



Possible site for the Mark V Jodrell Bank telescope near Meifod, Montgomeryshire.

chester has been looking for a site for the telescope within 100 miles of Manchester and has now purchased a farm near Meifod, Montgomeryshire, in the hope that the SRC will be able to supply the £5 million which will be required to construct the 400 ft steerable aerial and related equipment. The telescope is as yet included only in the forward planning of the SRC and the decision to go ahead with the scheme has yet to be made. The recent cuts in the SRC budget have delayed consideration of the scheme but, if the national economy does not take any further turns for the worse, building could begin in 1970, and the telescope could be ready for use by 1974.

The number of people employed on the Montgomeryshire site will be limited when the telescope is in use, as the Mark V will be controlled by radio link from Jodrell Bank. Electrical interference is a problem in a telescope of this type but, by building the Mark V in a low valley away from any major conurbation, Sir Bernard Lovell and his colleagues believe that interference will be kept to a minimum. The small amount of sky area lost because of the hills would be compensated for by the protection gained. Drastic building developments could upset the telescope but certainly in the near future this is unlikely, and at a meeting of the county council last week Sir Bernard gave assurances that farming activities in the district would not be affected.

In the mid-1950s a 250 ft dish was considered to be the largest that could be built, but because of advances in engineering techniques the maximum possible size is now put at 400 ft. The problems remain the same, however. Accuracy over the whole of the large area of the dish has to be maintained, and the wind still blows. The present design study provides for an accuracy of 3 centimetres over the whole area of the dish.

1967 Foot and Mouth not Airborne

THE notion that the virus which initiated the foot and mouth epidemic in Britain last year was transported from the Continent by winds is not borne out by meteorological evidence. Chapter and verse have now been published in the *Veterinary Record* (82, 610; 1968) by Mr C. W. Hurst of the Meteorological Office, Bracknell. Publication of this evidence was delayed in order that it could first be considered by the Northumberland Committee on foot and mouth disease (see *Nature*, 218, 412; 1968).

Mr Hurst, who has experience of analysing airborne transfer of spores and insects, apparently decided to analyse the foot and mouth disease outbreaks in England since 1952 after discussions with Dr J. B. Brooksby and the staff of the Animal Virus Research Unit at Pirbright. He claims that with the Meteorological Office's three hourly recordings of air movements from sea level to 2,000 feet and 12 hourly recordings of winds up to 10,000 feet it is usually possible to reach fairly definite conclusions about the possibility of airborne transfer of spores, insects and virus particles on such vehicles as dust or pollen grains.

Dr Brooksby suggested that the virus which caused the first outbreak at Oswestry in October 1967 must have arrived there between the 10th and the 20th of October. But between October 5 and 25, winds were predominantly west to south-west and there is no backtrack to any possible European source of the virus. Indeed, in 1967 there was little south-easterly to easterly airflow to Britain from the continent; the only periods when there was a good flow in this direction were in February, April and June, and occasionally in May and September. The other factor which argues strongly against airborne infection in October 1967 is that the initial outbreak was isolated and occurred near the Welsh border far from the windward coasts. Windborne infections are likely to be widely scattered

Initial Outbreaks of Foot and Mouth in 1965-67 with Potential for Transfer from Continental Sources

Month/year	Area of outbreak	Dates of possible virus arrival*	Possible Continental sources	Conclusions
Oct. 1967	Oswestry, Shropshire	Oct. 10-20, 1967	Much of Continent but not N.W. France	Not airborne
Sept. 1967	Stratford, Warwicks.	Aug. 25-Sept. 3, 1967	W. Germany, Belgium, Spain	Not airborne, but Aug. 22 possible transfer from Belgium
Jan. 1967	Fareham, Hants.	Dec. 25, 1966-Jan. 5, 1967	N.W. Germany, Holland, Spain	Spain available as source
July 1966	Morpeth, Northumberland	July 4-14, 1966	„ „ „	Not airborne
April 1965	Faversham, Kent	April 5-12, 1965	„ „ „	Not airborne, but April 1 possible transfer from Holland

*Range suggested by Dr Brooksby, Pirbright.

but more or less simultaneous whereas infections from other vectors are likely to be isolated.

Analyses of the prevailing air streams at the time of foot and mouth outbreaks earlier in 1967, in 1966 and 1965 are shown in the table. According to Mr Hurst, none of them are likely to have been started by windborne virus, although in three cases winds were in the right direction for a short time before the outbreaks. However, the waves of scattered but simultaneous outbreaks of the disease on the Kent and Sussex coasts throughout the spring and summer of 1952 present a different picture. These outbreaks had all the characteristics of airborne origin; they occurred after favourable airstreams and at periods when bird migration was minimal. Traditionally, birds, especially starlings, have been suspected of spreading foot and mouth disease, but in fact their role, if any, is far from clear. The Gower report discussed the possibility of starlings spreading the disease in the 1951 infections, but in 1952 it is unlikely that they had anything to do with the dispersal of the disease. If anything, during the spring and early summer the starlings would be migrating from west to east. And during the latest epidemic starlings seem to have had little impact. The snow in early December 1967 caused them to migrate south-westerly from central England, the infected area, to the Gower coast, south-west England and even southern Ireland, but there were no corresponding outbreaks of the disease.

Doing without the Dollar

THE state of psychology in Canada is heavily dependent on support from the United States in the forms both of men and money. But United States funds are likely to decrease to half their present size by 1970, and the Canadian Government must more than make good this gap if it is to finance the expected expansion of psychological activity in Canada.

Of the 1,600 psychologists working in Canada in 1966, 20 per cent were not Canadians and 11 per cent were Americans. Of the \$3.5 million granted in the same year for psychological research, roughly one-third each was contributed by Canadian, United States and other outside sources. According to a study by M. H. Appley and Jean Rickwood presented to the Science Council of Canada (*Psychology in Canada*, Science Secretariat, Ottawa), the costs of financing psychological research are likely to rise to \$14.6 million in 1970-71 and to \$30.8 million in 1975-76. These estimates are based on the assumption that, compared with 1966, the number of research projects will increase by 100 per cent by 1970 and 160 per cent by 1976. The estimates include a 20 per cent sophistication factor and an allowance of 25 per cent for cost escalation.

Where will these funds come from? The grant support from the US, far from keeping pace with this expansion, is expected to diminish rapidly, leaving the Canadian Government to foot almost the entire bill by 1975. The drying up of United States funds is presumably attributable to the containment of the rate of growth of US research spending in recent months.

If the level of spending on psychological research is not maintained, Canada must expect to lose a fair proportion of her foreign labour force, particularly the

reverse brain drain from the United States. The median income for psychologists is \$9,235 in Canada against \$11,500 in the United States, and the respective research grants per psychologist are \$835 and \$4,900. The necessary expansion of Canadian universities has depended heavily on American personnel and will continue to do so; differentials between the two countries cannot therefore be allowed to increase. Canadian faculties must remain competitive with those in the US in order to retain American psychologists.

Health in the United States

THE United States Health Education Committee has laboriously compiled a rather unusual document (1966, \$5.25) which outlines the major killing and crippling diseases in the United States, and describes what is being done to reduce their incidence. Five of the fifteen main causes of death are listed.

Main causes of death	Estimated deaths in 1965	Percentage total deaths
Cardiovascular-renal diseases	999,850	55
Cancer	296,320	16
Accidents	106,900	6
Pneumonia	61,460	3
Certain diseases of early infancy	55,060	3

From the report it seems that deaths attributable to rheumatic fever, tuberculosis, appendicitis, influenza, whooping cough, acute nephritis, dysentery and anaemias have all decreased within the past decade or two and, furthermore, during the 22 years between 1943 and 1965, the life expectancy for Americans increased by 7 years. At the time the information was compiled, the discovery of a reliable contraceptive pill was acclaimed as the most important medical advance in the sixties, but listed among other major research pay-offs and developments in other fields of medical research are anticoagulant drugs for treating heart attack, antihypertension drugs for hypertensive heart disease, methotrexate and actinomycin D—chemotherapeutic agents for certain types of cancer and, of course, a number of vaccines. New tests have been devised for detecting gonococcal arthritis and phenylketonuria, and many new anticonvulsant drugs have been developed.

The cost of illness to the United States in terms of lost working days and private expenditures for health and medical services is staggering—\$30 billion. The approximate financial aid given to medical research in the United States is as shown.

Cost of illness to the United States	\$30 billion
Amount repaid in income and excise taxes by individuals whose lives have been saved by medical research	\$1.2 billion
Total spent on medical research by the National Institutes of Health	\$1.2 billion
Amount spent by other departments of the Federal Government on medical and "health related" research including the pharmaceutical industry	\$0.75 billion
What the chief national voluntary health agencies raise	\$0.036 billion

The growth of population receives considerable attention in the document, and it is estimated that, at the present rate of growth, the population of the United States will double before the end of the century. The effect of this, it is suggested, will be to burden rather