

# RRS

# Newsletter

( For the Use of R.R.S. Staff Only )

No. 41

September, 1964 ✓

## ATMOSPHERIC EXPLORATION IN THE 1860's.

In an age which now takes for granted the artificial satellite orbiting high above the earth's surface, a manned orbital flight still arouses interest and enthusiasm among many. The motives which give rise to this interest are complex and not all creditable; but it seems likely that they are very close to those which aroused public curiosity in what the eighteenth and nineteenth century called Aerostation. This meant the ability to overcome gravity by the static lift of a lighter than air gas contained in a balloon.

For the first decades of ballooning it was sufficient that man should fly; but as time passed the device was seen to provide a useful platform from which investigations of the earth's atmosphere could take place. The first purely scientific ascent appears to have taken place in January, 1804, at St. Petersburg. In the century that followed there were many flights made in various parts of the world, the most famous of these being one in a series of investigations made by James Glaisher in 1862.

Glaisher was a member of a British Association committee first formed in 1859 for the purpose of making 'observations in the higher strata of the atmosphere by means of a balloon'. His companion on these flights was Mr. Coxwell, a professional aeronaut, responsible for the manufacture and handling of the balloon. This was some 90,000 cubic feet in capacity and was usually inflated with the least dense products of the nearest available gasworks.

The scientific objects of the ascents were many; among those listed being, to determine the temperature of the air, and its moisture content at different heights; to investigate the electrical condition and oxygen content of the atmosphere, note changes, if any, of the terrestrial magnetic field and examine the nature of clouds. As a secondary consideration, the accuracy of various barometers and hygrometers were to be examined and phenomena relating to the velocity of sound observed.

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Among the instruments carried were 'mercurial and aneroid barometers, dry and wet bulb thermometers . . . . . maximum and minimum thermometers, a magnet for horizontal vibration . . . . . an electrometer'. A camera also was taken on some flights.

On 5th September, 1862, the balloon was inflated at Wolverhampton gasworks and after some delay due to bad weather, the ascent began at three minutes past one in the afternoon. The various instrumental observations began, although a spinning motion of the balloon was too great to allow the camera to be used. The progress of the flight may be summarised thus:-

<u>Time</u>	<u>Height</u>	<u>Temperature</u>	<u>Dew point</u>
1.21 p.m.	10,500 ft.	32°F.	26°F.
1.28 "	15,800 "	18°F.	13°F.
1.39 "	21,200 "	8°F.	- 15°F.
1.49 "	26,400 "	-2°F.	- 36°F.

What followed is best told in Glaisher's own words, in extracts from his account in the British Association Report for 1862.

"I read the dry thermometer as  $-5^{\circ}$ ; this must have been about 1 h.52 m. or later; I could not see the column of mercury in the wet bulb thermometer; nor afterwards the hands of the watch, nor the fine divisions on any instrument. I asked Mr. Coxwell to help me read the instruments, as I experienced a difficulty in seeing. In consequence, however, of the rotary motion of the balloon the valve line had become twisted, and he had to leave the car and mount into the ring above to adjust it. At this time I looked at the barometer and found its true reading implying a height of 29,000 feet. Shortly afterwards I laid my arm upon the table, possessed of its full vigour, and on being desirous of using it, I found it powerless - it must have lost its power momentarily. I tried to move the other arm and found it powerless also. I then tried to shake myself and succeeded in shaking my body. I seemed to have no limbs, my head fell on my left shoulder. I struggled and shook my body again but could not move my arms. I fell backwards, my back resting against the side of the car, my head on its edge; all muscular power was lost in an instant from my back and neck. I dimly saw Mr. Coxwell in the ring, and endeavoured to speak, but could not; when in an instant intense black darkness came: the optic nerve finally lost power suddenly. I was still conscious, with as active a brain as at the present moment whilst writing this. I thought I had been seized with asphyxia, and that I should experience no more, as death would come unless we speedily descended: other thoughts were actively entering my mind, when I suddenly became unconscious as on going to sleep.

My last observation was made at 1h.54m. at 29,000 ft. I suppose two or three minutes fully were occupied between my eyes becoming insensible to seeing fine divisions and 1h.54m., and then that two or three minutes more passed

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till I was insensible; therefore I think this took place at about 1h.56m. or 1hr.57m. Whilst powerless I heard the words 'observation' and 'temperature' and I knew Mr. Coxwell was in the car speaking to me, and endeavouring to arouse me. I then heard him speak more emphatically, but I could not see, speak or move, I heard him again say 'Do try - now do', then I saw the instruments dimly, then Mr. Coxwell, and very shortly saw clearly .... I rose in my seat and looked round and said to Mr. Coxwell 'I have been insensible'. He said 'You have; and I too, very nearly'. I then took a pencil in my hand to begin observations. Mr. Coxwell told me that he had lost the use of his hands, which were black, and I poured brandy over them. I resumed my observations at 2 h.7m.

Mr. Coxwell told me that whilst in the ring his hands had frozen and he had to place his arms on the ring and drop down; that he thought for a moment I had lain back to rest myself; then he noticed that my countenance was serene and placid, without the earnestness and anxiety he had noticed before going into the ring, and then it struck him I was insensible.

He wished to approach me, but could not, and he felt insensibility coming over himself; that he became anxious to open the valve, but in consequence of his having lost the use of his hands he could not, and ultimately did so by seizing the cord with his teeth, and dipping his head two or three times, until the balloon took a decided turn downwards. The descent was very rapid; we passed downwards 3 miles in nine minutes, and finally descended in the centre of a large grass field at Cold Weston,  $7\frac{1}{2}$  miles from Ludlow.

No inconvenience followed my insensibility, and when we dropped it was in a country where no conveyance of any kind could be obtained, so that I had to walk between 7 and 8 miles."

This, then is a slightly condensed version of Glaisher's own account; both he and Coxwell appear to have worn no extra clothing beyond a topcoat and scarf. They made many other ascents during the 1860's, some to heights well above 20,000 ft. The estimated height of this particular flight was thought to be about 37,000 ft. and was, without doubt, well above 30,000 ft. It remained an altitude record until the 20th century.

Glaisher himself survived other escapes including a crash landing on the South coast, Coxwell was generally his companion in these adventures. At the time of these investigations he was fifty-three. Born within the lifetime of the great Henry Cavendish, discoverer of hydrogen, he died, aged ninety-four, in 1903, the year the Wright brothers' machine rose into the air at Kitty Hawk.

What, the reader may ask, has all this to do with our work at Ditton Park. A spell in the Radio Meteorological Section would show him that the balloon, albeit tethered, is still a useful servant and a capricious master. We, like Glaisher - though so far as the author is concerned, without his courage - are trying to find out more about the atmosphere. The temperature and moisture content at different heights are as much of interest now as they were in 1859 to that British Association committee fortunate enough to have the services of Henry Coxwell and James Glaisher.

G. W. GARDINER

JOURNEY TOWARDS THE QUIET SUN

REPORT ON A VISIT TO ISRAEL

Part 5

Having tried to give you an impression of the three principal cities of Israel, I shall in this final instalment describe some of the other interesting places we visited. A glance at the map in the June Newsletter may help you in following me around.

Israel has been called the country of the four seas - the Mediterranean, the Sea of Galilee (or Lake Tiberias), the Dead Sea and the Red Sea - and they will be my reference points in these rambling notes.

Numerous bathing beaches dot the 110 miles of Mediterranean shore. On lifeguard towers brown and brawny men equipped with whistles and powerful lungs watch your watery progress through the constant breakers, and even if you fail to hear them their expressive gestures will soon direct you back to safety should you have strayed. Crusader fortresses and harbour defences along this coast prove these intrepid defenders of the Holy Land (or ruthless invaders as the Moslems might have called them) to have been prolific builders when not fighting battles. Good use was made of materials left behind by earlier civilizations, and one often sees ancient columns sticking out horizontally from harbour and fortress walls they helped to strengthen. Many interesting sites have been excavated along the coast; the all-pervading sands had protected them from the usual spoliation by later inhabitants not entirely motivated by cultural interests. Caesarea, north of Nathanya, was a very prosperous Roman town with all modern conveniences such as running water, witness the remains of a splendid aqueduct, and cultural amenities such as an open-air theatre now in use again, and a hippodrome where polished stone slabs in the arena had been set in such a way as to startle lethargic horses into unwonted activity by the dazzling reflection of the sun (how about trying a laser at Ascot?).

The swampy area north of the Sea of Galilee where the River Jordan enters the country has been drained and a lake has given way to reservoirs and canals. Israel's water pipeline with its underground installations is now ready to pump her share of the abundant waters towards the parched southern regions. The shores of the beautiful harp-shaped Sea of Galilee are associated with many biblical events: Capernaum, the ancient synagogue where Jesus taught and healed; the Mount of Beatitudes, site of the Sermon on the Mount; Tabgha where occurred the miracle of the loaves and fishes. We are about 650 feet below sea level in the Jordan rift, part of an enormous crack in the earth's crust extending from Asia into the heart of Africa, which reaches its lowest point at the bottom of the Dead Sea (-2600 feet). Tiberias, the lowest-lying city on earth, was already famous in Roman days for its hot springs and is now a popular tourist centre with wonderful bathing from date-palm-shaded beaches nearby. At the southern end of the lake, where the

/Jordan

Jordan leaves it again, lies Deganya, the oldest Kibbutz or communal collective settlement. I can here only briefly summarize the principles on which this form of society is based: common ownership of property and pooling of labour; equal privileges and opportunities for all. Each member has his allotted job and all proceeds go into the communal purse. Within the settlement no money is used as all the needs of its members are provided at its own expense. A democratically elected committee administers affairs, and major problems are discussed and decided upon by meetings of all members. The system is entirely voluntary - anybody may apply for membership and a member is free to leave at any time. This social experiment, peculiar in its form to Israel, has been a most important factor in her development. Mainly agricultural to start with, many Kibbutzim have now turned to light industry and others provide holiday accommodation and rest homes in beautiful surroundings.

The road climbs into the hills and offers a last glimpse over the vividly blue lake fringed by deep-green plantations through which the tree-lined Jordan is snaking towards its doom down in the Dead Sea, with the bare, grey mountains of Syria providing a backcloth to the scene. Our homeward journey leads through Cana (water into wine) to Nazareth, a town largely inhabited by Christian Arabs, pleasantly situated but with its few remaining picturesque quarters hidden by uninspiring buildings. The universal symbol of progress - a tower crane - dominates the scene where the Franciscans are erecting the largest church in the Middle East above the Grotto of the Annunciation. Past the massive concrete foundations we work our way down into the caverns below where altars mark the sacred site. Nearby excavations have revealed ancient dwellings including a carpentry shop and the Grotto of the Holy Family. Modern comforts and light may have been lacking but the former Nazarenes must have, at least, managed to keep cool down there.

By coach in comfort from Tel Aviv to the Dead Sea - such tours are organized by the large transport co-operatives which also provide urban 'bus services and a dense network of countrywide coach routes. However, even static, retired 'buses have their uses in Israel - a number of single-deckers we saw neatly parked in the garden around a Jaffa school served as classrooms to ease the school shortage. How many double-deckers, I wonder, would be needed for a 'red-bus' university?

We travel south towards the desert and the open, rolling countryside has gradually acquired a distinctly arid look. We pass government-established Bedouin encampments offering basic amenities to these nomads. Here and there you can see them in the fields and spot the black tents, a few grazing camels and goats in the distance. Their way of life appears little affected by the 20th century although they are quite prosperous and their weekly camel market in Beersheba is now held mainly for the benefit of tourists. Women are still considered inferior, though necessary creatures, and very useful for doing all the hard work. The following rather unkind tale may perhaps reflect a change

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in attitude. Formerly the sheik as head of the tribe would ride on a donkey with his wives dutifully following behind, on foot of course. Since the war the order has been reversed: wives (still on foot) in front, sheik on donkey behind. Common courtesy? Female emancipation at last? No, just common sense - there are still quite a number of unexploded mines buried in the ground.

Beersheba, where Abraham dug his well 4,000 years ago (it can still be seen behind a petrol station) is the capital of the Negev. As Israel's fastest growing city it retains the pioneering spirit which, although faded elsewhere, flourishes in this desert region where courageous settlers face seemingly impossible odds and hope for the water the pipeline will eventually bring them.

Our coach halts awhile near the town centre and - what a coincidence - two camels gorgeously attired and complete with Arabs appear on the scene. The camels respectfully kneel on the hard and hot pavement, tourist mounts, camel rises with tourist, camera shutters click all around, tourist comes down to earth again. Near the other camel dispute over fees has started and suddenly camel and Arab trot off in a huff.

Our road now turns east and climbs into the rocky but still patchily green desert. Soon, however, we start the descent which continues more and more rapidly, and before we have a chance to warn the driver we have dropped below sea level (clearly marked by a road sign). In front of us, a thousand feet lower still, lies a vast expanse of brown and white wilderness shimmering in the heat, and the Dead Sea a distant bluish patch. We reach the big potash works at Sodom (1,286 feet below sea level) alongside a canal carrying lake water dyed a deep blue-green to facilitate evaporation in the pans beyond. The road now continues by the calm blue lake where salt crystals glitter on the shore and in the towering rock pillars. A private road parallel to ours carries a steady stream of lorries without registration plates, all destined to spend their working lives down here far from number-taking traffic cops and wardens, and engaged in the construction of a dyke half-way across the lake, i.e., to the border.

About 20 miles further on, the mountain fortress Massada looms up on our left. This last stronghold of Jewish rebels against the Romans in 80 A.D. is now the centre of important excavations. At Ein Gedi, our destination, an agricultural settlement makes extensive use of the principle of hydroponics. Plants are grown in water without the use of soil, which is practically non-existent in that region. Fresh-water springs are abundant, and we climbed up a steep path in the rocks to reach a dark-green pool fed by a waterfall. Near here David took refuge from the wrath of King Saul. People were bathing in the cool water, but we chose the salty alternative of plunging into the Dead Sea. Down at the beach the smooth lake looked clear and inviting but the water felt thick and sticky as well it might with over 25 per cent. of solids in solution as against the mere 5 per cent. in our own 'briny'. The good old-fashioned breast-stroke became decidedly tricky - my feet just stuck  
/out

out of the water and no amount of persuasion could lower them. To float on your back is bliss; an invisible cushion supports you almost on top of the water. Scientific curiosity impelled me to taste a little - in future I shall leave it to others to be scientifically curious. No wonder living creatures cannot exist in these waters and no reports of Dead Sea monsters would warrant investigation. We boarded our coach for the return journey slightly salted all over.

We flew the 200 miles from Tel Aviv to the Red Sea in one of those well-proven Dakotas long enough in service for all things liable to drop off to have done so. After take-off along the beach we follow the coast south and then swing inland towards the desert with its spectacular mountain ridges, escarpments and craters, brown, red and golden under the cloud-dotted blue sky. A faint pink haze below is caused by fine sand carried to great heights and distances by the hot and dry desert wind, the very trying khamsin. We descend over the eastern spur of the Red Sea known to Jordanians as the Gulf of Aqaba and to Israelis as the Gulf of Eilat, according to their respective ports only two miles and yet worlds apart. Eilat, where we touch down, is Israel's gateway to the East and Africa as it was in King Solomon's day. With January temperatures in the seventies, practically no rain and perfectly clear tropical waters it has also become a busy tourist resort with air-conditioned hotels and a new town growing before your eyes. The very low humidity renders normal air-conditioning worse than useless. Instead, the ancient method of water percolating through straw on the side of buildings that are exposed to the prevailing wind has been modernized.

Exciting desert tours by scout cars following non-existent tracks along impossible ledges into incredible scenery start from here. We had to content ourselves with a coach trip up the broad plain of Arava which links the Red Sea with the Dead Sea. The frontier follows the lowest contour line of this valley - no warning notice, fence or barbed wire demarcate it. At Timnah copper ore is now being worked perhaps more efficiently than in King Solomon's Mines nearby where once thousands of slaves suffered and perished to produce the valuable metal for export in exchange for the riches for the East. Grim watchtowers still overlook the open-cast site but are dwarfed by King Solomon's Pillars, giants in red sandstone which dominate the desolation at their feet. Back to the sea in time for the sunset turning the pink mountains across the bay in Saudi Arabia through magenta and purple to cocoa-brown and black. Thanks to the clarity and even temperature of the water this gulf is a miniature tropical sea almost at the doorstep of Europe. Swarms of brilliant blue-green fish float and counterfloat across the pebbles as you pass along the water's edge and you can take your pick of the multicoloured collection of shells on the beach. The next best thing is a trip over the coral reefs in a glass-bottomed boat for a dry look into the miraculous world below. Better still, have a go at skin-diving - which we did just two hours before our plane was due to leave. Flippered, bespectacled and besnorkelled

we were guided into the deep by our instructor. In this as in many other ventures it pays to keep your mouth shut, but as we lowered our heads into the water the wonderful sight made us perhaps gape more often than was good for us. We were now inside this boundless aquarium with our spectacular fishy friends darting in and out of knobbly corals and ignoring our presence. A brief but wonderful experience we are determined to repeat some day keeping our seawater intake to a minimum.

Off to the airport in a hurry where 4X-ADA was about to take off. You could almost board these planes as casually as a 'bus and half expect the stewardess to shout: Hold tight, please! - and ring the bell. Instead of landing at Beersheba as intended we were flown to Tel Aviv and whisked back the 70 miles to Beersheba by taxi at the company's expense. There feverish excitement reigned: it was the eve of Independence Day and over 100,000 visitors were expected for the annual military parade, the first to be held there in the 16 years of Israel's existence. All 50,000 inhabitants appeared to be gathered in a large open space to enjoy some popular entertainment and a noisy fireworks display. Next morning everybody streamed out to the beflagged stands along the route. The President and other V.I.P.s having arrived, the proceedings started with a roar as fighters thundered overhead followed by helicopters dragging banners and aerobic teams left ropes of coloured smoke dangling from the sky. The rumble of tanks and self-propelled guns brought us down to earth again, and cheers greeted the smart units of men and girl soldiers (there is conscription for both sexes).

Later on, as we followed the general exodus north through the colour changes of a desert sunset into the night, I felt that, although I had witnessed Israel's military might, her real strength rested in the confident determination of her people to make the country prosper and to overcome her many difficulties in peaceful endeavour by modern ideas and methods. This philosophy is perhaps best expressed in the words of the late President Weizmann:-

"I feel sure that science will bring to this land both peace and a renewal of its youth, creating here the springs of a new spiritual and material life, and here I speak of science for its own sake and of applied science."

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The few remaining days of our stay soon rushed by. Loaded with memories, some of which I have been privileged to share with you, we embarked at Haifa. The Quiet Sun, a familiar friend by now, accompanied us via Cyprus, Athens and Venice all the way to Slough - which may account for the splendid summer we have been enjoying this year.

W. S. Newman

/Staff News

Congratulations to:-

Mr. & Mrs. Gawan (Shirley is the Director's former secretary) on the birth of their daughter Fiona Jane in July.

Mr. & Mrs. Alan Rogers (in Falkland Isles) on the birth of their son Richard Jonathan on 11th August.

Mr. & Mrs. Mike Farman on the birth of their son Timothy on 29th August.

Mr. & Mrs. Peter Smith on the birth of their son Michael Wright on 7th September.

Malcolm Purvis (at Winkfield) on his marriage to Miss Sylvia Roche at the church of St. Mary of the Angels, London, W.2, on 29th August.

Tony Clements on his marriage to Miss Carol Marshall at St. George's Church, Stockport, on 31st August.

Jean Scott and Geoff. Fooks on their marriage at the Trinity Presbyterian Church, Bath, on 5th September.

Lorna Baker and Roger Foott on their marriage at St. Mary's Church, Hitcham, on 12th September.

Welcome to:-

New Staff

C. D. Jones	T/S.A.
A.J.H. Lucas-Smith	T/A.E.O.
R.W. Le Cheminant	T/S.S.A.
Miss M. G. Powell	T/A.E.O.
I.L. Freeston	T/S.S.O.
E.M. Forsdike	T/S.S.A.
A.J.M. Simpson	T/S.S.A.
W.W. Smith	T/Unskilled Labourer
J.R.E. Kenyon	T/E.O.
S.L. Close	T/S.S.A.
A.J. Gibson	T/A.E.O.

Resignations

Mrs. D. F. Gillett	Part-time cleaner
M. J. Weeden	A.E.O.

LETTER TO THE EDITOR

Sir,

Re your July, "This Month's Useless Facts", number 2, I should like to suggest that personal, salacious data such as this should not form a part of a journal which so far has proved itself particularly impartial in its treatment of all matters.

After all, squeezing (and cuddling, for that matter) is no more commendable in a Wolseley 6/110 than in the back seat of an Austin 7. This will, of course, date the writer somewhat but I feel sure that other readers who have not yet reached retiring age will feel similarly. One should remember that the students referred to may be married and their spouses would object to this haphazard squeezing and cuddling which appears to be the prerogative of the modern generation. Furthermore your excellent journal does not mention the sex of the participants - this may open the door to considerable correspondence on homosexuality in your columns!!

After consideration, perhaps you could allow future space to answer the following questions:-

- (1) Was this frolicking carried out by married or single members?
- (2) Age ranges please?
- (3) Sex of participants?
- (4) Location of the Wolseley during the exercise?
- (5) Duration per person of each bout of squeezing and cuddling?
- (6) The registration number of the vehicle involved so that I don't buy it as it's springs must be shot to hell!!

Well-wisher

(name and address supplied)

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Milton, thou shouldst be living at this hour

or ISIS through the looking glass

Extract from I.M. by Dr. King:-

"And thick and fast they came at last,  
And more, and more, and more -  
All hopping through the frothy waves,  
And scrambling to the shore."

- Lewis Carrol

I think that Lewis Carrol must have had foresight of the ISIS project, but whether he had or not, this report mentions various matters many of which require some sort of action, -----

Comment by Mr. Luscombe at end of Director's meeting to discuss ways and means of implementing this:-

"The little fishes of the sea  
They sent an answer back to me  
The little fishes answer was  
"We cannot do it, Sir, because ----"

SPORTS AND SOCIAL  
CLUB

Motor Rally

Because very few entries were received for this event, it has been postponed and will now take place on 1st November.

Mr. Reed will be pleased to accept entries after 12th October and, if fewer than ten have been received by 26th October, the rally will not take place.

Dance

DON'T FORGET - 26th SEPT.  
DANCING TO THE DERRICK DAWSON BAND  
REFRESHMENTS, RAFFLES, BAR

J. Juleff

INDUSTRIAL CONCERTS

ROYAL ALBERT HALL  
FRIDAY, 23rd OCTOBER  
to be repeated on  
FRIDAY, 30th OCTOBER

BEETHOVEN	Overture, Leonora No. 3
MENDELSSOHN	Violin Concerto in E minor
BRITTEN	Young Person's Guide to the Orchestra (Variations and fugue on a theme of Purcell)
DEBUSSY	Prelude à l'après-midi d'un faune
TCHAIKOVSKY	Overture, 1812

Conductor: JOHN PRITCHARD

Soloist: ALFREDO CAMPOLI

Tickets 6s.6d. (3s.-d. to those under 18)

Programmes 1s.-d.

Please sign the list on the corridor notice-board before Wednesday, 23rd September.

F. H. Venables

Bridge Club

This season the Bridge Club will be meeting every other week on whichever evening is the most popular. I hope there will be many new players; beginners or experienced Bridge fiends will be very welcome. The first club evening will be on Friday, 9th October, at 7.0 p.m. in the canteen and a notice will soon be put up for all intending players to sign.

Several matches will be played against other clubs during the winter: the first is against N.P.L. on Friday, 16th October, at R.R.S. N.P.L. are again arranging a teams-of-four contest in which we are participating: matches will be played at N.P.L. every few weeks.

As our first team won the D.S.I.R. inter-station Tournament last year we have to hold the event at R.R.S. this year and it is being arranged for Sunday, 1st November.

Jean Fooks

Scottish Country Dancing Group

A Scottish Country Dancing Group is being started on the Station this winter and meetings will be once a fortnight in the canteen: soft drinks and biscuits will be on sale. The first meeting will be on Monday, 12th October, at 7 p.m., and I hope this will be well supported: we can then decide which is the most popular time and evening for future meetings of the Group. Do come and join in whether or not you have done any Scottish Dancing before; it can soon be learnt and is great fun.

Jean Fooks

Amateur Radio Society

The Postmaster General recently agreed to issue transmitting licences to persons who have passed the Radio Amateurs' Examination but have not passed the Morse Test requiring a minimum speed of 12 words per minute. Operation is at present restricted to the amateur bands on frequencies above 430 Mc/s, although it is hoped that permission will soon be given to use the 2 metre band (144-146 Mc/s). John Juleff, who operated as VP8G0 during his tour of duty in the Falkland Islands, hopes to receive one of these licences in the next week or two. The call signs of the new licences begin with G8... Anybody interested in further details should contact Mr. J. Juleff.

Since July the call sign GB3 LER has been radiating from the Shetland Islands in the 2 metre and 10 metre amateur bands under the watchful eye of Ray Flavell, GM3 LTP. This is the main part of I.Q.S.Y. programme of the R.S.G.B. The signals are beamed in a northerly direction and amateurs in Scotland are listening for signals reflected from the auroral zone.

D. Thorpe

Extract from recent D.S.I.R. Research Programme, under R.R.S.

"Satellite measurements of energetic electrons in the ionosphere".

This seems to be vote-catching carried to extremes.

F. Horner

This Month's Useless Facts

Richard II invented the handkerchief.

Cars may drive on either side of the road in France, provided the steering wheel is on the offside.

J. N. Tyler