, or in addition to, the acoustical raps which hitherto had represented “Philip’s” replies to questions.

3. The Experiments

Although rather full discussions had taken place in the fall of 1976, owing to various adventitious circumstances the first experiment of the series was
not conducted until 20 January 1977. At the time of writing fifteen sessions have been held. The tape-recorder "T" (the gift of a generous patron) was used throughout. It is a Philips Hi-Fi Stereo N.4450. Reels of 26.5 diameter were used, mostly at the speed of 4.75 cm, though speeds of 9.5 and 19 cm were used occasionally. For simplicity only the open microphone method was employed. The sessions, which were almost all held in the room at the New Horizons Foundation where the Philip group regularly meet, were conducted as normal Philip sessions, often with the now (almost customary) visitors. The only new feature was that the group agreed to attempt so far as possible to replace or supplement acoustic raps on the table by voices on the tape. In order that any such voices should not be overlaid by normal recordings they were asked to pause in their conversation after each statement or question that was put to "Philip". The first session of 20 January, interestingly enough, was relatively meagre in normal "Philip" acoustic raps. The group, who seemed to have forgotten the original injunction, dispersed in a comparatively subdued and dispirited mood. However, on 24 January the writer, assisted by Professor A. R. G. Owen, and Mrs. Iris Owen, listened to the taping of the 20th. We were most interested to find that in about twenty places there were additional sounds on the tape, some of them resembling actual words spoken by human voices. It is worth remarking that during the previous three years numerous recordings on various tape-recorders, including "T", had been made of Philip group sessions without a single obtrusive sound being recorded additional to the acoustic noises observed by those present during the actual sessions — a fact which would seem to provide another useful control.

In the event, on playback every one of the fifteen sessions produced taped voices or voice-like sounds (unaccounted for, as we shall see, by actual acoustic happenings contemporaneously noted during the sessions). The "voices" ranged from faint unintelligible whispers through loud intelligible whispers and faintly spoken words or phrases to loud and distinct enunciations. In the interpretation of this result considerable weight has to be given to the fact that about 46% of the recorded "voices" respond directly by meaning and immediately in time to a statement or question put to "Philip" by a member or members of the group.

Admittedly, some of the recorded voices, such as sighs and moans were puzzling. However, all the voices seem to be in English, the mother tongue of every person present. Also pickup from television, radio and citizen and other communication bands can be ruled out because (a) they are recognizable by their semantic content and subject matter, also by the normality of speed, rhythm and accent, (b) the fact, already noted in the last paragraph, that the voice phenomenon usually appears immediately following on the final word of a Philip group question or statement, and (c) that such voice recordings have a characteristic rhythm different from recorded actual acoustic voices of Philip group members.

The self-imposed group discipline was good in respect of minimising incidental sounds such as those resulting from "fidgeting" or inadvertent movements, collision with table legs, coughing, etc., etc. Any breach of this regime is usually recognised immediately and recorded. It is worth remarking that, in the process of registering the events of a session, continuous monitoring was done by earphones was done by the writer, and very often by Dr. Joel Whitton, Chairman of the Research Committee of the T.S.P.R. After some practice in monitoring it was noted that sometimes a faint "noise" occurs
during the Philip group's voluntarily imposed silence or pause after a state-
ment or question. The location of this "noise" is noted on the revolution
counter. Upon playback, an intelligible word or sentence is heard. In the
writer's view this is suggestive of causal relation between the occurrence
of a consensus inspired thought in the Philip group and the manifestation of
that thought on the tape, albeit in a (usually) somewhat incomplete form.

We cannot at this stage assess whether it is significant that, as appears to
be the case, 52% of the "voices" occur immediately subsequent to the asking
a question of "Philip" by a particular member "Y" of the group. Other group
members record lesser percentages of voice response, but in the absence of a
complete statistical analysis of the tapes, it is not yet clear whether or not the
"voice" response is proportional to the amount of vocal participation of the
group member speaking before the pause. Of course it should be said that
recognition of the words, though unambiguous in a high proportion of cases,
remains an element in some degree subjective. It is hoped that this problem
will be diminished as a result of further practising by the group.

4. Results

The following is a sample of the "voices".

The preceding statement or question by a group member is printed in Italic.
The tape recorded "voice" is printed in capital letters. This is exemplified
in specimen I.

1. Group Member: Come on Philip!
   "Voice" DON'T WASTE THESE.

2. Did it go bom-bom or da-da?
   HE'S NOT LIKE THAT.

3. You'd be surprised!
   THE HELL WITH THE PLACE.

4. Are the curtains moving?
   NO: NO: YAH.

5. Was that you Philip?
   NO (Note: Table response was: two knocks signifying NO!.

   NO

7. I don't suppose that the Mississippi river was even named when the
   (Philip) was around.
   NO.

8. Philip, do you feel lonely since we left you?
   NO.

9. ... the sign on the road when you're going by it.
   SEVENTEEN.

10. Concentrate on saying Hello to Joel.
    I CAN'T.

11. (Said by the writer at the beginning of a session)
    The group will pause between questions.
    AND PLAY

12. Philip, why don't you scratch on the table?
    WHY?

   On some occasions a "voice" has been found on the tape which seems
to have some logical connection or similarity with a group member's remark spoken shortly afterwards as if the "voice" is in response to an unspoken thought. (This bears a slight resemblance to "Philip's" habit of sometimes giving "his" reply in acoustic raps before the group have finished speaking their question.) Thus

13. A loud babylike "voice": BUT WHY?

Three seconds later a group member said: Why?

The above constitutes only a small selection of the "voices" found on playback, which average something like fifteen per session. Specimens 1, 2, 9, 10 and 12 have been listened to only by the writer, and the interpretation is his alone, but that of the others is agreed by several listeners.

From the beginning the writer and Dr. Whitton, while monitoring the recording through earphones, also carefully watched the group from a distance of only five or six feet in full light for any indication of low amplitude comments by group members, such as lip movements. No such indications have been seen at any time. Not has anything corresponding to a "voice" been heard.

On 7 April 1977 the experiment was carried out in a special room "B" — an IAC, quadruply shielded electromagnetically with powerlines isolated and the ballasts from the fluorescent lights externalised. It is in the interior of a large modern building of steel and concrete construction in the University of Toronto and is suspended on springs to make it vibration-proof. In addition it is extremely thoroughly sound-proofed because its normal use is for acoustical experiments.

Only the group and the writer and Dr. Whitton were present in the room, which is very small, so that direct observation of vocalisations by the group members was facilitated. The observers in fact noted nothing in addition to the conventional type of Philip group conversation which, on playback, seemed normal enough. But a number of "voices" were found on playback.

In addition a special experiment was conducted as follows. The group were asked to choose a word unknown to the observers and to think about it for two minutes in total silence. This was done; the observers can both confirm that silence was absolute within the limits of human perception; nor were there any lip movements. The group told neither the observers, nor anyone else, the word they had chosen until two weeks later. Soon after the session the writer discovered on playback that during the two-minute interval a "voice" had been recorded on the tape. It was a faint whisper in a sing-song type of rhythm. The writer had no clue of any kind as to what the group had chosen to think of. His identification of the words, after many auditions, was BERNIES HAT. Only after he had formally minuted this was he told that the actual word which was thought about was BANANAS. The writer feels that it is remarkable (a) that there should be a "voice" on the tape at that point, (b) that the "target" and the "voice" should have so close a resemblance.

5. General Comments

Our future experimental research will include the application of the following techniques and provisions:

(i) increased physical control of the group,
(ii) use of soundproofed screened rooms,
(iii) determination of the best type speed for clarity,
(iv) simultaneous use of two tape-recorders,
(v) use of tape-recorders without microphones,
(vi) use of a diode on one channel and an open microphone on another,
(vii) further experiments with group concentration on target words,
(viii) analysis by voice prints.

The writer regards the experiments described only as pilot ones. He does not wish to draw any final conclusion from the results to date. Though suggestive and tantalizing they are as yet far from conclusive in respect of the very large issues under consideration. It is certainly impressive that the results should be consistent with the specific hypothesis that the experiments were explicitly designed to test! It would be very important if eventually it could be proved that human thoughts can manifest themselves as voices on tape. Consequently it would seem to be imperative to look at the group electronic voice phenomenon from every possible angle; the origin of the "voices" thoroughly deserves continued investigation.

REFERENCES


Toronto Society for Psychical Research 2 May, 1977
Tape-Recorded, Low-Amplitude Psychokinesis

RAYMOND BAYLESS

ABSTRACT: Further experiments on the production of acousical tape-recorded raps by the author and Mr. Wesley Frank are described, which show that the raps are independent of the tape-recorders used, and can be produced in a variety of solid objects with corresponding variability of tone, quality, etc.

In addition human voices have been successfully recorded, as well as other noises such as whistlings.

The experimental precautions taken, which are described, would seem to preclude any normal explanation for the sounds, which are therefore concluded to be psychokinetic and paranormal.

1. Introduction

The field of what can be termed low-amplitude, tape-recorded phenomena offers a variety of effects which have just begun to be explored. Historically, this new dimension of experimentation began in 1956 when the tape-recorded voice-phenomenon was discovered by Mr. Attila von Szalay (Bayless, 1959). The evening following this discovery I joined him in the first of a series of experiments that lasted for many years. During these early experiments occasional whistles were received as well as definite, indisputable raps. On occasion, the voices were heard as audible faint whistlings which were resolved into "human" speech played back at high amplification. However, the main thrust of experimentation was toward the development of the voice-phenomenon itself. Except for remarking that other sounds including raps were received, no special effort was made toward exploring the rappings.

Some years ago my interest in the possibility of obtaining tape-recorded raps inaudible to the unaided ear but revealed by high amplification and the use of tape-recorders was aroused and (having for all practical purposes forgotten the raps of earlier years) I hypothesized that such parallel phenomena to tape-recorded voices should exist.

During a new series of experiments with Mr. Wesley Frank raps were successfully taped as well as occasional "human" voices. This fact shows clearly the interwoven relationship of low-amplitude voice and psychokinetic phenomena. I will add that the same dual nature of the tape-recorded phenomena is also displayed, though much less obviously, in my personal experiments.

On June 7, 1965, I began a series of personal experiments designed to record low-amplitude raps, but before discussing them will briefly outline the experimental techniques used. First, a quiet environment is obviously required. A sound-proof room, of course, would be ideal but I unfortunately do not have access to such a room. A reasonably sensitive tape-recorder must be employed. The microphone is placed on a resonant "sounding surface" such as the small wooden table that I habitually use and the recorder is turned to its highest amplification. The experimenter or experimenters must sit absolutely quietly with no bodily movements, etc., and the slightest sound inadvertently made must be immediately noted on the tape. Any external sounds must also be immediately noted on the tape. Short periods of recording are
most practical and obviate the rigors of long replay and strained attention. I normally record for five minute intervals. No less than four such recording periods for each experiment is suggested.

For formal experimentation new tape which has been tested for the presence of normal sounds can be employed, but for continued practical testing tapes which have been re-recorded are acceptable. As mentioned, when a tape passes through the recording head it is automatically erased and when a tape from a prior negative test is used, free from raps, etc., then it is perfectly acceptable. I frequently erase and test tape for one or more tests and then, after these tests are completed, I rewind it for continued tape-recording. The tape-recorder is always kept by my side and never emits any sound which can even remotely be confused with the raps and is constantly monitored for this theoretical possibility.

Various recorders have been used, all with success, thus demonstrating the independence of the phenomena from the machines. Various "sounding surfaces" including a drum and a piano stool as well as the usual wooden table have also been successfully utilized.

The degree of light apparently does not influence the phenomenon. The phenomenon does vary, however, according to the individual experimenter and this principle hold true for the voice effect as well.

All evidence to date indicates that the raps and accompanying effects are acoustical in nature and confirm my experiments performed in March, 1973 which demonstrated that Mr. von Szalay's taped voices were the result of an acoustical process rather than the result of an unknown electromagnetic phenomenon (Bayless, 1975 a, b, 1976 a,b).

To return to the inception of my personal experiments, on July 7, 1975, sitting in a slightly dimmed room with the microphone from a Panasonic RQ-2365 tape-recorder resting on the surface of the small wooden table in front of me, I succeeded in recording probably more than 25 to 30 raps of varying intensity and pattern. These raps were recorded during the first ten-minute recording period; a second recording of equal length was blank. During this test I rested my hands lightly on the surface of the table but other than noting that I am devoid of subconscious motions, I do not advance this trial as anything more than a preliminary experiment of a very successful nature. It did demonstrate to me that I was capable of receiving low-amplitude raps inaudible to the unaided ear and only revealed when the tapes are replayed. Experimentation continued and from Dec. 30, 1975 the policy of no physical contact with the table was maintained. In defence of the light hand contact, it was used to encourage the quick development of the phenomena.

2. New Experiments

I will outline a number of sample experiments in order to illustrate the various forms of tests made and the results which confirmed the reality of the paranormal nature of the raps and occasional accompanying phenomena. As noted all following experiments maintained a policy of no hand contact.

During a six-minute test on July 30, 1974, utilizing a tape rewound from a previously erased and recorded tape which was devoid of results, three obvious, fast raps were taped. A Panasonic RQ-2365 recorder was used. I sat, as usual, 2½ feet from the microphone and table.

On August 2, 1976, two five-minute tests were undertaken and the first provided two "medium" clear raps. A Sony TC-100 recorder and a new tape which had also been erased and tested for normal sounds was used.
On August 4, 1976, a ten-minute recording offered six quite faint but easily heard raps. Again the Sony TC-100 recorder was used. In this case the tape had been rewound from a previous blank recording. Therefore, the raps received could not have resulted from the previous taping.

August 16, 1976 offered a mixed fare. The Sony TC-100 was employed, as well as a tape which had been rewound from a previous blank test. A single faint but “very definite” rap was recorded followed by a clear, loud, tonal man’s voice which said “Friday.” This voice has been played for numerous hearers, some without being previously told what the voice said, and all easily understood what it said.

The same recorder and a new but untested tape were used on August 17, 1976. One faint but clear rap was received. A following test which utilized the same tape, erased, tested and found free from normal sounds, proved blank but the third and last recording rewound from the blank tape offered one faint rap.

Typical of many less successful experiments was a five-minute test made on 8 October, 1976. Only one rap was recorded. However, it occurred on a tape which had been properly erased, tested and found free from normal sounds. This experiment marked the beginning of a short series of tests in a darkened room but the lack of light did not influence the intensity of the phenomena to any discoverable degree. After the series was finished, tests in darkness were discontinued.

Periodic tests are made with tapes that have been erased and tested and raps are frequently received during such experiments. By this means a continual “check” is kept, verifying the continued reception of raps with control tapes.

On occasion raps are received in comparatively large numbers. For example, during five five-minute tests made on November 7, 1976, sixteen individual raps were recorded. The Sony TC-100 recorder was used.

To test the possibility of obtaining raps on surfaces other than the usual table, the microphone from the Sony TC-100 recorder was placed on the surface of a small drum. Good artificial light prevailed. A new but untested tape was used; however, the first two five-minute tests proved negative. The third test, using the tape rewound from the last blank recording, provided a fairly loud and very obvious rap on the drum. As my original notes state, “The rap was very resonant and typical of the drum’s tone.”

On another occasion two raps were received when the microphone had been placed on the surface of a piano stool hurriedly pressed into service.

As seen, successful results have been obtained with various tape recorders including the Sony TC-100, Sony TC-343, Panasonic RQ-2365, General Electric NB-4458 and Hitachi TRQ-340.

Illustrative of the independence of the phenomena from individual recorders, I called at the home of Mr. William Welch, noted investigator of taped voice-phenomena (Welch, 1975) and respected friend, and placed the microphone from his Sony TC-353 on a nearby wooden book shelf. No normal contact was made with recorder, microphone, wires, shelf, etc. Numerous faint voices were recorded as well as one extremely loud rap.

In view of the reception of tape-recorded raps with various recorders and on different surfaces, I will state with confidence that the phenomena is completely independent of individual machines and surfaces.

As previously mentioned, other effects than raps are occasionally received.
They too are inaudible to the unaided ear and must be revealed by the use of high amplification and tape recorders.

For example, on August 1, 1976, using the Panasonic RQ-2365 recorder and a tape rewound from a previous five minute test, fourteen clearly heard short whistles were recorded as well as a preceding series of faint whistles which were not counted.

Voice effects are very occasionally received, as mentioned, but in much lesser number than are the raps. As a result it can be suggested that raps will be recorded with much greater ease than will be voices.

Another consistent effect which sounded much like “scrapings” or “blowings” into the microphone was recorded but dramatically came to an end during the end of November, 1976. In consequence a new series of experiments was launched on Nov. 27, 1976, but the phenomena now received consists almost entirely of raps. The first experiment of the new series provided only one rap and eight faint examples of the “scraping” effect which was arbitrarily titled “contact sounds” for the sake of convenience. The seventh experiment offered only two faint examples and one unintelligible voice. No further “contact sounds” have been recorded.

Thirty-one experiments have taken place since Nov. 27, 1976 but since their inception, the phenomena have taken place on a reduced scale. However, even though the raps have been fewer in number and lesser in intensity, they are gradually building back up to their previous number.

On Jan. 18, 1977, the first of four “negative” experiments was undertaken to demonstrate the dependence of the raps on the presence of the table. For each experiment, consisting in total of 18 five-minute tests, the microphone was placed on a pile of four pillows. Unless the table was rapped obviously no sound was transmitted through the pillows into the microphone. No raps were recorded. At the conclusion of this series of special experiments the pillows were removed; the microphone placed in its usual position lying directly on the surface of the wooden table and all procedure returned to normal.

Prior to the beginning of the “negative” tests twelve experiments had been conducted, for example, and ten had offered positive results. After the finish of the “negative” experiments four consecutive experiments again gave positive results. Therefore, it has been indicated strongly that the raps are directly dependent on the presence of a “sounding surface.”

We then carried out a series of experiments made to determine whether Mr. Frank could influence from a distance a small metal bell within a stout wooden box containing the microphone. When the tapes were played back they had on them a variety of sounds, including a number that were distinct “tings” and bell-like, as well as “whisperings” and tonal voices, some of which formed distinguishable words. However a detail account of this research will be given in a subsequent paper.

3. Discussion

The discovery of low-amplitude, tape-recorded, acoustical raps, bell ringing and associated sounds has added a new chapter to low-amplitude, tape-recorded phenomena and in all probability points to an entire range of low-amplitude effects. The raps, etc., are clearly accompanying phenomena to tape-recorded voices, and it is suggested that the raps will be found to occur in much greater proportion than do the voices. It is also suggested that they will be found to be comparatively widespread and capable of being received by many ex-
perimeners. It is also expected that many other sound effects such as the occasional whistles I have encountered will be obtained.

In my opinion the ability to produce low-amplitude phenomena varies from individual to individual just as does the ability to receive tape-recorded voices. Contrary to what has been said by many in the past, my years of experimentation with the voice-phenomenon has led me to accept this opinion as fact. I recently received a letter from Mr. Richard K. Sheargold in which he confirms my observation. In the case of Mr. Sheargold's voice effects, they are of the non-acoustical type showing that the variance of ability holds true for both types (Sheargold, 1973).

I consider myself a rather poor subject for the reception of low-amplitude phenomenon and am quite sure that others will be found with far greater ability.

It does seem that low-amplitude, tape-recorded psychokinesis should offer an excellent laboratory tool. The actual technique for the reception of such phenomena is essentially very simple, particularly in the preliminary stages, and does not require vast amounts of thoroughly expensive equipment. A particular advantage of low-amplitude psychokinesis is that it provides an objective phenomenon, hopefully in quantity, which can be studied from a quantitative approach as well as that of a qualitative nature.

REFERENCES


11348 Cashmere St., Los Angeles, California 90049

22 January 1977
The Cult of Pyramid Power

RUTH M. FLYNN

ABSTRACT: A description of experiments carried out at Sarnia, Ontario, for the Ontario Schools Science Fair in 1976 on the claims for pyramid power on plant growth. This work was awarded Second Place at the Fair.

The Toronto Society for Psychical Research reported experiments done on the subject of pyramid power in New Horizons, Vol. 1, No. 2, Summer 1973. At the time of those experiments, two major claims only were being made for the alleged power of pyramid shapes, namely; that food would not spoil if kept within a pyramid and at a certain level, and that razor blades would not become dull if kept within a pyramid. The members of the Society carrying out experiments on these two claims disproved them to their own and the Society's satisfaction. Immediately following publication of this report, however, claims were being made that plants placed within a pyramid shape grew taller, stronger, and produced more fruit and flowers than if grown normally.

Subsequently the whole question of pyramid power has become a 'cult' and various entrepreneurs have joined in, and now one can buy 'personalised' pyramids in which to sit or sleep to improve one's health, or mind; pendants, charms jewellery of all types in the shape of pyramids are sold, as good luck charms. Pyramids for plant growth, or for improving water, cigarettes, food, etc., have a very large sale. The cult has invaded the field of architecture and pyramid shaped houses are being built, and every conceivable claim is made, quite indiscriminately for this mysterious pyramid power. Many books have been written and many newspaper and magazine articles published. In all this mass of literature there are practically no detailed reports of any experiments done to test the truth of the statements made, and even when the 'power' clearly and publicly fails, as it did last year when the Toronto Maple Leafs hockey team took pyramids to the playoffs to help them win, and lost instead. Believers in the pyramids quickly forgot this; the demand for pyramids and the extravagant claims made for them were in no way diminished. However, a few voices have been raised in the name of sanity and common sense. Robert Forrest (1977) reports a series of experiments that he carried out with different-shaped boxes, including pyramids, on the dehydration of potato bits, and could not find that the pyramid shape had a different effect than the other boxes. Professor Herman Tiessen of Guelph University carried out experiments on tomatoes, lettuce, cauliflowers, asparagus, and muskmelons, and after three independent studies were done reported that "Pyramids won't make seeds sprout faster, or seedlings grow stronger, or flowers bloom . . . our investigations failed to find any supportive evidence" (1976). Rene Vincens, President of the Cercle Parapsychologique de Marseille, in a private letter, indicated that experiments carried out by them in France had failed to produce any evidence for the power of pyramid shapes. Unfortunately the experiments that disprove the theory have had very little publicity, while the wild claims continue to receive attention.

With the help of Professor A. R. G. Owen of the Toronto Society for
Figure 1: Plants at start of the experiment, 11th March, 1976.

Figure 2: Plants in their containers, 11th March, 1976.

Figure 3: Plants on 1 April, 1976.
Psychical Research, and as one of its members, I decided to enter an experiment on the power of pyramid shapes on plant growth in the Ontario Schools Science Fair, in the Spring of 1976. The experiment was carefully and meticulously carried out and I was awarded a Second Place for the entry.*

It was of course fully realized that however carefully performed, experiments with living plants and material are only properly carried out in a laboratory setting. Plants and seeds normally vary considerably, and two seeds planted in identical conditions can vary naturally in the rate and amount of subsequent growth. However, as far as possible identical plants were used, they were *Phylodendrons*, bedding plants, bought from a grocery store and planted in identical soil and in identical small plastic boxes, 2 inch cubes with drainage. Figure 1 shows the plants when bought. The plants were numbered 1 to 5 and No. 1 was left in the open to grow; No. 2 was placed in a wire pyramid as sold in the local garden shops and recommended for plant growth especially; No. 3 was placed in a closed cardboard pyramid, No. 4 in a cardboard pyramid with round holes cut in the side to let in some air and light, and No. 5 placed in a cardboard cube, also with a hole cut in the sides (See Fig. 2). The experiment was started on 11 March 1976, and all plants were treated exactly equally as regards watering, temperature, light and air control.

Photographs were taken at weekly intervals, and the final series of photographs (Fig. 3) show how matters stood on 1 April.* The plant left growing in the open, No. 1, is clearly healthy and growing well, as is, in fact, No. 2 which was grown under the open wire pyramid. However it is *not* bigger and stronger than the one in the open, as claims would have it, merely about as good as No. 1. The other three, under the closed pyramid, the closed pyramid with holes, and the cube shape with holes show the effect of air and light deprivation and are, as one would expect, somewhat stunted and less well grown than the other two.

It has to be emphasized that growing material, such as plants and flowers, is very difficult to experiment with, and these can only be regarded as crude tests. However, the average person buying a pyramid is only looking for crude results. These tests are very easily performed by anyone interested enough to try, and it seems surprising that many more people have not, in fact, experimented with their plants and reported results. Certainly it appears that there is no more reason to believe that pyramid shapes can influence plant growth than that they can influence the preservation of foods.

As part of the Schools Science Fair project, I also repeated the experiments that had been done by other members of the Toronto Society for Psychical Research, and reported in *New Horizons*, Vol. 1, No. 2. I experimented with hamburger, lettuce, apple, banana and potato pieces. The substances were placed in covered pyramids, on platforms inside the pyramids, in wire pyramids, and inside clear plastic jars. Observations were made every 24 hours, and photographs taken. Very careful notes were made. A spiral generator (an alternative to a pyramid) was used in the apple experiment, and as a control apple slices were wrapped in aluminum foil. A wire pyramid was

---

*Ms. Flynn was awarded First Place in 1975 for her project on E.S.P. (Ed.)

I am indebted to my father, James N. Flynn, who photographed the different of all the experiments for me (R.M.F.).

The experiment has in fact been continued and the plants are the same now (15 June 1977) as on 1 April 1976 (Ed.).

30
also used. Space does not allow me to report all the results obtained; they filled a thick notebook; but the overall conclusion reached was the same as that reached in the previous experiments by the Society. Food was preserved or deteriorated according to the well-known 'cookie jar' principle and not as a result of being placed in a pyramid shape. Some foods such as egg and hamburger, dry out and are preserved when placed so that air can circulate around them. (Incidentally, for anyone wishing to repeat this experiment, hamburger mixture bought in the shops contains a great deal of preservative—for proper results freshly ground meat with no preservative added is essential). The original pyramids of Egypt, are, of course, located in a desert region, and are ideal containers for preservation of meat naturally—whatever shape they were, they would still have this property! There seems in fact no basis at all for the claims made for the power of pyramid shapes; it appears to be merely superstition.

REFERENCES


Toronto Society for Psychical Research. 1 September 1976.
An Empirical Study of Biorhythm in Humans

JOEL L. WHITTON, M.D.

ABSTRACT: Self-reports of health, hours slept, mood and cognition were minuted at the same time daily by eighteen subjects for a minimum of 320 days to determine if there are rhythms in their behaviour. Significant rhythms were found in more than half of the subjects' reports. The cycles tended to be long with a majority in the interval 3 to 8 weeks.

1. Introduction

It is usual for biological functions to fluctuate or oscillate between two limits in a rhythmic fashion. Daily variations in man's biochemical and hormonal systems are known to occur and are called circadian rhythms. Longer cycles also occur, for example the 28-day female hormone cycle. Little is yet known however, about periodicities in the more subjective behaviours such as mood and thinking.

At the turn of the century, a psychologist at the University of Vienna, Professor Hermann Swoboda, began to study rhythmic changes in mental states. His observations (1917) indicated that there was a 23-day cycle relating to the physical body, and a 28-day emotional-sensitivity cycle.

Wilhelm Flies (1923), a physician and president of the German Academy of Science, independently found the same 23- and 28-day cycles.

A 33-day intellectual rhythm was added in the 1920s by Dr. Alfred Teltscher (Thomen, 1973). Recently 38-, 43-, and 48-day cycles have also been suggested relating respectively to compassion, aesthetic perception and self-awareness (Buletza, 1976).

Based on a study of ancient manuscripts, Dr. H. Spencer Lewis (1929) proposed an ordered progression of cycles: a seven-year rhythm of life growth, a 52-day cycle of intuitive influences, a 28-day cycle divided into four seven-day active and passive phases, and a tide cycle of 12 hours. The Lewis system and the Swoboda-Flies-Teltscher system are fixed to the birthdate, at which time all the proposed cycles commence.

Only infrequently in the past 50 years however, have such biorhythms been scientifically studied. Occasionally individuals with precisely timed episodes of manic-depressive mood swings have been reported (Jenner et al, 1967; Gjessing and Gjessing, 1961). Daily mood assessments of workers in a large public utility demonstrated that over a year, emotional cycles were present with periods ranging from 18 to 67 days (Hersey, 1931). Dorland and Brinker (1973) found in a subject's mood significant rhythms of 2.4, 3.7, 5.5, 7.0, and 18.0 days with the 7-day rhythm prominent. A rhythm of 38 days was found by Sothern (1974) in a male subject. Nelson (1971) reported mood changes in students that were reliably present and varied with the demands of the school year.

Anecdotally, reports of mood fluctuations, variations in hours slept and in other variables, are often alleged. For some individuals these reports are impressive and suggest that such rhythms may be valid.

In 1973 the Toronto Society for Psychical Research began a year-long pilot study of biorhythms. The preliminary results supported the hypothesis
that there are persisting cycles in certain of man's physical and emotional behaviours. A larger study was therefore undertaken to address the question: "Do individuals exhibit sustained periodicities in their self-reports of health, hours slept, thinking and mood variables?"

2. Method

Eighty-five individuals were approached and agreed to participate in a year-long study of biorhythms. Each was given a list of questions comprising six factors that were to be answered at the same time each day.

Detailed instructions were personally given as to what each question meant, how to perform self-ratings and how to score each question. To minimize clerical errors, the responses were recorded directly by each subject onto keypunch forms. The six factors were:

1. A subjective assessment of physical health.
2. The number of hours slept the preceding night.
3. General level of anxiety.
5. Mood.
6. This factor was chosen uniquely for each subject and was a variable (different from the other five); one that the subject believed to be periodic in himself or herself.

Except for question 2, the ratings were made from 1 to 9 with 1 low and 9 high.

Self-ratings are necessarily subjective and are thus susceptible to problems of reliability and validity (Wittenborn, 1972). For this reason careful instruction is required. After a training period, it can be expected that each subject is measuring some index peculiar to themselves for each factor. For example, the experience of anxiety may be different for each person, but once a person learns to recognize his or her unique experience, then it can at least be said that an aspect or interpretation of the variable is being measured. Strobel (1974) has used self-ratings for life events and mood evaluations with good results.

A difficulty with the factors being assessed in this study is their susceptibility to influence by external causes. Even the persistent and precise cycles of psychosis studied by Gjessing have been demonstrated to be quickly modified by external events (Jenner et al, 1968). It can be expected that sleep will show at least a seven-day rhythm in those individuals who sleep longer on one day of the weekend, a culturally determined rhythm.

The data, considered as a time-series, demonstrated several periodicities in a background of noise. This suggested the application of spectral analysis (Otnes and Enochson, 1972; Jenkins and Watts, 1968). Each raw time-series was completed with zeroes at each end (as necessary) to construct a 512-point series, means were removed, and then transformation to the frequency domain was performed using a fast Fourier transform. The spectra estimators were smoothed with weights \((\frac{1}{4}, \frac{1}{2}, \frac{1}{4})\) resulting in a bandwidth of approximately 0.00586 cycles/day (cpd) and a nyquist frequency of 0.5 cycles/day. The period of a cycle varies inversely with its frequency and therefore, given a bandwidth, there is less resolution for longer periods. For example, with a bandwidth of 0.005859 cpd, the periods 26 to 31 days are within the bandwidth of the closest cycle to 28 days. Each period was expressed as the central period for its appropriate bandwidth interval. Thus, periods from 26.74 days to 31.059 days were all expressed as 28 days. The
central frequency for this bandwidth is 0.03515625 cpd which is 28 days to the nearest day.

Power spectra were performed on each complete time-series and on the first and second half of each series. A peak in the power spectrum was considered statistically significant if its 95% confidence limit did not include the expected value for Gaussian noise, and if the same peak was significant in power spectra on both the first and second halves of the time-series and in the spectrum of the complete time-series. This requirement excluded cycles that were not significantly present throughout the study.

A further requirement was that if a small but significant peak was near the noise limit and the spectrum had evidence of broad-band noise (smaller non-significant peaks all across the spectrum), that peak was rejected. Also rejected were peaks representing very long periods, i.e. over 85 days, as it could not be definitely established whether such long periods were artificial trends in the time-series due to slowly changing rating criteria or were indeed valid cycles.

3. Results

Eighteen subjects successfully completed the daily ratings for 320 days or more. The other subjects dropped out of the study after from between 26 and 126 days for reasons such as inability to rate at the same time each day, forgetting to rate for several days, or lack of continuing interest.

Results from the 18 subjects are summarized in the table.

Only one subject (S130) did not exhibit periodicities in the reported data. Eleven subjects (61%) had significant cycles in three or more factors. Of the 108 time-series, 59 or 54.6% contained significant cycles. There was no significant difference with respect to sex (chi-squared) or age (two-tailed student's T) at the 5% level between subjects who had three or less significant periodicities versus subjects who had four or more. Age and sex as well did not differentiate subjects who had significant periodicities in factor 6.

The distribution of the periods was very skewed towards the longer periods as 56.1% of the periods were 21 to 57 days or 3 to 8 weeks long; 32.3% were between 1 and 3 weeks; 6.2% were 1 week long, and 5.4% were less than 1 week in duration. A 5% level chi-squared was used for the following period distribution analysis. The skewed distribution as grouped above was significant for all subjects, for females and for males. The only significant difference between males and females was that males exhibited more significant periodicities in their reports of hours slept. There was a non-significant tendency for females to have more periodicities in their self-reports of physical health and anxiety levels. There was also a non-significant tendency for females to have longer cycles than males.

Factor six was chosen by each subject as a variable that the subject believed was periodic. In only 8 subjects (44.4%) was this variable in fact significantly periodic over the entire sample time.

4. Discussion

This study has found that a substantial proportion of normal (non-patient) individuals do exhibit significant and sustained periodicities in their self-reports of health, mood, hours slept, and cognition. However, the data as summarized in the table suggest three related questions.

First, for most subjects, some factors have similar cycles. For example in S100 the 34-day period occurs in factors 1, 2, 4 and 5, and the 43-day
period occurs in factors 1, 3, 5 and 6. This suggests either that there may be common mechanisms subtending some of the variables assessed in this study or that the self-report instrument was not adequate to extract independent subjective factors. There is in the periods no consistent pattern enabling this issue to be resolved as yet.

The second question is, why are the periodicities significant in only 54.6% of the time-series? Factor 3 in S115 demonstrated a significant period of 17 days for the full time-series and for the first half, but was not significant in the last half of the time-series. This cycle was therefore not included in the results. Equally common were subjects having no cycle intense enough to rise above the level of noise. The latter case is straightforward in that the time-series is simply not periodic. The first case suggests local periodicities which arise but are not sustained.

The third related question is, why do periodicities in the measured variables occur at all? Are they endogenously driven by hormone or biogenic amine systems? Female menstrual cycles are known to correlate with psychiatric symptoms (Jacobs and Charles, 1970), lower academic examination performance (Dolton, 1968) and mood (Reynolds, 1969; May 1976). In the current study cycles circa 28 days were found in both sexes. Central nervous system status will affect other rhythms such as absolute pitch (Wynn, 1973a, 1973b) and the ultradian rhythms of the critical flicker-fusion (Lovett Doust, 1975). Biogenic amines are suspected of having a circadian rhythm (Akerstedt, 1976; Hery et al, 1972) but long time-series studies are lacking except, for example, biochemical studies in psychosis Takahashi and Gjessing, 1974; Hatotani, 1974).

At the present time one can only speculate on the possible origin of these periodicities. Sollberger (1965) briefly reviews exogenous potential synchronizers relating to geophysical and astronomical factors. Ravitz (1962) has suggested mental events may be susceptible to magnetic fields. The earth's magnetic field has slight periodicities believed to be influenced by solar changes. These minor cycles are at 27-29, 13 and 9 days. If there is some external synchronizer for biorhythms in mood and other mental events, there then is no essential objection to having a fixed rhythm commencing at birth.
### TABLE: LENGTHS OF PERIODS EXHIBITED BY SUBJECTS

<table>
<thead>
<tr>
<th>S</th>
<th>(1) Health</th>
<th>(2) Sleep</th>
<th>(3) Anxiety</th>
<th>(4) Thought</th>
<th>(5) Mood</th>
<th>(6) Of Choice</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>43,34,21,14</td>
<td>7,34,16,4</td>
<td>28,17,43,16</td>
<td>57,34,12,17</td>
<td>21,34,17,43</td>
<td>43,57,24,14</td>
<td>M</td>
</tr>
<tr>
<td>115</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>103</td>
<td>57,34,19</td>
<td>7,3½</td>
<td>43,7,17,16</td>
<td>17,2½</td>
<td>34,19,17</td>
<td>34,24,19</td>
<td>F</td>
</tr>
<tr>
<td>160</td>
<td>—</td>
<td>—</td>
<td>43</td>
<td>43</td>
<td>43</td>
<td>43,19</td>
<td>F</td>
</tr>
<tr>
<td>152</td>
<td>14</td>
<td>—</td>
<td>13,6</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>F</td>
</tr>
<tr>
<td>137</td>
<td>16</td>
<td>—</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>57</td>
<td>M</td>
</tr>
<tr>
<td>141</td>
<td>—</td>
<td>7,16,57</td>
<td>43</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M</td>
</tr>
<tr>
<td>143</td>
<td>24,34,19,12</td>
<td>—</td>
<td>57,9,43,24</td>
<td>21,14,13,34</td>
<td>21,34,57</td>
<td>43,19,11,21</td>
<td>F</td>
</tr>
<tr>
<td>123</td>
<td>57</td>
<td>57</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>F</td>
</tr>
<tr>
<td>130</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>116</td>
<td>—</td>
<td>7,57,43,28</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>M</td>
</tr>
<tr>
<td>136</td>
<td>—</td>
<td>—</td>
<td>34,14</td>
<td>28</td>
<td>—</td>
<td>43,28</td>
<td>F</td>
</tr>
<tr>
<td>147</td>
<td>34,28,17</td>
<td>7</td>
<td>43</td>
<td>34,28,12</td>
<td>19,28,43</td>
<td>34,28</td>
<td>F</td>
</tr>
<tr>
<td>183</td>
<td>—</td>
<td>57,28,7,21</td>
<td>—</td>
<td>21</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>185</td>
<td>—</td>
<td>34,13,57</td>
<td>21</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>198</td>
<td>57</td>
<td>—</td>
<td>34</td>
<td>7</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>142</td>
<td>43,19</td>
<td>3</td>
<td>43</td>
<td>—</td>
<td>43</td>
<td>—</td>
<td>F</td>
</tr>
<tr>
<td>153</td>
<td>—</td>
<td>24,3,17,19</td>
<td>10</td>
<td>—</td>
<td>6</td>
<td>—</td>
<td>M</td>
</tr>
</tbody>
</table>

*Periods are in days and listed in descending order of amplitude (i.e., height of peak). A dash (—) indicates that there were no significant periodicities.

### REFERENCES


WYNN, V. T. 1973a. Absolute pitch in humans, its variations and possible connections with other known rhythmic phenomenon. Prog. in Neurobiol. 1:111-149.


Toronto Society for Psychical Research 22 March, 1977
Are More Babies Born at the Full Moon?

PETER W. GRIBBLE, B.SC., M.ED.

ABSTRACT: Data collected to test whether more births occur near full Moon did not support that particular hypothesis. However, there was a statistically significant excess of births in the moon's last quarter.

1. Method

The purpose of this study was to test whether the frequency of births was related to the phases of the moon. The specific hypothesis chosen for examination postulated that births occurred more frequently when the moon was near the full.

Data were collected from the Infant and Maternity Statistics of the South Peel Hospital in Cooksville, Ontario. These statistics listed each birth with its particular such as anaesthetist, scrub nurse, type, time and date of delivery, etc. All types of birth and delivery including prematures, stillbirths, later natural abortions and caesarians, were counted with the exception of early or induced abortions, and listed for each day of the calendar year 1971. In order to increase the sample it was supplemented with similar data for the period 1 January 1968 through to the new moon of May 1969.

The dates of the phases of the synodical lunar month in the relevant eras were obtained with the aid of the simplified Scientific Ephemeris published by the Rosicrucian Fellowship. Now, as is well-known, a lunation or lunar month (synodic period) which is the interval between consecutive new moons, is 29 days 12 hours and 44 minutes, i.e. 29.53 days. It was convenient therefore to truncate the lunation at both ends, sacrificing 1.53 calendric days. The method adopted was to label any day which the Ephemeris designated as a full moon as the fifteenth day of that synodic period. The preceding fourteen and the subsequent thirteen calendric days were included so as to constitute a month of 28 calendric days centred approximately (i.e. to within a part of one calendric day) on full moon. Only the births in these conventionalized but moon-related "months" were analysed, the residue being neglected.

2. Statistical features of the data

There were 17 conventionalized months for the 1968-69 era and 11 for the 1971 era. When the 28 months for the two eras were aggregated per day of lunation as defined above, the total numbers of births were as tabulated, according to day and the moon's quarter. The total number was 4031 representing (over 28 x 28 = 784 days) a mean frequency of 5.142 births per calendric day.
It is immediately obvious that in neither era (1968-69 and 1971) nor in both combined, is there any serious difference in the number of births during the first three quarters of the moon. This impression is fully confirmed by calculation of chi-squareds (2 D.F.) for equality which are: era 1968-69, 0.36; era 1971, 7.14; combined 0.82; and thus quite insignificant. This effectively disposes of the hypothesis under test. It has to be said that in the South Peel Hospital in 1968-69 and 1971 births were not more frequent during the middle of the lunar month. This finding is reinforced by the following tabulation.

<table>
<thead>
<tr>
<th>Days</th>
<th>Births</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>551</td>
</tr>
<tr>
<td>5-8</td>
<td>551</td>
</tr>
<tr>
<td>9-12</td>
<td>527</td>
</tr>
</tbody>
</table>

Statistically speaking, the 580 births recorded for the middle four days is almost exactly equal to one-seventh of the total 4031 of births, namely 575.86. The corresponding chi-squared (1 D.F.) is 0.035, which is negligible.

However the incidence of births in the South Peel Hospital was not uniform over the lunar month in the eras in question. In the last quarters of the lunations in the 1968-69 era there were 615 births, which is considerably in excess of 544.7, the number expected on the hypothesis of uniformity. Chi-squared (1 D.F.) is 6.60, and is significant almost at the 1% level. The corresponding figure for 1971 era is 491 as compared with 430.3 expected. Chi-squared (1 D.F.) 17.86, which is significant at less than 0.01%. For the combined data, 1106 births in the last quarter exceeds the expectation of 1007.75 with chi-squared (1 D.F.) equal to 42.04 which is very highly significant. Correction for trend, which strictly should be applied, will not, in fact effect things very much. Significance levels should be multiplied by four since the hypothesis differs from the one originally under test.

The two eras 1968-69 and 1971 were mutually consistent, the proportion of last quarter births being 27.35% for, 1968-69, and 27.55% for 1971. The heterogeneity chi-squared (1 D.F.) is 0.012 and therefore negligible. The overall frequency of last quarter births is 27.44%. It should be noticed that although the excess of last quarter births is statistically significant it is not in fact numerically very large.
3. Discussion

This study was motivated by a desire to ascertain whether a finding reported for New York municipal hospitals would apply in a different place and era. A statistical examination of the birth dates of more than 250,000 children showed the birthrate to be highest during the three days around full moon (Palmer, 1970). This result was also given a behavioural interpretation in terms of the social consequences of moonlight, and on the assumption that the average period of gestation in humans is almost exactly nine lunations.

The present study would seem clearly to show that neither the New York result nor any behaviour inferred from it can be regarded as being valid for all populations. Its interest however extends somewhat beyond a mere failure to verify the hypothesis. The South Peel births exhibit a statistically significant tendency to occur more frequently during the moon's last quarter than in any other phase. It would be inadequate therefore to say merely that the hypothesis is rejected. It would moreover be definitely wrong (i.e., illogical) to say that there is no evidence for a causal relationship between the moon and the frequency of births. Indeed the situation is that we have two sets of evidence, each of which suggests a connection of some sort with the moon without, of course, being conclusive. Our problem is that the form of the apparent relationship differs in the two cases. This situation, though frustrating, is not in fact at all uncommon for biological or sociological data, which often show statistically significant but different (indeed sometimes opposite) trends in different populations.

All that can reasonably be done at this stage is to list the logical possibilities as follows.

(i) Both results are statistical flukes. (This must happen sometimes!)
(ii) One result corresponds to a valid empirical fact, but the other is a statistical fluke.
(iii) Both results are valid empirical facts, but the connection of at least one with the moon is spurious (i.e. some kind of false correlation).
(iv) The moon through physical, physiological, psychological or sociological influences, does affect conception or birth or both, but the precise effect differs between populations in consequence of biological, or behavioural, or geographical differences, or all of them.

Only data on other populations and repetitions for New York and Peel County can afford insight at to which is the true situation.

4. Acknowledgements

I am grateful for the statistical help of Professor David F. Andrews of the Department of Mathematics, and Professor A. R. G. Owen of the Department of Preventive Medicine and Biostatistics, University of Toronto.

REFERENCE


Department of Psychology, Erindale College, University of Toronto.

20 December 1976.
Quantitative Fluctuations in Kirlian Fingertip Coronas

DALE SIMMONS, DIP. ENGR. TECH., B. SC.

ABSTRACT: Quantitative measures, S, A, and C, are applied to Kirlian fingertip coronas, and their statistical variation studied within an individual. It is shown that the corona can exhibit very large fluctuations for which as yet no cause can be reliably assigned. Correlations with biorhythmic variables representing physical or emotional wellbeing are, so far as this experiment goes, absent or negative.

1. Introduction

Research in the T.S.P.R. investigating the possibility of establishing a "normal" or standard Kirlian finger-tip coronal pattern for an individual or group was reported by the writer (June 1976) as follows:

The Kirlian device employed was designed and constructed by the writer and, although a solid state unit, is similar in principle to the auto-ignition coil discharge type of apparatus. Gross control parameters such as pressure on the film, voltage and frequency settings, barometric pressure, humidity and fingertip moisture were taken into account. Over the course of two months the coronal patterns of 11 individuals were obtained at weekly intervals. In total, 7 standard photographs of each individual were taken.

Using the 77 resulting photographs it was impossible to establish, scientifically, a normal coronal pattern corresponding to a "normal" state of being. No two coronal patterns of any individual were exactly the same and no pattern specific to any individual could be detected. Coronal pattern fluctuations within an individual ranged from very broken to very uniform and from a few points of light to a 5 mm thickness. These fluctuations were not related to any noticeable state changes as assessed by the individuals themselves and effectively destroyed any hope of establishing a norm. The drastic variations mentioned above were seen in individuals within a time period of only a few minutes and for no apparent reason. Similarly no correlation between coronal patterns and personalities could be drawn.

In October 1976 subsequent to the publication of my paper in June 1976, Pehek, Kyler, and Faust, reporting on their work at Drexel University, Philadelphia, also noted the variability in the intensity of Kirlian fingertip coronas. They say:

For comparable experimental conditions the photographic images of streamer activity (corona) of fingers of relaxed subjects taken randomly over a period of time varied from a condition where no streamer activity was recorded to one in which streamers were produced uniformly about fingers. Such extreme variations have even occurred within several hours with the same subject.

In view of our own results, the writer and his colleagues certainly accept the validity of the last sentence relating to the fluctuations in the corona, but would regard it as being something of an understatement. In consequence we feel that considerable reserve has to be exercised in accepting the validity of any alleged correlations between the size and brightness of the corona and various parameters, other than those originating from variant forms of the photographic process itself (see Dobervich, 1974). In our opinion this would certainly apply to correlations with meditative states as asserted in the literature.
and with "before" and "after" states in "healers", also with mental concentra-
tion or relaxation. As regards correlations with physiological parameters, in
the light of our experience as well as that of Pehek, Kyler, and Faust, we feel
that it cannot be over-emphasized that, even with the best techniques, results
may be at the mercy of experimental design which perhaps in all Kirlian re-
search ought to be adapted ab initio to look for changes in the averages of
quantities that are subject to large inherent fluctuations.

In our own work we could not establish any correlation between recent
rubbing of the skin with alcohol, or with vigorous washing with either soap
suds or tap water, or with anointing with skin cream, or with prior cooling
or heating of the fingers with icy or boiling water. But we do not dispute
Pehek, Kyler and Faust's findings that the corona is modified by the presence
of a Mylar strip, by drenching in water or wetting with water or saline.
These treatments, so far as the writer can tell from the published account,
seem (a) to be rather more extreme than any used in Toronto, or (b) to count
as major modifications of the photographic process itself rather than as normal
causes of variability within or between persons.

However the writer feels that considerable interest attaches to Pehek, Kyler
and Faust's finding that there is a relationship between the corona and palmar
sweating even though, of necessity, the latter has to be measured somewhat
indirectly. Thus subjects' coronas tend to be reduced after "hyperventilation".
Hyperventilation is the phenomenon of "overbreathing" — an increase in the
depth and rapidity of respiration (Noyes and Kolb, 1958), which can lead
to reduction in the alveolar air, and in the arterial blood carbon dioxide tension
with a fall in the blood bicarbonate. The consequences of hyperventilation are
extremely diverse, as can be ascertained from the literature. It may be the case,
as is said by Pehek, Kyler and Faust, that a concomitant is an initial increase
in palmar sweating. However it is fair to say that the physiological effects of
overbreathing are so diverse that any particular correlation may be hard to
identify without ambiguity. The identification with palmar sweating might
therefore seem to possess somewhat of a degree of arbitrariness, though the
writer grants that, being (literally) a superficial characteristic, sweating could
well, by prior reasoning, be important for Kirlian coronas. However, it is
certainly interesting that a corona reduction occurred under hyperventilation
with all five of the subjects observed by Peher, Kyler and Faust.

It should also be stressed that these investigators did find a correlation
between corona size and GSR (galvanic skin response). (The latter variable
is negatively correlated with sweating activity). In addition they were able
to make "sweat counts" on their subjects using the method of Sutarman and
Thomson, and to study the effect of an immersion in water (or saline) at
various temperatures on the coronas of subjects with high and low sweat
counts. As a result, Peher, Kyler and Faust have, in the writer's opinion,
presented a strong case for supposing that moisture, in the form either of
sweat or water, tends to repress the Kirlian corona. In particular their research
suggests that acute stress (by encouraging sweating) will tend to diminish the
corona. To what extent this prediction may be empirically verified, or how it
relates to results of the kind discussed by Moss and Johnson (1976) concerning
effects of sympathectomy or of xylocaine, lies outside the writer's present
intention which is to describe a relatively simple series of observations, inspired by commonsense reasoning, but animated by a desire to improve the
scientific quality of Kirlian studies through the substitution of quantitative
methods for the qualitative ones that have hitherto dominated research in
this field.

42
2. The Observations

Subsequent to the research by the writer and his T.S.P.R. colleagues which has been mentioned, but prior to the knowledge of the Drexel University research, it was decided, in discussion, that it might be useful to follow a single subject over many days. For convenience the writer selected himself, and photographed his middle fingertip Kirlian corona as nearly as possible at a definitely prescribed time on each of 45 days, within the period from 17 February through 15 April 1976. He also recorded his subjective scores, H and E, for physical and emotional wellbeing on the scale used in the biorhythm experiment (Whitton, this Journal) for the variables (1) Physical health, H, and (5) Mood, E. By subsequent inspection and measurement of the photographs of his fingertip coronas two measures of coronal developmental, namely: S, the maximum "streamer length" (in millimetres) and A, an estimate for the total "luminous area" of the corona were ascertained. Naturally, A is rather difficult to assess and its value is admittedly somewhat subject to measurement error. Also, coronas of very different shapes can have the same value of A, which is essentially integrated "streamer density" as defined by Peher, et al.

The variable H and E are measured on an integer scale, possible values 0, 1, ... 9, the subject aiming at representing his modal, normal, or average level as 5.0. The variables H and E each fluctuated between the values 3 as minimum and 7 as maximum. Reassuringly the 45 day means were

\[ E = 5.10000 \pm 0.12472 \quad \text{and} \quad H = 4.87778 \pm 0.15089, \]

the second (±) figure in each case being the standard error of the mean, the S.E.s of H and E being 1.01217 and 0.83666 respectively. The means themselves are close to the ideal values of 5.0, suggesting that the writer's subjective estimates of his own norms are reasonably accurate. The correlation between H and E was 0.38378, which is reasonably high for biological variables. (If they are bivariate normal, this correlation would be significant on 43 D.F. at the 1% but not at the 0.1% level).

The correlation between S, the streamer length (mean S = 2.04222 ± 0.17143), and "luminous area" (mean A = 1.49444 ± 0.16967), was notably high, being 0.68797, showing rather distinctly that the extent and the "bulk" of the corona are both very characteristic of coronal conspicuity and almost interchangeable as measures thereof within a single individual. In the units employed for S and A, it so happens that their S.E.s respectively 1.15000 and 1.13819, are not significantly unequal. It follows therefore from standard reasoning in principal component analysis that the single variable, \( C = S + A \), may reliably be used as an effective measure of the total conspicuity of a Kirlian fingertip corona, valid without re-scaling for the same finger of a single individual.

3. The Absence of Correlations

When the squared correlations between the personal "state" variables H and E and the coronal measurements S and A were calculated they turned out to be rather small, suggesting that S and A were, in fact, not related to H and E. The correlations themselves in fact had negative values, which, if they had been statistically significant would have indicated an antagonism between physical or emotional "highs" and conspicuity of the corona. However none of the four correlations was significant at the 5% level. Necessarily therefore the writer is obliged perforce to register the conclusion that there
is no evidence of a positive relationship between the “state” variables H and E and the coronal features S, A, or S + A (i.e., C). The actual values of the correlations are

\[
\begin{align*}
    r(H, S) & = -0.272, \\
    r(H, A) & = -0.262, \\
    r(E, S) & = -0.205, \\
    r(E, A) & = -0.177.
\end{align*}
\]

The correlations of the state variables H and E with coronal conspicuity C are

\[
\begin{align*}
    r(H, C) & = -0.251, \\
    r(E, C) & = -0.208,
\end{align*}
\]

and not significant at the 5% level, the 5% point being greater than 0.29. If desired, H and E can be replaced by the single “principal component” V = H + E, representing general “vitality” or “verve”. The correlation with C is \( r(V, C) = -0.27731 \), again not significant.

The writer would like to emphasize that at no time when he photographed his fingertip corona was he in an exceptional physical or mental state distinguished by real stress, agitation, or anxiety, violent feelings, sweating, hyperventilation, depression, etc. His subjective H and E values represented variations within his normal range of physiological and emotional states. Consequently he is inclined to doubt whether the pronounced fluctuations in his corona can be explained in terms of moisture alone.

4. Conclusions

Although a single series of observations on one person cannot be expected to be very informative, the results would none the less seem to be useful. It shows that, in some individuals, there is either no relationship between conspicuity of the corona and feelings of wellbeing, or that if there is a relationship it may be a negative one. It shows also that the corona can exhibit very large scale fluctuations for which as yet no cause can be assigned with any degree of reliance. The writer feels also that this study has successfully indicated how, by use of the measures, streamer length S, and luminous area A, and their summation, the “conspicuity” C, this field of research can be brought into the domain of the quantitative sciences, which will render the various generalizations that are propounded more susceptible to actual testing.

5. Acknowledgements

I am grateful for the help of Professor A. R. G. Owen of the Department of Preventive Medicine and Biostatistics, University of Toronto, with the statistical analysis.

REFERENCES


WHITTON, Joel L. An Empirical Study of Biorhythm in Humans. This Journal.

Department of Physics. University of Toronto. 1 November 1976
ABSTRACT: A statistical analysis through the use of the computer of the style in the History written by the Roman historian Ammianus Marcellinus has revealed such pervasive patterning at a variety of levels of composition that there is doubt as to whether or not the manner of writing was cognitive.

The primary purpose in the use of a computer as an aid in research was its employment in the production of a concordance to the History of the Roman historian Ammianus Marcellinus. Ammianus was a Greek by birth who spent the early part of his life in Syrian Antioch. While the dates of his birth and death are unknown, his life fell within the period from about 325 to approximately 400. He served in the Roman army and then became a private citizen soon after the Emperor Julian's death in 363 probably to write.

The History contained an account of events in the Roman Empire from 96 to 378. The work was divided into 31 books of which there are extant books 14 to 31. These surviving 18 books deal with the events from 353 to 378, a period of 25 years.

As soon as the first draft of the concordance had been produced attention was addressed to a stylistic analysis of our author's writing. The data provided by the computer brought to light results which were unexpected. Specifically the statistics relative to the following levels of style were furnished by the computer: the number of words in each book, the number of sentences in each book, the mean sentence length in each book, the predominance within each book of sentences of a specific number of words, the number of short sentences used in creating gaps between long sentences, the alphabetical frequency in the use of initial letters, and repetition in the employment of joint vocabulary.

The first set of data examined was that which related to the number of words used in each of the extant 18 books. The graph which resulted from the plotting of the data is shown on Figure 1. The statistics regarding the number of words each book contains are presented on the left. The horizontal axis at the bottom of the graph has the extant 18 books arranged in numerical order. It was only after careful consideration that this arrangement was determined upon. The reasons are these. First, Book 14 covers the chronological period 353-354 A.D.; Book 15, 354-355; Book 16, 356-357; and so on to Book 31 which embraces the period from 375 to 378. Secondly, it would appear that the books were written in sequence in that at the beginning of Book 15 Ammianus writes as follows:

Then Book 26 opens with this statement:
Having narrated the course of events with the strictest care up to the bounds of the present epoch, . . . let us hasten to continue our narrative.

Thirdly, there are dotted throughout the books, to a significant total, references, such as the following, taken from Book 23, chapter 6:

There are also many thousand tigers, and numerous other wild beasts, and by what kind of devices they are usually taken I recall that I gave an account long ago.

This reference must be to one of the missing 13 books. Other references often occur which relate to content in earlier extant books. Finally, evidence with regard to an aspect of style which cannot be presented by means of a graph seems to support arrangement of the books in their numerical order. As a result of assignment of the symbol “A” to books in which the largest number of sentences contain 10 to 20 words, the symbol “B” to books in which the largest number of sentences contain 20 to 30 words, and the symbol “C” to books in which the largest number of sentences contain 30 to 40 words a clear pattern emerges in that Books 15, 23 and 31 are “A” Books. Between Books 15 and 23 are 7 “B” books, between Books 23 and 31 are 5 “B” books and 2 “C” books. Book 14, it would appear, belongs to the patterning in the missing 13 books. In any event, analysis of the statistical data relevant to other levels of style reveals that Book 23 not infrequently is a pivotal book in the patterning insofar as it occupies in the numerical order a central position just as is true when a graph was not used. This latter piece of evidence together with the clear progression in chronology with respect to the events recorded, the statements that introduce Books 15 and 26, and the references to matter discussed in books earlier in the numerical order, determined that the books be arranged as is shown on this graph. The scale (about 260 words vertical to one book horizontal) was chosen merely to satisfy the normal desideratum that the vertical extent of the figure be comparable to its horizontal one, and is irrelevant to the particular finding that emerged.

The first observation that caught the eye with regard to Figure 1 was that the line from Book 22 to Book 31 was parallel to the line drawn from Book 18 to Book 30. The second aspect was the presence of what at first sight seemed to be a parallelogram; indeed, on the scale used, it was almost a square. Closer inspection, however, revealed that whereas the difference between Point A (Book 22) and Point B (Book 29) was 1,109 words, the difference between Point D (Book 17) and Point C (Book 24) was 1,236 words. By the same token A to D comprises a difference of 1,788 words and B to C, 1,915 words. In both situations the operative number is 127 in that 127 added to 1,109 given 1,236 (D to C) and 127 added to 1,788 gives 1,915 (A to B).

The presence in this graph of these findings led to analysis of the data pertinent to other levels of style. One peculiarity of Ammianus' writing is the repetition of clumps of words. For example, in Book 14, chapter 7, occur these words: Iamque lituis claduin concrepantibus internarum. Exactly the same words in the same order occur in Book 28, chapter 1. This characteristic is present in all the 18 extant books. Thus, it seemed deserving of analysis.

With respect to the graphs that follow and their vertical axes, Figures 5 and 6 are very similar to Figure 1. The only difference is that Figures 5 and 6 list on the left the number of sentences in the books at intervals of 5 sentences.
Figure 1: Books arranged in numerical order and plotted according to the number of words in each.

Figure 2: The Percentage of Joint Vocabulary Within Each of the Books Which is Repeated In the Other Books.
The data presented on Figure 4 involve the use of the decimal point. The vertical axis lists the mean sentence lengths in the books. Because it was found that the mean sentence length, for instance, in Book 15 was 28.5 words, that in Book 24 was 28.6 and that in Book 21 was 28.7, the vertical axis shows the data listed at intervals of 0.5 words.

Figures 2, 7, and 8 provide on the vertical axis data which had to be computed to four decimal places. Figure 2, for example, presents the percentage of joint vocabulary in each of the books which is repeated in other books. Of the total number of words in Book 14 0.0216% consists of joint vocabulary that is to be found in one or more of the other books. Here the most appropriate methods of organizing the statistics seemed to be to list the figures at intervals of 0.001%.

The vertical axes on Figures 7 and 8 are similar except that, because the percentage of the vocabulary in each of the books from Book 15 to Book 31 which is repetition of joint vocabulary present in Book 14 is smaller, the figures on the axes are given at intervals of 0.0005%.

Finally, the graph which is Figure 3 shows the employment (as an initial letter) of the letter C, expressed in percentages relative to the total number of words in each of the books. So little difference is there amongst the 18 books that the vertical axis lists the data at intervals of 0.1%.

Figure 2 is the graph on the same scale as Figure 1 which presents the data with regard to the percentages of joint vocabulary within each of the books which is repeated in the other books. The lines joining Books 17 and 26, Books 20 and 29, Books 18 and 27 are almost exactly parallel as is true of the lines joining Books 15 and 17, Books 18 and 20, Books 27 and 29. The statistics have a 1, 2, 3 relationship in that the difference between Books 17 and 20 (.0183 and .0222) is .0039; the difference between Books 18 and 20 (.0300 and .0222) is .0078; and the difference between Books 17 and 18 (.0183 and .0300) is .0117.

The solid lines on the graph shown in Figure 3 (scale 0.010% vertical to one book horizontal) illustrate the use in the employment (as an initial letter) of C (expressed in percentages) in the 18 books. The lines which have been drawn with a single dot between dashes form the sides of the figure not provided by solid lines. These lines, for instance, link Books 16 and 17, Books 16 and 24, and Books 24 and 30. In addition, this sort of line was also used in the lower section of the figure, such as the line drawn from Book 15 to Book 16 and extended to the point of intersection with the line drawn from Book 29 to Book 27 and extended to the point of intersection. The latter type of line, since it does not form a side of the figure, has two dots between dashes. Analysis of the statistical data shows that there are two basic relationships. The vertical lines which form four of the sides of the figure have statistical differences of 1.1; that is, Book 16 (9.4) and Book 15 (8.3); Book 16 (9.4) and Book 22 (8.3); Book 24 (9.6) and Book 23 (8.5); Book 24 (9.6) and Book 30 (8.5). The horizontal lines, on the other hand, have statistical differences of 0.2; for example, Book 24 (9.6) and Book 16 (9.4). Because figures similar to those found to be inherent in the graphs illustrated in Figures 1, 2, and 3 were discovered to be present in graphs relative to other levels of style, a search was undertaken to find out whether or not there was a consistency within all the graphs. The vertical distance on the next graph (Figure 4) provides the figures relative to the mean number of words in the sentences in each of the books. Book 23 (25.6) contains on the
Figure 3: The employment (as an initial letter) of C (expressed in percentages) in the 18 books.

Figure 4: Books arranged in numerical order and plotted according to the mean sentence length in each.
average the shortest sentences while Books 19 and 30 (35.8) contain overall the longest. What came to light was again unexpected. It was found that, as is shown on Figure 4 (scale 20 words vertical to one book horizontal), if Book 23 were joined by a line with another book (Book 19 on Figure 4) and that line is taken to be the diameter of a circle, then when the line is drawn from Book 23 to the circumference at the point where it is intersected by the horizontal broken line indicating the average and that point is linked to the other book, the figure is of course, by Euclid Book 3, Proposition 31, a right-angled triangle. However, if the same scale is used the other angles are invariably close to 60° and 30°.

With respect to this triangle, the difference between Book 19 (35.8) and the line of the average (31.1) is 4.7. The difference between the line of the average (31.1) and Book 23 (25.6) is 5.5. These two differences when added together come to 10.2. This total is equal to the difference between Book 19 (35.8) and Book 23 (25.6). There is no consistency amongst the graphs with regard to which book it is that when joined to Book 23 provides the line to be diameter of the necessary circle. From the viewpoint of the statistical data it was found that the difference between Book 19 (35.8) and the line of the average (31.1), or the figure 4.7, was the same as the difference between Book 18 (34.7) and Book 20 (30.0) and that between Book 29 (33.3) and Book 24 (28.6). Of greater significance in analysis of the statistical data however is the figure .7, a difference in which a total of 6 of the 18 books are involved.

Because investigation had shown that there was a factor which was consistently to be found in all the graphs and that this constant involved a circle, the research next proceeded along a different path. The objective was to find out whether or not the circle had relation to the plotting of the books on the graphs. Figure 5 (scale 10 sentences vertical to one book horizontal) provides an example of the sort of result arising out of the quest. The ordinates (vertical scale) of Figures 5 and 6 indicate the number of sentences in each of the books. Book 18 (144) has the lowest number of sentences. Book 31 (316) has the highest. The average number of sentences in the 18 books is 225.6. The statistics with regard to the number of sentences each book contains involve a clearly defined progression based upon the use of the number 14. Book 18 (144) is related to Book 19 (158); Book 30 (168), to Book 26 (182); Book 24 (202), to Book 20 (216); and so on up the scale. Three anomalies occur: Book 29 (231) and Book 21 (244), Book 27 (200) and Book 20 (216), and Book 22 (289) and (+28?) Book 31 (316). As the graph shows on Figure 5 a line was drawn from Book 18 through Books 24 and 28 to Point A on the line from Book 30 to 31; a line was drawn through Books 18 and 19 and extended to Point B or the point of intersection of this line with the extension of the line from Book 30 through Book 29; a line was drawn from Book 18 through Book 27 to Point C. Then a circle was constructed using AB as radius. When the chords had been inserted it was found that the extension of one fell close to Book 25 and the extension of another on Book 26.

As an indication that the relationships between the chords of the circle shown on Figure 5 and the plotting of the books on that graph might not have been merely chance, Figure 6 (drawn to the same scale as Figure 5) demonstrates that by use of the same principles put into effect earlier there were brought to light two other circles. Here the line was drawn from Book 18 through Book 25 to the Point A on the line joining Books 30
Figure 5: Books arranged in numerical order and plotted according to the number of sentences in each.

Figure 6: Books arranged in numerical order and plotted according to the number of sentences in each.
and 31. The line was drawn from Book 18 through Book 29 to Point B. With A as centre and AB as radius the circle and its chords were drawn. Then one chord when extended passes through Book 23 to Book 17, another chord when extended falls close to Book 28, the line from Book 18 which passes through Books 24 and 28 intersects the circumference just where two of the chords join at Point C, and a third chord when extended falls almost on Book 25. In the same fashion the line from Book 18 through Book 26 was produced to Point D. A circle with radius DE, E being Book 30, was drawn and its chords inserted. One chord when extended falls on Book 15 and another chord on Book 28.

The graphs pertaining to the other levels of style were analyzed to determine whether or not circles and their chords had relevance to points where the statistics had dictated the books should be plotted. The results were similar to those presented on Figures 5 and 6.

The next step in the investigation was to check data which up to this time had never been analyzed before. The data are those relating to repetition of joint vocabulary. This time the stylistic characteristic was examined from a different point of view. The graph presented as Figure 7 lists the statistics relating to the percentages of vocabulary in Books 15 to 31 which repeat word clumps found in Book 14. Thus, there is not a point on the graph for Book 14. The vertical axis on Figure 7 reveals that Books 19 and 27 (0.0099) contain the largest percentage of joint vocabulary repeated from Book 14 and that Book 23 (0.0032) contains the smallest percentage. The average amount of repetition is 0.0071%. As with Figure 8, the scaling is 0.005% vertical per book horizontal. First, a line was drawn from Book 23 to Book 27 (Point A). A semicircle was drawn, the line from Book 23 to Book 27 being the diameter. Point A and Point B (the point of intersection of the line of the average with the circumference) were joined. Book 23 and Point B were joined; the line passed through Book 31. The figure thus created is a right-angled triangle, the angle of close to 30° being at Book 23 and the angle of close to 60° at Book 27. The difference in percentages between Book 27 (0.0099) and the average (0.0071) is 0.0028, or 4 x 0.0007. The figure 0.007 plays an important role in the progression inherent in the statistics; for example, Book 24 (0.0047) + 0.0007 = Book 26 (0.0054); Book 26 (0.0054) + 0.0007 = Books 17 and 22 (0.0061). Books 16, 20 and 21 are related in the same way. The other figure which provides progression is 0.0003. All books not noted above are involved in a progression governed by 0.0003.

Secondly, chords were drawn within the semicircle. One chord when extended falls on Book 18. Another chord's line when produced falls on Book 19. Book 28 (Point C) is almost exactly the centre for inscribing the circle within the equilateral triangle formed by the chords and the radius of the semicircle.

Thirdly, Books 23 and 21 (Point D) were joined by a line. With this line as its diameter a circle was drawn and the chords inserted. Two chords when extended intersect at Book 31, and two others intersect almost exactly at Book 16. Book 20 (Point E) and Book 24 (Point F) are centres for the inscribing of circles within the equilateral triangles formed by the relevant chords and radii.

Figure 8 has the same basic circle as has Figure 7; that is, the circle whose diameter is the line from Book 21 to Book 23 and whose chords have been inserted. With Book 24 (Point A) as centre the circle cir-
Figure 7: Book 14: External Repetition in Books 15-31.

Figure 8: Book 14: External Repetition in Books 15-31.
cumscribing the equilateral triangle formed by the chord and the radii was
drawn. One of the chords of this circle when it is extended falls on Book 18
(Point B); in the same fashion another chord falls on Book 29 (Point C).
With Point D on the extension of the chord from Book 21 to Book 31 as
centre the circle was drawn having the line from Book 21 to Book 31 as
diameter. With Book 29 (Point C) as centre the circle was drawn circum-
scribing the equilateral triangle formed by one of the chords and the radii
of this circle. The line AEF, passing through Book 20 and being close to
bisecting the chord at Point E, was drawn. With Point E as centre and with
EF as radius a circle was drawn. The analysis, carried forward to this stage,
revealed the influence that chords seem to have had in determination of the
placing of the books on the graph.

That Ammianus was familiar with Ptolemy's *Almagest* seems most likely.
Books I and II of the *Almagest* are introductory, setting forth Ptolemy's
basic astronomical assumptions and his mathematical methods. Book I con-
tains his Table of Chords for arcs subtending angles from $\frac{1}{2}$° to $180$° by
steps of $\frac{1}{2}$°. Ammianus mentions Ptolemy's name twice in his *History*. The
first occasion comes in chapter 3 of Book 20 where there occurs a digression
on the eclipse of the sun. Furthermore, at a loss perhaps for the appropriate
words in Latin, Ammianus quotes four Greek words taken from Book 6,
chapter 6 of the *Almagest*. The second occasion for the use of Ptolemy's
name occurs in chapter 8 in Book 22 where Ammianus is describing Thrace
and the Pontic Sea. In providing details about the voyage around the shores
of the Pontic Sea Ammianus writes that it is a distance of 23,000 stadia
"as is asserted by Eratosthenes, Hecataeus, Ptolemy, and other very accurate
investigators of such problems . . . ." Here, of course, the reference must be
to Ptolemy's *Guide to Geography*. The *Guide* came to be for geography
what the *Almagest* was for astronomy.

Specific reference is made in chapter 1 of Book 26 to other astronomers
with whose work Ammianus implies he is familiar. These are Meton, Euctemon,
Hipparchus and Archimedes. At this point the historian is providing an
explanation with regard to the principle of the bisextile year. It might be
added that in the *Almagest* Ptolemy discusses this problem under the general
heading in Book 3, chapter 9: "On the Inequality of Solar Days."

The question, thus, arose as to whether or not Ammianus' writing had
been influenced by a familiarity with the astronomical principles set forth
by Ptolemy in his *Almagest*. There seems to be a fairly significant body of
evidence that perhaps this was the case.

Another clue that may help to explain the geometrical-statistical basis
underlying Ammianus' style is the fact that he is apparently an observer
of the heavens who is fully familiar with the movements of the signs of
the zodiac. Books 20, 22 and 26 of his *History* contain references to the
zodiacal constellations.

It is most tempting to conclude that in the case of Ammianus' writing
the quantitative stylometric analysis has revealed a mind that is imbued
with the knowledge necessary for one in the fourth century to possess were
one to be skilled in astronomy. This tentative conclusion is all the more
attractive in that it has been found possible to mount the signs of the zodiac
from Capricorn to Leo on the graph shown on Figure 1. Evidence of this
must be reserved as the subject of another paper.

A deeper mystery, however, remains unresolved. In view of the fact that
altogether fourteen different levels of style have been analyzed and been
found to have a geometrical-statistical basis, the question arises as to whether or not the patterning was cognitive or non-cognitive or a combination of both. This paper does not attempt to provide an answer to that inquiry but rather to report what has been found in the hope that readers will feel free to communicate their knowledge of similar discoveries, should they know of any, to the writer. In any case it would seem desirable that the works of other writers, particularly those of Ammianus' own time, should be analyzed by methods similar to those outlined in this paper, in order to ascertain whether their styles have any features seemingly inspired by an esteem for geometry, astronomy or astrology.

Department of Classics
University of Victoria
Victoria, B.C.

16 March 1977
JUST PUBLISHED

CONJURING UP PHILIP
An Adventure in Psychokinesis
by Iris M. Owen with Margaret Sparrow

This book has been written to answer the hundreds of enquiries about "Philip" received from all over the world. It describes in detail how the Philip research developed and explains how groups of non-mediumistic people can train themselves in the psychological skill needed for the production of genuine physical phenomena. In addition the book discusses the implications of the "Philip" research for the study of ghosts and hauntings, thought-forms and problems of spirit communication as well as possible applications to group therapy and paranormal healing.

Lovers of history will enjoy Philip's 17th Century setting in the heart of rural England.

$8.95

Also available:

PSYCHIC MYSTERIES OF CANADA
by Dr. A. R. G. Owen

Written in a clear but entertaining style so as to interest both scientists and laymen, Dr. Owen illustrates the subject matter of psychical research from Canadian sources, and explains the remarkable discoveries in this field that Canadians have made in the last few years.

Dr. Owen is now Executive Director of the New Horizons Research Foundation, the foremost institute for psychical research in Canada.

$8.95
An Invitation

*New Horizons* is the first Canadian journal for frontier research. It has been privileged to publish reports of outstanding significance concerning entirely new breakthroughs into previously unknown realms of human potentiality, but aims always at maintaining the highest level of factual accuracy and scientific objectivity.

The production of the Journal and the research reported in it are financed entirely by private donations.

You are invited to support the work of the New Horizons Research Foundation by giving an annual donation of $10 or more which will make you an Associate and entitle you to all its journals, newsletters, etc.

NEW HORIZONS RESEARCH FOUNDATION
P.O. Box 427, Station F, Toronto, Ontario, Canada
M4Y-2L8.