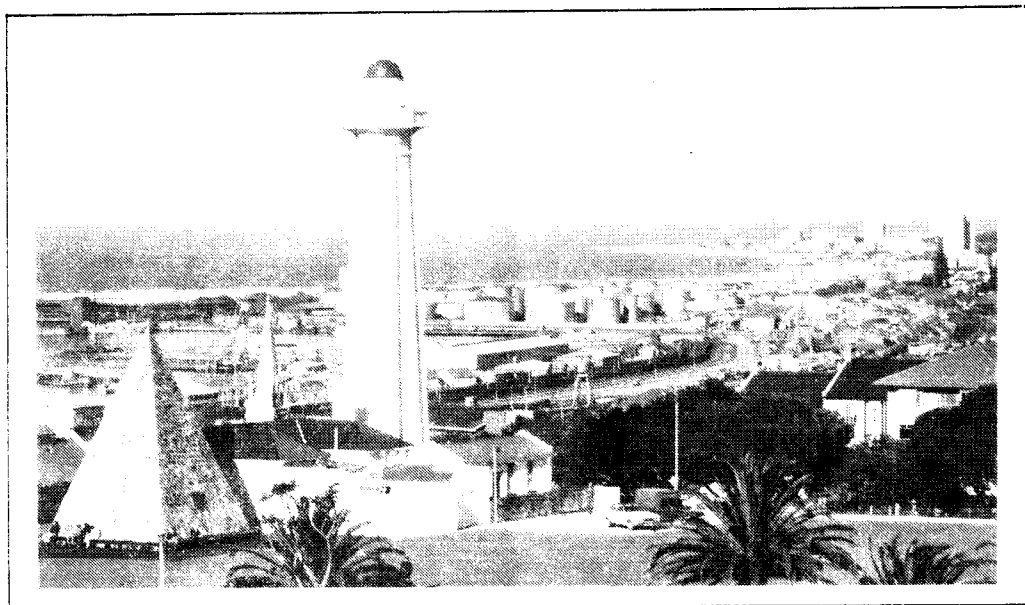
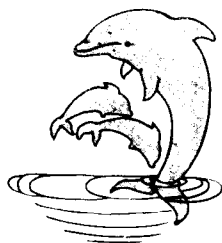




Q S X
P E



THIS NEWSLETTER IS PUBLISHED BY THE
PORT ELIZABETH BRANCH OF THE SOUTH
AFRICAN RADIO LEAGUE.

P.O. BOX 10402
LINTON GRANGE
6015



PORT ELIZABETH BRANCH
NOTICE OF MONTHLY MEETING.

MEMBERS ARE REMINDED THAT THE MONTHLY GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE, WILL BE HELD AT ST. MARTIN'S CHURCH, GREAT WEST WAY, KABEGA, ON FRIDAY, 26TH APRIL, 1987 AT 8.15P.M.

THE CHAIRMAN WILL REPORT BACK ON THE A.G.M. AND THE RESULTS OF THE MOTIONS DISCUSSED.

COMMITTEE

<u>CHAIRMAN:</u>	BRIAN WELLER ZS2AB	303498
<u>VICE CHAIRMAN:</u>	LIONEL COOMBE-DAVIS ZS2DD	321770
<u>SECRETARY:</u>	MARGE WELLER ZS2OB	303498
<u>TREASURER:</u>	LYNN CROTHALL ZS2MM	354671
<u>SPECIAL EVENTS AND</u>		
<u>SOCIAL ACTIVITIES:</u>	OWEN WHEELER ZS2HZ	381310
<u>AWARDS:</u>	BILL HODGES ZS2-157	512580
<u>EDITOR QSX-PE:</u>	MARGE WELLER ZS2OB	303498
<u>MEMBERS:</u>	DICK SCHONBORN ZS2RS	322111
	BEAVAN GWILT ZS2RL	306968

<u>LIBRARIAN</u>	COLIN ASHWELL ZS2AO	312471
------------------	---------------------	--------

BULLETIN ROSTER

40 METRES

2 METRES 80 METRES



26TH APRIL	ZS2RL	MIDDLE UP	ZS2HZ	ZS2AB
3RD MAY	ZS2AB	TOP DOWN	ZS2RL	ZS2DD
19TH MAY	ZS2DD	BOTTOM UP	ZS2HZ	ZS2AB
17TH MAY	ZS2OB	MIDDLE DOWN	ZS2MM	ZS2DD
24TH MAY	ZS2MM	MIDDLE UP	ZS2RS	ZS2HZ

SUNDAY BULLETINS

HF 40M - 7098KHZ (LOWER SIDEBAND)
80M - 3640KHZ (LOWER SIDEBAND)
VHF 145,700 AND 145,75MHZ

BRANCH FREQUENCIES
P.E. REPEATER 145,05/65
GRAHAMSTOWN 145,15/75
LADY'S SLIPPER 145,10/70
COCKSCOMB 145,00/60
RTTY MAILBOX 145,35
VHF BEACON 144,910MHZ

WE LIKE BEING YOUR BRANCH

THIS AND THAT

WELCOME

WE WISH TO EXTEND A HEARTY WELCOME TO TWO NEW MEMBERS TO THE BRANCH, ROBERT MARTINDALE AND JOHAN WEPENER AND WE HOPE YOU HAVE A LONG AND HAPPY ASSOCIATION WITH THE BRANCH AND THE LEAGUE. GOOD LUCK WITH YOUR EXAM IN NOVEMBER.

MORSE CODE TEST

THE BRITISH AUTHORITIES HAVE ANNOUNCED THAT THE MORSE CODE TEST WILL BE VALID FOR LIFE. IN OTHER WORDS, IF A BRITISH AMATEUR LETS HIS LICENCE LAPSE AND HE WISHES TO RENEW IT, HE NEED NOT TAKE THE MORSE CODE TEST AGAIN.

MOBILE IN U.K.

AFTER A QSO WITH A MOBILE STATION IN G-LAND, IT WAS ESTABLISHED THAT NO ONE MAY USE OF HAND-HELD MICROPHONE WHILST TRAVELLING. A VOX-OPERATED MIKE EITHER SUSPENDED FROM THE ROOF OF THE CAR, OR ATTACHED TO THE GEAR LEVER OR SUSPENDED AROUND THE NECK MAY, HOWEVER, BE USED. ALSO IT IS ILLEGAL TO TRAVEL WITH AN AERIAL MORE THAN 14 FEET ABOVE THE GROUND.

SATELLITE NEWS

BECAUSE OF THE RAPIDLY FALLING SOLAR POWER AVAILABLE TO OSCAR 10, ITS USE DURING THE REST OF MARCH AND APRIL IS EXPRESSLY PROHIBITED. IF THIS PROHIBITION IS STRICTLY OBSERVED THE SPACECRAFT WILL AGAIN BE AVAILABLE FOR USE AT THE BEGINNING OF MAY.

THE LAUNCH OF SATELLITES RS-9 AND RS-10 IS STILL ON HOLD. IT IS NOT CLEAR WHAT THE CAUSE OF THIS DELAY IS BUT CONTINUED SPECULATION POINTS TO EXISTING COLD WEATHER CONDITIONS. RS-9 IS THOUGHT TO HAVE A MODE-A TRANSPONDER AND A ROBOT ABOARD. RS-10 CARRIES MODE A, K, T AND A ROBOT TRANSPONDER. AN APRIL LAUNCH NOW SEEMS LIKELY. FOR THE LATEST NEWS PLEASE MONITOR THE S.A. AMSAT NEWS.

"73" THE EXPRESSION "73" USED BY ALL RADIO AMATEURS, GOES BACK TO 1859 WHEN AN AMERICAN COMMITTEE DEALING WITH TELEGRAPHY DEVELOPED A SERIES OF ABBREVIATIONS TO BE ABLE TO SEND MESSAGES QUICKER. BY THE WAY, WHERE WE USE "88" TODAY, THEY USED "22". THE REASON FOR THE CHANGE IS NOT KNOWN.

QUESTION..."WHAT IS RF ANYWAY?"

ANSWER..."RF IS A MAD NON-SCIENCE SIMILAR IN NATURE TO WITCHCRAFT OR PAGANISM. MAXWELL AND EINSTEIN THOUGHT THEY PUT IT TOGETHER, BUT THEY WERE TOTALLY WRONG. THEY WERE MEN OF SCIENCE AND THERE IS NO ROOM FOR SCIENCE IN RF. NO ONE REALLY KNOWS HOW RADIO WORKS, LEAST OF ALL RF ENGINEERS WHO HAVE CLOUDED THE ISSUE WITH QUANTITATIVE OBSERVATIONS. RF DESIGN IS ACTUALLY ACCOMPLISHED DURING HALLUCINATIONS WHILE CONSORTING WITH SPIRITS. DESIGN-INS OCCUR WHEN THE CUSTOMER HAS THE SAME HALLUCINATIONS. HERBAL TEAS, BRIGHT-COLOURED CLOTHES, A TAMBOURINE (FOR CHANTING SESSIONS) A HAITIAN VODOO KIT AND A OUIJA BOARD ARE ALL NECESSARY ACCOUTREMENTS FOR THE RF SALESMAN. DATA SHEETS AND APPLICATION NOTES SHOULD ONLY BE USED AS A LAST RESORT.

(BOB ZAVREL - APPLICATIONS ENGINEER, AUDIO PRODUCTS - SIGNETICS).

STATESIDE NUMBERS

AT THE END OF SEPTEMBER 1986, THERE WERE 421 082 RADIO AMATEURS IN THE U.S.A. THIS IS AN INCREASE OF 2,1% WHEN COMPARED WITH THE FIGURE OF SEPTEMBER 1985. A RECENT SURVEY SHOWED THAT 55% OF ALL AMERICAN AMATEURS OWN AND USE A COMPUTER. THIS SHOWS A STRONG CONNECTION BETWEEN THE TWO TYPES OF HOBBIES IN THE U.S.A. SURPRISINGLY ENOUGH, THE FIGURE FOR JAPAN IS MUCH LOWER, ONLY 23%.

MINUTES OF GENERAL MEETING OF THE PORT ELIZABETH BRANCH OF THE SOUTH AFRICAN RADIO LEAGUE HELD AT ST. MARTIN'S CHURCH, PORT ELIZABETH ON FRIDAY 20TH MARCH, 1987.

PRESENT: 27 MEMBERS AND VISITORS.

APOLOGIES: ZS2s MM, LW, BY, RB, CZ, DT, ZR2sAAA AND EY.

THE CHAIRMAN WELCOMED ALL TO THE MEETING AND ESPECIALLY JUNE ZS2JJ AND MIKE ZS2MJ WHO HAD RECENTLY MOVED TO PORT ELIZABETH AND ALSO TO THREE NEW MEMBERS, ROB FROST, ROB SALMON AND ROB MARTINDALE AND ALSO TO OWEN THOMAS ZS2AZ OUR GUEST SPEAKER FOR THE EVENING.

THE CHAIRMAN MENTIONED THAT ALTHOUGH IT HAD BEEN DECIDED TO DROP SOME OF THE BUSINESS OF THE MEETING, IN ORDER TO REMAIN WITHIN THE CONSTITUTION IT WOULD BE NECESSARY TO ADOPT AND SECOND THE MINUTES OF THE PREVIOUS MEETING AND TO PRESENT A FINANCIAL REPORT. THIS WOULD BE DONE IN FUTURE AND WOULD NOT TAKE MORE THAN A FEW MINUTES.

MINUTES: THE MINUTES OF THE MEETING HELD 20TH FEBRUARY, 1987 HAVING BEEN PRINTED AND CIRCULATED IN QSX-PE WERE TAKEN AS READ, PROPOSED BY ZS2VM AND SECONDED BY ZS2AO.

FINANCE: IN THE ABSENCE OF LYNNE ZS2MM WHO WAS VISITING HER BROTHER IN HOSPITAL IN EAST LONDON, THE CHAIRMAN PRESENTED THE FINANCIAL REPORT AS FOLLOWS: FIXED DEPOSITS R2000, SPECIAL SAVINGS: R1218. SUBS FOR 9 NEW MEMBERS HAD BEEN FORWARDED TO H.Q. THE TRAVELLING SUPPER HAD COST R470 IN TOTAL AND RECEIPTS TOTALLED R450. THERE WERE THREE GUESTS WHO HAD ATTENDED AT OUR INVITATION.

GENERAL: (1)ZS2VM RAISED THE SUBJECT OF LICENCES WHEN OPERATING MOBILE AND IT WAS DECIDED THAT IT WOULD BE A GOOD PRECAUTION TO TAKE A COPY WHEN TRAVELLING. HOWEVER, A LETTER WOULD BE WRITTEN TO THE P.M.G. SEEKING CLARIFICATION ON THE WHOLE ISSUE OF MOBILE OPERATION ESPECIALLY IN THE HOMELANDS.

(2)PIRATE OPERATORS HAD RECENTLY BEEN HEARD ON THE COCKSCOMB REPEATER AS WELL AS MUSICAL TRANSMISSION. WHEN CHALLENGED, THEY CLOSED DOWN AND THE CHAIRMAN SAID THAT WE SHOULD TRY TO GET A DIRECTION BEARING ON THEM BUT NOT TO TALK DIRECTLY TO THEM. ALL SHOULD KEEP A LOOKOUT FOR THEM AND REPORT THEM TO THE COMMITTEE.

(3)ROB SALMON REPORTED THAT THE TOWN REPEATER WAS NOW IN WORKING ORDER AND SHOULD BE HANDED OVER TO OWEN ZS2HZ WHO WOULD SEE TO THE RE-INSTALLATION. THESE WERE UNITS RECENTLY BROUGHT FROM CAPE TOWN. ONCE THIS WAS WORKING CORRECTLY, ATTENTION WOULD BE PAID TO THE GRAHAMSTOWN REPEATER.

(4)BILL HODGES HAD ACQUIRED A DRAKE 2B RECEIVER AND HE HAD DONATED THIS TO THE BRANCH TO BE USED BY DESERVING INDIVIDUALS AT THE COMMITTEE'S DISCRETION. AFTER IT HAD BEEN MARKED AS BRANCH PROPERTY IT WOULD BE LOANED OUT. A HALLICRAFTERS TRANSCEIVER HAD BEEN DONATED BY SELWYN ZS6SS AND THIS WOULD BE FETCHED FROM GRAFF REINET AS SOON AS FEASIBLE.

(5)THE CHAIRMAN REMINDED MEMBERS THAT BECAUSE OF THE EASTER WEEKEND THE APRIL MEETING WOULD BE HELD ONE WEEK LATER ON 24TH APRIL AND THIS WOULD ALLOW HIM TO REPORT BACK ON THE A.G.M.

(6)THE CHAIRMAN SAID THAT HE HAD SENT AN ADVANCE NOTICE OF THE COMPONENT SALE TO RADIO ZS. MOST OF THE EQUIPMENT HAD BEEN STRIPPED BUT WOULD NEED TO BE SORTED. COLIN ZS2AO SAID HE HOPED IT WOULD NOT BE TOO EXPENSIVE. BRIAN SAID THAT IT WOULD BE OFFERED AT PROBABLY 33 TO 50% OF CURRENT COMMERCIAL PRICES BUT THAT A FURTHER DISCOUNT WOULD BE AVAILABLE TO P.E. BRANCH MEMBERS. THERE WAS A LOT OF VERY USEFUL EQUIPMENT WHICH COULD BRING IN R3000/4000 WHICH WOULD BE USED TO BUY MORE EQUIPMENT FOR THE BRANCH FOR USE AT JOTA, HOBBIES FAIR, ETC.

(7)TREVOR ZS2AE ASKED TO SPEAK ON THE QUESTION OF REPEATERS BELONGING TO THE BRANCH. IT WOULD BE ADVISABLE TO LOOK AT WHAT WE HAVE AND WHAT WE INTEND TO DO IN THE FUTURE, SUCH AS REPLACING THE GRAHAMSTOWN REPEATER, REPLACING THE RECEIVE ANTENNA ON LADIES SLIPPER AND THE 2M LINK TO

THE CAPE. TREVOR SAID HE HAD BROUGHT BACK 2 CMT'S FOR THE LINK AND FELT THAT IF THEY WERE NOT GOING TO BE USED, THAT THEY SHOULD BE RETURNED. BRIAN SUGGESTED THAT A WORKING GROUP BE SET UP TO DEAL WITH THE WHOLE QUESTION. TREVOR SAID HE WOULD CHAIR THE GROUP AND THE FOLLOWING VOLUNTEERED THEIR SERVICES: ZS2VM, RL, WG, RS, AD, RT AND THE THREE ROBS. BEAVAN ZS2RL SAID THAT PERHAPS THE EFFORT INVOLVED IN KEEPING THE COCKSCOMB REPEATER WORKING WAS NOT WORTH THE TROUBLE. TREVOR ZS2AE SAID THAT HE WAS QUITE HAPPY TO CONTINUE WITH IT AND THAT THERE WERE SEVERAL OTHERS ALSO WILLING TO HELP. IT WAS DECIDED TO HOLD A MEETING SOON TO DISCUSS FULLY ALL EVENTUALITIES. MENTION WAS MADE OF THE 2M LINK VIA GEORGE TO CAPE TOWN AND AS THE ALGOA BRANCH HAD UNDERTAKEN TO DO THIS, OWEN ZS2HZ SAID THAT WE SHOULD ASK FOR THEIR CO-OPERATION. AFTER A VOTE WAS TAKEN, IT WAS THOUGHT THAT THE LINK WAS FEASIBLE AND BRIAN ZS2AB SAID THAT THE LINK SHOULD BE BY TONE ACCESS ONLY TO PREVENT OUR REPEATERS BEING HELD OPEN FROM CAPE TOWN. DICK ZS2RS SAID THAT THIS HAD BEEN ACCEPTED AS A PROJECT BY THE ALGOA BRANCH AND IT WAS THOUGHT ADVISABLE TO APPROACH THE PEOPLE CONCERNED IN CAPE TOWN AS WELL.

THERE BEING NO FURTHER BUSINESS, THE MEETING WAS CLOSED AND TEA WAS TAKEN. THEREAFTER A MOST INTERESTING AND INFORMATIVE TALK WAS GIVEN BY OWEN THOMAS ZS2AZ ON SEVERAL YACHTING TRIPS AND TRIPS TO TURKEY. EVERYONE WAS DELIGHTED AND ENTHRALLED BY THE TALK.

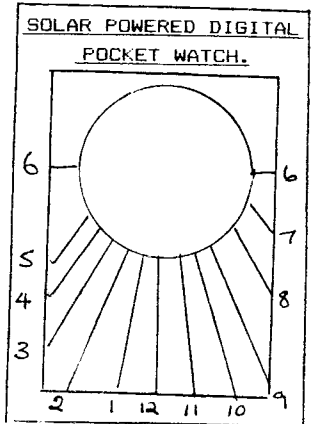
SGD:	SGD:
B.A. WELLER ZS2AB	M.T.WELLER ZS2OB
CHAIRMAN	SECRETARY

A SOLAR POWERED DIGITAL POCKET WATCH.

MANY OF US HAVE ACQUIRED ONE OF THESE NEW DIGITAL WATCHES WHICH HAVE COME ONTO THE MARKET IN RECENT YEARS. THE PRICES HAVE REALLY COME DOWN RAPIDLY IN RECENT MONTHS. IN CONTINUATION OF THIS TREND A POCKET MODEL HAS BEEN PATENTED WHICH IS NOT ONLY ONE OF THE CHEAPEST ON THE MARKET BUT IS ALSO SOLAR POWERED.

THE CIRCUIT DIAGRAM IS SHOWN. ACTUAL SIZE WILL DEPEND ON THE USER'S NEED. THE CIRCLE IN THE MIDDLE SHOULD BE CAREFULLY CUT OUT. THIS NEED NOT BE TOO SMALL. (READ ON.)

THE WATCH IS OPERATED AS FOLLOWS: INSERT YOUR MIDDLE FINGER INTO THE CIRCLE, THE FINGER POINTING VERTICALLY. ALIGN THE DEVICE SO THAT THE LINE INDICATING "12" POINTS APPROXIMATELY SOUTH, THE SHADOW CAST ON THE CIRCUIT BOARD INDICATING THE TIME. WHETHER IT IS MORNING OR EVENING, DAY OR NIGHT WILL HAVE TO BE DETERMINED FROM OTHER OBSERVATIONS. AS COMMON WITH OTHER SOLAR DEVICES, THE WATCH SWITCHES OFF AT NIGHT.



Amateurs victims of gigantic hoax! Sporadic E is NOT a natural phenomenon, but an international plot. CQ is proud to have scooped both Jack O'Brien and The National Enquirer to bring you this shocking expose.

Floating Mirrors And Their Use in Radio Communications

BY PROFESSOR EMIL HEISSELUFT*

SPORADIC E, A SO-CALLED "SUMMERTIME PHENOMENON" IN THE TEMPERATE ZONES, HAS NEVER BEEN ADEQUATELY EXPLAINED. SOME OBSERVERS HYPOTHESIZE, FOR EXAMPLE, THAT IONIZED PATCHES ARE PRODUCED SPORADICALLY AT ALTITUDES JUST BENEATH THE E LAYER AS A RESULT OF SHEAR WINDS AT THESE HEIGHTS, AND THAT THESE PATCHES ACCOUNT FOR THE PROPAGATION WHICH IS OBSERVED. "NOT SO!" SAYS PROF. HEISSELUFT. "THE PROPERTIES MANY BELIEVE TO RESULT FROM SPORADIC E IONIZATION ARE REALLY ATTRIBUTABLE TO THE PRESENCE OF WIRE-GRID MIRRORS WHICH ARE HELD IN PLACE BY INTENSE BEAMS OF RADIATION FROM THE GROUND". IN THIS EXCLUSIVE ARTICLE FOR CQ MAGAZINE, PROF. HEISSELUFT SUPPORTS HIS ASSERTION USING INFORMATION HERETOFORE SUPPRESSED BY THE GOVERNMENTS INVOLVED IN FLOATING MIRROR EXPERIMENTS. IF WHAT THE PROFESSOR SAYS IS TRUE, AMATEURS AND SCIENTISTS WORLDWIDE HAVE BEEN THE VICTIMS OF A GIGANTIC HOAX.

K2EEK.

FROM MAY THROUGH AUGUST OF EACH YEAR, AMATEURS IN THE NORTHERN HEMISPHERE COMMUNICATE USING SIGNALS REFLECTED FROM WHAT ARE THOUGHT TO BE IONIZED CLOUDS WHICH FORM SPORADICALLY JUST BENEATH THE E LAYER (90-100KM OR ABOUT 60 MILES ABOVE THE EARTH). IN TRUTH, THE SIGNALS ARE REFLECTED FROM WIRE GRIDS WHICH ARE SUPPORTED BY RADIATION PRESSURE FROM GROUND-BASED TRANSMITTERS AND WHICH ACT AS FLOATING MIRRORS.

THIS CLAIM IS BASED ON INFORMATION CONTAINED IN RECENTLY DECLASSIFIED DOCUMENTS UNEARTHED BY AN ASSOCIATE OF MINE AT THE LAUTON INSTITUTE. MOREOVER, IT APPEARS THAT THE FLOATING MIRROR CONCEPT IS AN OUTGROWTH OF SECRET SOLAR PRESSURE STUDIES PERFORMED BY PROFESSOR JERZY OSTERMOND-TOR AND ME IN THE MID-1950s! REGARDLESS, AMATEURS AND SCIENTISTS WORLDWIDE HAVE OBVIOUSLY BEEN THE VICTIMS OF A GIGANTIC HOAX, FOR THERE REALLY IS NO SUCH THING AS A "SPORADIC-E CLOUD."

SO-CALLED SPORADIC E (Es)

FOR BACKGROUND, IT IS OF INTEREST TO REVIEW BRIEFLY WHAT PROPERTIES ARE ATTRIBUTED TO SO-CALLED SPORADIC E. A KNOWLEDGE OF THESE PROPERTIES WILL MAKE IT EASIER TO UNDERSTAND HOW FLOATING MIRRORS CAN ACCOUNT FOR THE TYPE OF PROPAGATION WE EXPERIENCE AND ASSOCIATE WITH "ES."

SPORADIC E IS THE NAME GIVEN TO WHAT ARE THOUGHT TO BE PATCHES OR CLOUDS OF INTENSE IONIZATION WHICH FORM AT ALTITUDES JUST BENEATH THE IONOSPHERE'S E LAYER. IN THE TEMPERATE ZONES, Es IS OBSERVED PRIMARILY DURING THE LATE SPRING AND SUMMER MONTHS. FOR EXAMPLE, IN THE NORTHERN HEMISPHERE, 80% OF ALL Es PROPAGATION IS OBSERVED BETWEEN THE MONTHS OF MAY AND AUGUST, INCLUSIVE, WITH MOST OF THE ACTIVITY TAKING PLACE DURING THE MIDDAY AND EARLY EVENING HOURS.

RADIO SIGNALS REFLECTED FROM E_s CLOUDS (IF THAT IS WHAT THEY TRULY ARE) CAN TRAVEL AS MUCH AS 2200KM (ABOUT 1300 MILES) IN ONE HOP (FIG.1). FURTHER, RECEIVED SIGNALS RE QUITE STRONG, INDICATING THAT THE REFLECTION TAKES PLACE WITH VERY LITTLE SIGNAL LOSS.

PROPAGATION VIA SO-CALLED SPORADIC E IONIZATION IS VERY ERRATIC IN NATURE. IN PARTICULAR, THE SIGNALS RECEIVED APPEAR TO HAVE BEEN REFLECTED FROM SOMETHING THAT IS DRIFTING WITH TIME, OFTEN AT VERY HIGH SPEEDS. THIS OBSERVATION IS DRAWN FROM THE FACT THAT DURING E_s OPENINGS, SIGNALS CAN BE OBSERVED TO PEAK UP RAPIDLY, TO HOLD STEADY FOR A FEW MINUTES, AND THEN TO DISAPPEAR COMPLETELY INTO THE NOISE.

ALL OF THESE OBSERVATIONS CAN BE EXPLAINED BY THE PRESENCE OF "MIRRORS" WHICH ARE FLOATED AT ALTITUDES OF 60 MILES OR SO BY RADIATION PRESSURE FROM GROUND-BASED TRANSMITTERS. TO DEMONSTRATE THAT THIS IS POSSIBLE, AND THAT RADIATION PRESSURE CAN INDEED SUPPORT SUCH MIRRORS, LET ME DIGRESS FOR A MOMENT AND REVIEW FOR YOU SOME OF THE ANALYSES PROF. OSTERMOND-TOR AND I MADE RELATIVE TO THE USE OF RADIATION PRESSURE IN SPACE TRAVEL.

RADIATION PRESSURE

SEVERAL YEARS PRIOR TO THE LAUNCHING OF SPUTNIK, PROF. OSTERMOND-TOR AND I RECEIVED A GRANT FROM THE AUSTRIAN ACADEMY OF SCIENCE TO STUDY THE FEASIBILITY OF USING RADIATION PRESSURE TO PROPEL A VEHICLE THROUGH SPACE. WE HYPOTHESIZED THAT A SPACE-SHIP COULD BE BUILT AND FITTED WITH LARGE METALLIC-FILM SAILS AND THAT SOLAR RADIATION PRESSURE COULD BE USED TO "PUSH" THE VEHICLE THROUGH SPACE. OUR STUDIES OF THEORETICAL PHYSICS CONVINCED US THAT IT SHOULD BE POSSIBLE TO BUILD SUCH A SOLAR-POWERED SPACESHIP.

TO SEE THIS, CONSIDER THE FOLLOWING SIMPLIFIED FORMULATION. IF WE LET w BE THE MEAN ENERGY DENSITY IN ONCOMING WAVES, THE WAVES CARRY w/c UNITS OF MOMENTUM PER UNIT VOLUME (WHERE c IS THE VELOCITY OF LIGHT). THUS, THE WAVES BRING w UNITS OF MOMENTUM PER SECOND TO EACH UNIT AREA OF THE SURFACE. WHEN THE WAVES ARE ABSORBED BY THE SURFACE, IT RECEIVES THE MOMENTUM, AND, HENCE, EXPERIENCES A PRESSURE EQUAL TO w IF ON THE OTHER HAND, THE WAVES ARE TOTALLY REFLECTED FROM THE SURFACE, THE PRESSURE EXERTED ON THE SURFACE IS $2w$. FINALLY, IF THE RADIATION IS INCIDENT AT SOME ANGLE e , THE PRESSURE IS REDUCED BY A FACTOR OF $\cos^2 e$ (FIG.2).

BASED ON THIS TYPE OF AN ANALYSIS, TOR AND I CONCEIVED THE IDEA OF A SPACESHIP WHICH WOULD BE PROPELLED THROUGH SPACE BY MEANS OF SOLAR RADIATION. BASICALLY, THE SPACESHIP HAD TWO LARGE METALLIC-FILM "SAILS" WHICH COULD BE SYNCHRONOUSLY ROTATED TO VARY THE RADIATION PRESSURE ON THE SAILS (AND, HENCE, TO VARY THE VELOCITY OF THE SPACESHIP). IN ORDER TO STEER THE SPACESHIP, HOWEVER, IT WOULD BE NECESSARY TO MOUNT STERABLE THRUSTER ROCKETS ABOVE AND BELOW THE CABIN. A DIAGRAM OF THE HEISSULFT/TOR SOLAR-DRIVEN SPACESHIP IS SHOWN IN FIGURE 3. DETAILS OF THE SPACESHIP HAVE ONLY RECENTLY BEEN MADE AVAILABLE TO THE PUBLIC AFTER HAVING BEEN CLASSIFIED FOR 25 YEARS.

OUR ANALYSES OF SOLAR RADIATION PRESSURE APPARENTLY HAVE LED TO THE CONCEPT OF USING COMMUNICATION MIRRORS WHICH ARE FLOATED ABOVE THE GROUND BY RADIATION PRESSURE. CSONKA, IN PARTICULAR HAS PUBLISHED A TECHNICAL NOTE ON THIS SUBJECT. BELOW IS A BRIEF REVIEW OF HIS WORK.

RADIATION SUPPORTED MIRRORS

ACCORDING TO CSONKA, IT SHOULD BE POSSIBLE TO CONSTRUCT A LIGHTWEIGHT WIRE GRID USING ALUMINIUM WIRE HAVING A DIAMETER OF 1μ (ONE MICRON). THE WIRES WOULD BE STRUNG PARALLEL TO ONE ANOTHER AND WOULD BE HELD TOGETHER BY A RELATIVELY FEW NUMBER OF CROSS-WIRES. IN THIS WAY, THE RADIATION REFLECTED FROM THE WIRE GRID WOULD BE LINEARLY POLARIZED.

AS AN EXAMPLE, CSONKA SUGGESTS THAT IF ONE WERE TO CONSTRUCT SUCH A WIRE GRID HAVING A DIAMETER OF 4 METERS (ABOUT 13 FT) IT WOULD WEIGH ABOUT 0,035 GRAMS AND IT COULD BE SUPPORTED AT A HEIGHT OF 60 MILES BY 50 TO 150KW OF ELECTROMAGNETIC RADIATION. THE MIRROR WOULD BE LAUNCHED FROM A BALLOON, AND WOULD BE "BLOWN UP" TO ASSUME ITS "FACE-DOWN-DISK" SHAPE BY THE COMBINED

FORCES OF RADIATION PRESSURE AND GRAVITY. FURTHER, THE MIRROR PRESUMABLY COULD BE MADE TO DRIFT FROM PLACE TO PLACE BY SHIFTING THE BEAM OF RADIATION. IT SHOULD EVEN BE POSSIBLE, WITH A PROPERLY DESIGNED WIRE GRID, TO ROTATE THE MIRROR BY ROTATING THE POLARIZATION OF THE RADIATION WHICH IS USED TO SUPPORT THE MIRROR! THIS, IN TURN, ACCORDING TO CSONKA, "OPENS THE WAY TO SELECTIVE DIRECTIONAL TRANSMISSION."

"INCREDIBLE!" YOU SAY? WHAT IS EVEN MORE INCREDIBLE, MY DEAR FRIENDS, IS THAT SEVERAL GOVERNMENTS HAVE FOR MANY YEARS SECRETLY DEPLOYED SUCH FLOATING MIRRORS! CONSTRUCTED IN THE MANNER PROPOSED BY CSONKA, THESE MIRRORS - AND NOT INTENSE IONIZATION - ARE RESPONSIBLE FOR WHAT MOST PEOPLE DESCRIBE AS SPORADIC-E PROPAGATION. VIRTUALLY ALL OF THE MIRRORS HAVE BEEN LAUNCHED DURING THE LATE MORNING AND LATE AFTERNOON HOURS OF LATE SPRING AND SUMMER DAYS; THIS IS DONE TO EXAMINE MIRROR BEHAVIOUR DURING THE HOTTEST TIME OF DAY AND AT THE DAY/NIGHT TRANSITION. BY USING THESE TWO LAUNCH WINDOWS, THE MIRRORS ARE GENERALLY READY FOR USE AROUND LOCAL NOON AND LOCAL SUNSET - JUST THE TIMES WHEN SO-CALLED SPORADIC E IS SAID TO OCCUR. THE MIRRORS ARE USUALLY FLOATED AT AN ALTITUDE OF 60 MILES AND SIGNALS REFLECTED FROM THEM HAVE BEEN OBSERVED AT DISTANCES OF UP TO 1300 MILES. (IN SOME CASES, MULTI-HOP PROPAGATION USING TWO MIRRORS HAS BEEN OBSERVED; DISTANCES COVERED SOMETIMES REACH 2600 MILES). THEN TOO, THE REFLECTED SIGNALS ARE QUITE STRONG AS WOULD BE EXPECTED FOR RADIATION WHICH IS REFLECTED FROM A METALLIC SURFACE. IN SHORT, THE FLOATING MIRRORS HAVE, OVER THE YEARS, SHOWN THEMSELVES TO BE A LOW-COST MEANS BY WHICH TO PROPAGATE STRONG RADIO SIGNALS OVER GREAT DISTANCES.

THERE IS, HOWEVER, ONE PROBLEM WITH THE MIRRORS WHICH MUST BE SOLVED BEFORE RADIATION-SUPPORTED MIRRORS CAN PROVIDE RADIO WAVE PROPAGATION ON A DEFENDABLE BASIS.

THE PROBLEM

SIMPLY PUT, THE PROBLEM IS THAT IT HAS NOT BEEN POSSIBLE TO CONTROL THE POSITION OF THE FLOATING MIRRORS IN A CONSISTENT MANNER. PERTURBATIONS IN THE ORIENTATION OF THE MIRRORS - USUALLY CAUSED BY UPPER-ATMOSPHERIC WINDS - CHANGE THE ANGLE WITH WHICH THE GROUND BASED RADIATION IS INCIDENT ON THE MIRRORS. SUCH CHANGES REDUCE SIGNIFICANTLY THE RADIATION PRESSURE (BECAUSE OF THE PREVIOUSLY DESCRIBED $\cos^2 e$ DEPENDENCE) AND RESULT IN LOSS OF MIRROR CONTROL.

FOR EXAMPLE, IF THE SUPPORTING RADIATION IS INCIDENT PERPENDICULAR TO THE PLANE OF THE MIRROR (FIG 4(A)), $\cos^2 e = 1$. IF, HOWEVER, WIND CAUSES THE MIRROR TO TIP BY 45 DEGREES (FIG 4(B)), $\cos^2 e = 0.5$. THAT IS, THE SUPPORTING RADIATION PRESSURE IS REDUCED BY 50%. UNDER THESE CONDITIONS, THE MIRROR IS LEFT TO THE MERCY OF THE WINDS, AND AS USUALLY HAPPENS, IT DRIFTS OFF AT SPEEDS OF UP TO 250 M.P.H. AND IS DESTROYED WITHIN AN HOUR OR SO.

AS A RESULT OF WIND INSTABILITIES, THEREFORE, THE SIGNALS AMATEURS AND OTHERS RECEIVE FROM FLOATING MIRRORS ARE OBSERVED TO PEAK FOR ONLY A FEW MINUTES BEFORE FADING INTO THE NOISE! IN ADDITION, SINCE THE MIRRORS ARE QUICKLY DESTROYED AFTER LAUNCH, MIRROR PROPAGATION IS ONLY OBSERVED FOR SHORT PERIODS OF TIME ON THOSE DAYS WHEN BALLOON LAUNCHES ARE MADE.

CONCLUSIONS

AS HAS BEEN DEMONSTRATED ABOVE, ALL OF THE PROPERTIES NORMALLY ASSOCIATED WITH SO-CALLED SPORADIC E CAN BE EXPLAINED BY THE PRESENCE OF FLOATING MIRRORS WHICH ARE LAUNCHED BY MANY OF THE WORLD'S GOVERNMENTS. THESE MIRRORS, WHICH ARE, IN REALITY, WIRE GRIDS, ARE SUPPORTED (ALBEIT BRIEFLY) AT ALTITUDES JUST BELOW THE E LAYER BY RADIATION FROM GROUND-BASED TRANSMITTERS. UNFORTUNATELY, WINDS ALMOST ALWAYS DESTABILIZE THE MIRRORS, CAUSING THEM TO DRIFT AWAY FROM THEIR LAUNCH SITES AT SPEEDS OF UP TO 250 M.P.H. WHEN FIRST LAUNCHED, HOWEVER, THE MIRRORS CAN BE USED FOR RADIO PROPAGATION TO DISTANCES OF UP TO 1300 MILES.

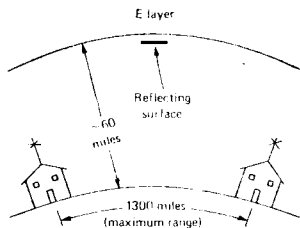


Fig. 1-Propagation via so-called sporadic E can provide communications over distances of up to 1300 miles.

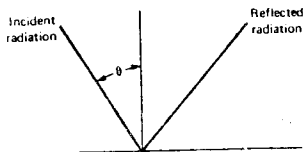


Fig. 2-For totally reflected radiation which is incident at an angle θ , the pressure is $2w \cos^2\theta$.

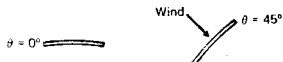


Fig. 4-(A) A stable mirror shown shortly after launch. (B) Wind effects tilt the mirror, reduce the radiation pressure on it, and cause it to go out of control.

Solar radiation

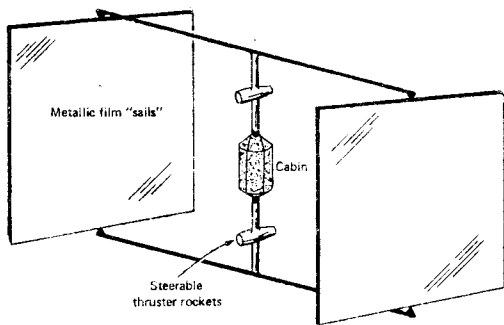


Fig. 3-Diagram of Heisselult/Tor solar-powered spaceship (modified after Heisselult and Ostermond—Tor ±).

References

1. Richtmyer, F.K., E.H. Kennard, and T. Lauritsen, *Introduction to Modern Physics*, McGraw-Hill Book Co., Inc., New York, p. 109, 1955.
2. Heisselult, E., and J. Ostermond-Tor, "Sailing in Space by Means of Solar Radiation Pressure," *Lauton Institute Report LI-2-55 (SECRET, downgraded 2 February, 1980)*, 1955.
3. Csonka, P.L., "Technical Note on a Radiation Supported Mirror," *Micro-wave Journal*, p. 72, October, 1979.

IN SUM, DEAR READER, USERS OF THE RADIO SPECTRUM HAVE, FOR YEARS, BEEN THE VICTIMS OF A HOAX. YOU SEE, AS NOTED ABOVE, THAT THERE REALLY IS NO SUCH PHENOMENON AS SPORADIC E IONIZATION AND THAT WHAT MANY BELIEVE TO BE ES PROPAGATION REALLY RESULTS FROM THE REFLECTION OF RADIO WAVES OFF FLOATING MIRRORS.

NOTE FROM THE EDITOR: WOULD ANYONE LIKE TO CHALLENGE THE ABOVE, EITHER IN WRITING FOR QSX-PE OR AT A BRANCH MEETING? PLEASE CONTACT ME. THANKS.



SUPPORT
OUR
ADVERTISERS

TRANSPONDER PREFERRED TO SATELLITE.

A DOMESTIC TELECOMMUNICATIONS SATELLITE WAS NOT ECONOMICALLY VIABLE AND POTENTIAL USERS OF SUCH A SERVICE SHOULD LOOK TO HIRING A TRANSPONDER FROM INTELSAT, SAID DAWIE MALAN, SENIOR DIRECTOR, TRANSMISSION, AT THE POST OFFICE.

MALAN SAID HE FOUND IT DIFFICULT TO UNDERSTAND WHY POTENTIAL DATA TRANSMISSION USERS CONTINUED TO EXPRESS INTEREST IN A DOMESTIC SATELLITE SYSTEM WHICH WOULD COST R480-MILLION WHEN THEY COULD HIRE A TRANSPONDER FROM INTELSAT FOR ABOUT R2-MILLION A YEAR.

HE ADDED THAT THE LEAD TIME FOR A DOMESTIC SATELLITE SYSTEM WOULD BE AT LEAST FOUR YEARS, WHILE A SERVICE VIA INTELSAT COULD BE PROVIDED IN LESS THAN A YEAR. "TWO TOP-LEVEL INVESTIGATIONS IN 1983 AND 1984, PROVED BEYOND ANY DOUBT THAT THERE WAS NO ECONOMIC JUSTIFICATION FOR A DOMESTIC SATELLITE SYSTEM. THE 1984 INVESTIGATION WAS UNDERTAKEN UNDER THE CHAIRMANSHIP OF THE I.D.C. WHICH WAS WELL-QUALIFIED TO EXPRESS ANY OPINION ON THE ECONOMIC VIABILITY OF PROPOSED PROJECTS. THE I.D.C. RECOMMENDED, AND THE CABINET DECIDED ON 10 SEPTEMBER 1984 THAT, BECAUSE A DOMESTIC SATELLITE COULD NOT BE ECONOMICALLY JUSTIFIED, NO FURTHER INVESTIGATION INTO THE PROVISION OF A DOMESTIC SATELLITE SHOULD BE UNDERTAKEN BY THE STATE OR PRIVATE SECTOR AND THAT POTENTIAL USERS OF A SATELLITE SYSTEM SHOULD NEGOTIATE WITH INTELSAT, VIA S.A.P.O. FOR THE HIRE OF AVAILABLE TRANSPONDERS," HE SAID.

S.A.P.O., MALAN SAID, WAS A MEMBER OF INTELSAT AND COULD PROVIDE POTENTIAL USERS WITH INFORMATION ABOUT THE CHARACTERISTICS AND COST OF THE SERVICE. THIS HAD ALREADY BEEN DONE WITH THE S.A.B.C. WHICH USED AN INTELSAT TRANSPONDER TO RELAY TELEVISION PROGRAMMES TO SOME OF ITS REMOTE TRANSMITTERS.

MALAN ADDED THAT VALUE-ADDED NETWORKS HAD A MUCH ROSIER FUTURE AND IT WAS INEVITABLE THAT S.A.P.O. WOULD EVENTUALLY HAVE TO SANCTION THEIR USE. "THE PRIVATE SECTOR MIGHT BE ABLE TO PROVE THAT EFT-POS (ELECTRONIC FUNDS TRANSFER AT POINT OF SALE) AND EDI (ELECTRONIC DATA INTERCHANGE) HAVE BECOME ESSENTIAL FOR IMPROVING EFFICIENCY AND RAISING PRODUCTIVITY," SAID MALAN.

(COMPUTING - FEBRUARY 1987)

HOW TO DESTROY THE BRANCH SPIRIT.

EVERY TIME YOU COME TO THE BRANCH MEETING, MOAN ABOUT SOMETHING. YOU PROBABLY DO NOT KNOW WHAT YOU ARE TALKING ABOUT, BUT YOU WILL HELP TO CAUSE FRICTION AND DISCONTENT.

IF YOU DO TAKE THE TROUBLE TO ATTEND MEETINGS, FIND FAULT WITH THE WORK OF OFFICE BEARERS AND OTHER MEMBERS.

IF ASKED BY THE CHAIRMAN TO GIVE AN OPINION REGARDING SOME IMPORTANT MATTER, SAY NOTHING; AFTER THE MEETING TELL EVERYONE WHAT OUGHT TO HAVE BEEN DONE.

IF YOU DO NOT ATTEND A MEETING, GET A GARBLED ACCOUNT FROM SOMEONE AND ADVERSELY CRITICISE THE DECISIONS COME TO BY THE MEMBERS WHO DID ATTEND.

NEVER ACCEPT OFFICE, AS IT IS EASIER TO CRITICISE THAN DO THINGS; BUT AIR YOUR VIEWS IN THE BAR OR ON THE AIR.

DO NOTHING HELPFUL OR CONSTRUCTIVE YOURSELF, BUT, WHEN OTHER MEMBERS TAKE THE INITIATIVE, HOWL ABOUT HOW THE BRANCH IS RUN BY A CLIQUE.

BE ARROGANT, OVERBEARING AND RUDE TO THE COMMITTEE AND ENDEAVOUR TO MAKE THEIR WORK AS DISAGREEABLE AS POSSIBLE.

ANTENNA ACCIDENT.

A HAM IS SITTING AT HIS DESK, ANSWERING A LETTER FROM HIS INSURANCE COMPANY.

"I AM WRITING IN RESPONSE TO YOUR REQUEST FOR ADDITIONAL INFORMATION FOR BLOCK THREE OF THE ACCIDENT REPORT FORM. I PUT "POOR PLANNING" AS THE CAUSE OF MY ACCIDENT. YOU SAID IN YOUR LETTER THAT I SHOULD EXPLAIN MORE FULLY AND I TRUST THAT THE FOLLOWING DETAILS WILL BE SUFFICIENT.

I AM AN AMATEUR OPERATOR AND ON THE DAY OF THE ACCIDENT I WAS WORKING ALONE ON THE TOP SECTION OF MY NEW 80 FOOT TOWER. WHEN I HAD COMPLETED MY WORK, I DISCOVERED THAT I HAD, OVER THE COURSE OF SEVERAL TRIPS UP THE TOWER, BROUGHT UP ABOUT 300 LBS OF TOOLS AND SPARE HARDWARE. RATHER THAN CARRY THE NOW UNNEEDED TOOLS AND MATERIAL DOWN BY HAND, I DECIDED TO LOWER THE ITEMS DOWN IN A SMALL BARREL BY USING A PULLEY, WHICH FORTUNATELY WAS ATTACHED TO THE GIN POLE AT THE TOP OF THE TOWER.

SECURING THE ROPE AT GROUND LEVEL, I WENT TO THE TOP OF THE TOWER AND LOADED THE TOOLS AND MATERIAL INTO THE BARREL. THEN WENT BACK TO THE GROUND AND UNTIED THE ROPE, HOLDING IT TIGHTLY TO ENSURE A SLOW DESCENT OF THE 300 LBS OF TOOLS. YOU WILL NOTE IN BLOCK NUMBER ELEVEN OF THE ACCIDENT REPORTING FORM THAT I WEIGH ONLY 155 LBS.

DUE TO MY SURPRISE OF BEING JERKED OFF THE GROUND SO SUDDENLY, I LOST MY PRESENCE OF MIND AND FORGOT TO LET GO OF THE ROPE. NEEDLESS TO SAY, I PROCEEDED AT RATHER A RAPID RATE OF SPEED UP THE SIDE OF THE TOWER. IN THE VICINITY OF THE 40 FOOT LEVEL, I MET THE BARREL COMING DOWN. THIS EXPLAINS MY FRACTURED SKULL AND BROKEN COLLARBONE. SLOWED ONLY SLIGHTLY, I CONTINUED MY RAPID ASCENT, NOT STOPPING UNTIL THE FINGERS OF MY RIGHT HAND WERE TWO KNUCKLED DEEP INTO THE PULLEY.

FORTUNATELY, BY THIS TIME, I HAD REGAINED MY PRESENCE OF MIND AND WAS ABLE TO HOLD ONTO THE ROPE, IN SPITE OF MY PAIN. AT APPROXIMATELY THE SAME TIME, HOWEVER, THE BARREL OF TOOLS HIT THE GROUND AND THE BOTTOM FELL OUT OF THE BARREL. DEVOID OF THE WEIGHT OF THE TOOLS, THE BARREL NOW WEIGHED APPROXIMATELY 20 LBS. I REFER YOU AGAIN TO MY WEIGHT IN BLOCK ELEVEN OF THE ABOVEMENTIONED ACCIDENT REPORTING FORM. AS YOU MIGHT IMAGINE, I BEGAN A RAPID DESCENT DOWN THE SIDE OF THE TOWER. IN THE VICINITY OF THE 40 FOOT LEVEL, I MET THE BARREL COMING UP. THIS ACCOUNTS FOR THE TWO FRACTURED ANKLES AND THE LACERATIONS OF MY LEGS AND LOWER BODY.

THE ENCOUNTER WITH THE BARREL SLOWED ME DOWN ENOUGH TO LESSEN MY INJURIES WHEN I FELL INTO THE PILE OF TOOLS ON THE GROUND, AND, FORTUNATELY, ONLY THREE VERIEBRAE WERE CRACKED. I AM SORRY TO REPORT, HOWEVER, THAT AS I LAY THERE ON THE TOOLS, IN PAIN, UNABLE TO STAND, AND WATCHING THE EMPTY BARREL 80 FEET ABOVE ME...I AGAIN LOST MY PRESENCE OF MIND, I LET GO OF THE ROPE.

WB/VHC AND KA9GMR.



Instant Printing

9 ST. PATRICK'S ROAD
PORT ELIZABETH
6001

TELEPHONE 22614

FOR ALL YOUR COMMERCIAL PRINTING REQUIREMENTS

TRY US FOR YOUR QSL CARDS!



**PETERSEN &
SMITHIES**

THE Engine Rebuilders
Specialists in Veteran car engines.

3 HANCOCK STREET, NORTH END

☎ 041-543669/0

ASK FOR LEO SMITHIES

HENROSE PRODUCTS (PTY.) LTD
(EDMS) BPK

MANUFACTURERS OF PLASTIC BAGS
PRODUCERS OF FRUIT JUICES
"ORANG-U-TANG"
AND "LEKKA LIKS" FROZEN SUCKERS

VERVAARDIGERS VAN PLASTIEKSASSE
VERVAARDIGERS VAN VRUGTE SAPPE
"ORANG-U-TANG" EN
"LEKKA LIKS" VERVRIESTE YSBLOKKE

TEL. 546470

5-7 EDGAR LANE

NORTH END

PORT ELIZABETH, 6001

**Computer
Park**



Rink Street, Port Elizabeth

Phone (041) 52-1634

We Guarantee Success

E.P. MUFFLERS

YOUR
Mr. Xhout
EXHAUST FITTING AND PIPE BENDING
SPECIALISTS.

ALSO:
TOWBARS
BATTERIES
SHOCK
ABSORBERS

MILD STEEL
FULLY
GUARANTEED

STAINLESS
STEEL
LIFETIME
GUARANTEE

54-5420

BY THE

29 EMBASSY STREET, NORTH END, P.E.

**BAMBOO
SNACKS**

FOR DELICIOUS CHINESE TAKE-AWAYS
IN THE WESTERN SUBURBS.

OLD CAFE ROAD
FABEGA PARK, PORT ELIZABETH

PHONE 30 4390

**Express Number plates
& 'SIGNS'**

INC.
FLEKTI-PLATE

Reg. 65/26/748/07

Tel 54 2834 / 54 1501 / 54 1652

23a De Villiers St

PO. Box 2587

Port Elizabeth

North End 6056