

**REPORT OF THE**

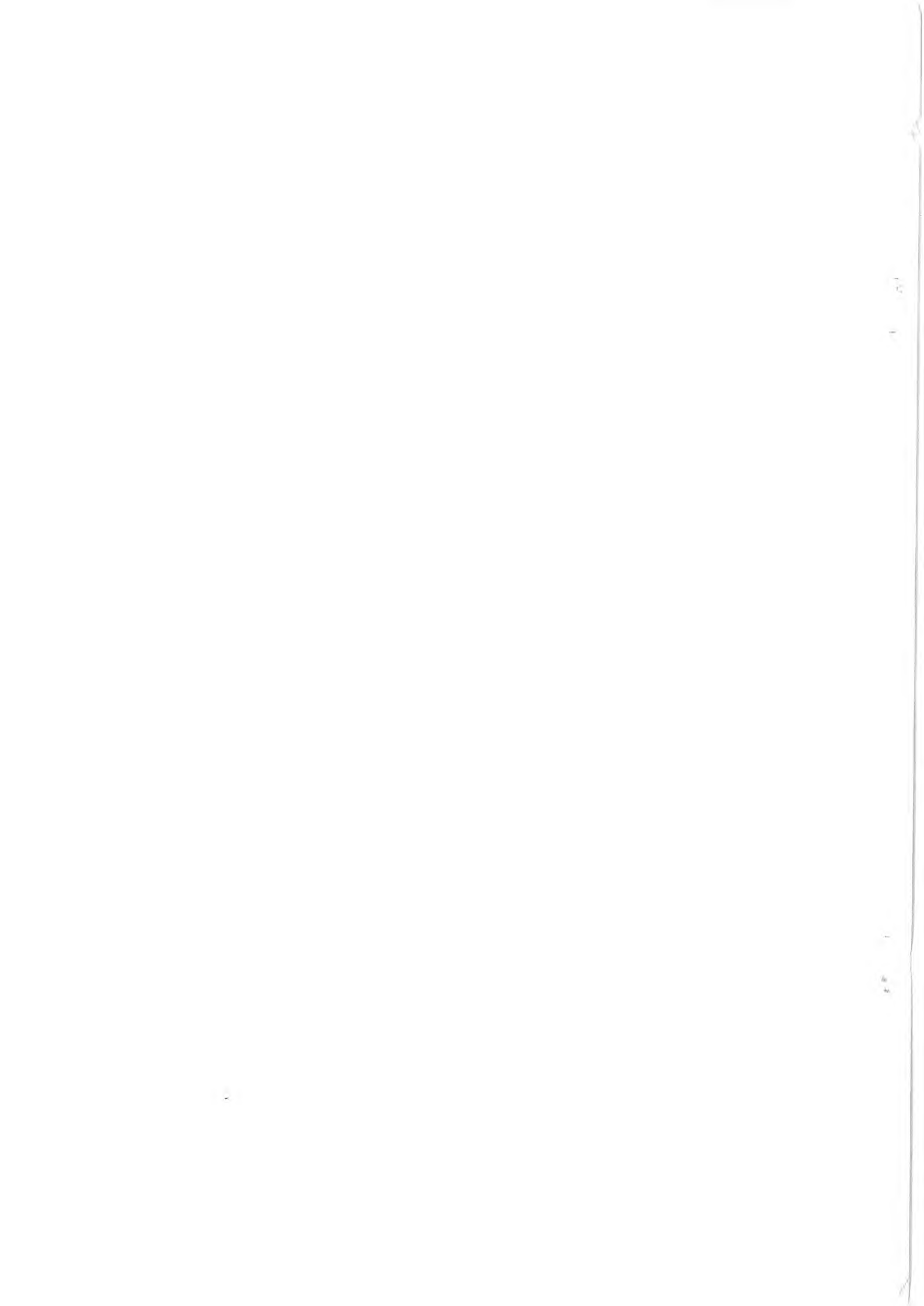
**Held in Rome, Italy  
10-13 April 1973**

**TWENTIETH SESSION OF  
THE EUROPEAN COMMISSION  
FOR THE CONTROL  
OF FOOT-AND-MOUTH DISEASE**

*5562*



**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**



Meeting Report AGA 1973/2  
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REPORT  
of the  
Twentieth Session of the  
European Commission for the Control of Foot-and-Mouth Disease  
held in  
Rome, Italy  
10-13 April 1973

Food and Agriculture Organization of the United Nations  
Rome, 1973



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## INTRODUCTION

The Chairman, Mr. A.G. Beynon, welcomed delegates and observers to the XXth Session of the European Commission for the Control of Foot-and-Mouth Disease. He invited Dr. R.B. Griffiths, Chief of the Animal Health Service of the Animal Production and Health Division to open the session.

Dr. Griffiths conveyed to the meeting the apologies of the Director-General, Dr. A.H. Boerma, who was unable to attend; and said that the presence at the session of so many eminent veterinarians illustrated the interest and importance of the work of the Commission.

He stated that there were many reasons to believe that the European Commission still constituted the ideal forum for dealing with the problems posed for Europe by the presence or the threat of Foot-and-Mouth Disease. The recent decision taken by the Federal Republic of Germany to become a member of the Commission and the possibility that other countries may soon follow this example is further recognition of the soundness of the Commission's programme and, at the same time, a reward for those who believed in the Commission and who have worked for it over the past 19 years. He was certain that all those who had contributed to the consolidation and the expansion of the Commission's role and activities would share the wish that membership might soon be extended to cover the whole of Europe.

Unfortunately, this year it was not possible to look back with satisfaction on what has been considered in the past as a progressive improvement in the Foot-and-Mouth Disease position in Europe. A serious setback had been experienced since the last Session in April 1972, the continent having experienced an almost uninterrupted series of outbreaks.

The exotic A<sub>22</sub> virus reappeared suddenly in southeastern Europe in April 1972, penetrating deeply into Greece and the Ukraine. The countries situated along the Danube river were all involved later in 1972 in another epizootic wave, caused by the C virus, which became particularly serious when large industrial piggeries were exposed to the disease. A strain of virus, probably introduced from overseas, caused outbreaks in the Iberian peninsula.

These were only the most striking features of a situation which further deteriorated toward the end of 1972, with the spread in some countries of an infectious vesicular condition which affected only pigs and was clinically indistinguishable from Foot-and-Mouth Disease.

A most important task of this Session of the European Commission was to evaluate these events and the results of control operations as well as to review and redefine, if necessary, the preventive and prophylactic measures which should be taken to avoid a repetition of the past year's outbreaks.

The endeavours of all those faced with the problems as outlined had been followed with the greatest interest. The determination shown in dealing with outbreaks and, in particular, the vast employment of human and financial resources in all countries affected by the C virus was noteworthy. Dr. Griffiths referred also to the rapid response of vaccine producers to requests for large quantities of vaccine at the most critical time of the spread of C virus infection in central eastern Europe.

While the impressive results obtained in arresting the spread of disease clearly demonstrated both the efficiency of the veterinary control measures and the achievements of the vaccine production industry, there were nevertheless disparities in prophylactic methods, including an imbalance in the vaccine supply potential existing in Europe. At previous Sessions of the Commission it had been emphasized that dramatic changes in the disease situation could occur at any time should Foot-and-Mouth Disease be introduced into those countries of continental Europe where disease prevention was not supported by regular vaccination. Dr. Griffiths stated that the widespread incidence of the disease in 1972

illustrated the vulnerability of Europe and was a clear indication that any temptation to relax efforts or discontinue the present system of prophylaxis must be avoided. He also expressed the hope that ways and means would be found to extend systematic vaccination far beyond the area covered at present.

The importance of disease latency and the continuing threat from smouldering foci caused by European strains of virus was emphasized, as was the need to keep constantly in mind the possibility of new infections originating from outside the continent. The intensification of international and especially intercontinental trade in animals and meat, as well as the pressing demand for more and more protein, increased the risk of introducing infection if the greatest care were not taken to select and control the trade channels for meat and animals. One of our responsibilities was to assist the developing countries to exploit the export potential of their meat trade wherever possible. There was no need to emphasize that the attainment of an acceptable animal health situation was a prerequisite for any operation of this kind. To this end, the criteria jointly established by FAO and the International Office of Epizootics in defining the disease-free zone concept for export purposes were important technical achievements. Having established the criteria, the task now was to explore the possibilities of implementation, together with the countries concerned.

This and other related matters were constantly under review. It is hoped that further information and technical guidance will emerge from the ad hoc consultation on non-tariff trade barriers and on disease-free zones which is to be convened by the Organization in July this year.

In closing, Dr. Griffiths expressed his indebtedness to the Commission for the support given to FAO programmes whose objective is to facilitate a more rational exploitation and distribution of the food resources in the world, a matter of the greatest importance to both the developed and the developing countries.

The Chairman thanked Dr. Griffiths for his opening remarks and said that he would like to welcome Dr. A. Geissler, the representative of the Federal German Republic which had now joined the Commission. He also welcomed three new chief veterinary officers: Dr. A.C.L. Brown of the United Kingdom, Dr. L. Dénes, from Hungary and Dr. V. Benko from Yugoslavia. He noted with pleasure the presence of an observer from the World Veterinary Association and observers from O.I.E., and E.E.C. The Chairman recalled the late Professor Ubertini who died in February of this year; his services to the Commission would be sadly missed. The meeting rose and stood in tribute to his memory.

The Chairman referred to the meeting of the Executive Committee held on 9 April and introduced the papers to be presented. He congratulated Dr. Boldrini and his staff for preparing the comprehensive set of papers and said that further working papers would be circulated during the Session.

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AGENDA OF THE TWENTIETH SESSION

The following agenda was adopted:

1. Position and control of FMD in Europe since the last Session (strains of virus involved - prophylactic campaigns).
2. Swine Vesicular Disease.
3. Position of A<sub>22</sub> infection in southeastern Europe and action taken to reestablish buffer areas and a disease-free zone in Thrace.
4. Disease position in the Near East and other regions of epizootiological importance to the European continent - Preventive measures and import policies.
5. Proposed amendments to the Constitution:
  - (a) schedule of sessions and Executive Committee meetings;
  - (b) membership of the Executive Committee.
6. Financial position of the Commission and proposal for increase of contributions - administrative accounts and budgets.
7. Report of the Executive Committee on the Commission's activities:
  - (a) activities of the Secretariat;
  - (b) report of the Executive Committee meeting held in London (23-25 October 1972);
  - (c) report of the Research Group meeting held at Pirbright (25-27 October 1972);
  - (d) future activities.
8. Election of the Executive Committee:
  - (a) election of Chairman;
  - (b) election of Vice-Chairman;
  - (c) election of members.
9. Approval of the draft report of the Session.
10. Any other business.

I. THE POSITION AND CONTROL OF FOOT-AND-MOUTH DISEASE  
IN EUROPE SINCE THE LAST SESSION

The Chairman, introduced the paper on the position and control of Foot-and-Mouth Disease since the last Session (Appendix I) and the Secretary highlighted the main events of the year: the appearance of A<sub>22</sub> virus in southeastern Europe; the virus C epizootic in central eastern Europe and the appearance of swine vesicular disease in the United Kingdom and several continental countries. He also drew attention to Table I of the Appendix I in which outbreaks, virus types and sub-types which appeared in Europe in 1972 had been listed. Table II of the same appendix gave information on the present position of prophylactic schemes in the continent.

Delegates and observers then commented on the position in their respective countries:

1. Scandinavian countries, the United Kingdom and the Republic of Ireland  
No disease recorded.

## 2. Western Europe

No additional comments on the attached Tables were made by representatives from France, Germany, the Netherlands, Luxembourg and Switzerland.

## 3. Southern Europe

Spain. There were 30 percent fewer outbreaks in 1972 than in 1971. In October 1972 there had been a rapid increase in the incidence of Foot-and-Mouth Disease in the northern part of the country caused by a subtype of virus A which appeared to be new for Europe. While vaccination with A<sub>5</sub> vaccine had been used together with strict control measures, severe outbreaks occurred when movement restrictions were lifted. Vaccination was therefore only partially effective. A stamping-out policy and strict veterinary measures together with vaccination were therefore maintained.

Types O, C and since October A virus had caused outbreaks in the province of Santander where a new subtype related to A<sub>5</sub> and A<sub>24</sub> had been encountered. The exact origin of the infection was unfortunately not discovered. The appearance of the outbreaks of the A subtype coincided with the time when imported animals arrived from South America and also with the importation of meat from various sources including Europe. In all cases it was impossible to trace the source of the disease or virus.

Italy. During 1972 nine outbreaks of FMD were recorded in the country. The first appeared in July near Brescia, after a seven months' foot-and-mouth disease-free period. The following outbreaks then occurred:

Province of Brescia:	1 outbreak on 16 August
Province of Trieste:	1 " on 23 August
Province of Venice:	1 " on 26 September
Province of Pistoia:	1 " on 27 September
Province of Massa Carrara:	1 " on 29 September
Province of Perugia:	3 outbreaks on 12 October, 28 October and 2 November

Virus type O was demonstrated in all these outbreaks.

A stamping-out policy was systematically carried out and 291 cattle and 829 pigs were slaughtered. The total stock involved in the outbreaks was 672 cattle, 829 pigs and one goat.

The origin of infection for the outbreaks at Venice, Pistoia and Massa Carrara was an outbreak in imported cattle at Trieste.

Ring vaccination was carried out around all outbreaks in addition to stamping-out and the application of veterinary sanitary measures.

As in the previous year, the entire cattle population over three months of age and all ruminants destined to be moved to alpine pastures were inoculated with trivalent vaccine. In all, 7 million cattle and 1 800 000 sheep and goats were vaccinated in 1972.

In 1973, two foci of infection caused by virus A were found in the province of Brescia. The animals involved were two pigs and one ox. The origin of these outbreaks has remained obscure.

## 4. Central and Eastern Europe

Austria. After a period of almost seven years, FMD reappeared in Austria on 25 January 1973. The outbreak was caused by virus type C, which had been introduced from Hungary by travellers crossing the frontier. In one case it seemed likely that staff of the Austrian railways accompanying Austrian trains through parts of Hungary were responsible for the introduction of the virus. It was considered, however, that the movement of livestock and the commercial importation of meat and milk products from Hungary

was not responsible for the introduction of FMD into Austria. The location of the primary outbreaks confirmed this conclusion. Thus, it seems that the control of livestock shipments and meat and milk products is easier than the control of people and their baggage.

There were two primary outbreaks caused by type C virus near the Hungarian border and one caused by type O near the Slovakian border. Thirty secondary outbreaks followed, involving 33 farms on which 57 cattle and 94 pigs showed clinical symptoms of infection. A total of 370 cattle, 6 sheep, 2 goats and 954 pigs on these farms were slaughtered under Austrian veterinary regulations. Compensation amounted to 6.7 million Austrian schillings.

Around the foci of infection, a large-scale ring vaccination campaign was carried out with monovalent vaccine. Altogether 656 000 cattle and 28 000 sheep and goats were vaccinated. The costs of this vaccination campaign will amount to approximately 8.5 Austrian schillings and will be borne by the Federal Government. Pigs were not included in this vaccination scheme as immunization of this species does not seem to be satisfactory under Austrian field conditions.

The vaccination scheme covered all domestic ruminants in:

The province of Burgenland - the whole territory

The province of Lower Austria - territory south of the Danube and along the Slovakian border

The province of Styria - northern parts neighbouring Lower Austria.

Recently, the epizootic changed its character. Whereas at the beginning the animals primarily affected were cattle, later on pigs were the first animals to show symptoms in four municipalities of Lower Austria and Burgenland. From this it may be concluded that the C virus which had been introduced from the south-east is not markedly adapted to pigs.

In the village of Stötters, province of Burgenland, where FMD affected several pig herds all pigs were given a threefold dose of a monovalent cattle vaccine as an experiment. Simultaneously, all domestic ruminants were revaccinated to achieve a solid immunity also in young animals. The results of this field trial are awaited.

Czechoslovakia. In November 1972, FMD type C was diagnosed in one primary focus in pigs, followed by 10 secondary outbreaks in pigs and cattle. At the beginning of 1973, 4 outbreaks of type O occurred in pigs and cattle. At present, FMD remains in five secondary outbreaks.

Bivalent type A/O vaccine and monovalent type C were used in 1972 to vaccinate 3 499 009 cattle, 480 902 sheep and goats and 217 343 pigs. Locally produced and imported vaccines were used. Vaccination is compulsory and free of charge. A stamping-out policy, strict veterinary measures and ring vaccination have been used.

Hungary. In October 1972 FMD type C appeared in pigs grazing along the eastern border of the country and in different parts of the border. All animal movement in the country was forbidden immediately and the stamping-out policy was implemented affecting 1 333 bovines, 289 sheep and 13 194 pigs. Extensive vaccination was also carried out but the disease was not contained and it seems that the virus involved is a virulent strain affecting only pigs. The stamping-out policy could not be applied in the larger piggeries and further spread occurred. Vaccination was continued with imported vaccines and, eventually, after a massive vaccination campaign, the spread of the disease was halted. The total number of diseased or suspected pigs was 400 000. To meet current demand and to cope with revaccination, more than 30 million doses of vaccine were imported and 4.5 million doses were produced locally. 310 million Forints were spent for the purchase of vaccine and 60 million Forints to conduct vaccination campaigns.

It is proposed to increase vaccine production so that sufficient stocks will be available to inoculate all cattle and sheep and, where necessary, pigs. Hungary has been free of FMD since 5 January 1973.

Yugoslavia. Toward the end of 1972, FMD was confirmed in six municipalities. In 12 foci of infection, 3 549 pigs and 73 cattle were destroyed. Type C virus was identified, but the outbreaks were brought under control and did not spread from the affected districts in Vojvodina. Infection reappeared early in February 1973 in the same area near the Romanian frontier involving six villages. Both types O and C virus were isolated. To supplement the earlier intensive vaccination programme an additional two million doses of vaccine are being imported during the next few months.

It was emphasized that a total stamping-out policy was applied in Yugoslavia.

Romania. After a long period of freedom from infection, one outbreak caused by virus type O was detected in south-western Romania during August 1972. The focus of infection was a feedlot visited by foreign merchants some days prior to the appearance of the disease.

In October, the disease appeared again, this time being caused, as in the neighbouring countries, by virus C. In the beginning, small groups of privately owned pigs were affected but large cooperative farms were later involved. In all, outbreaks were recorded in 21 municipalities in the western province of Satu Mare, Bihor and Timis during October and November 1972.

The disease was severe in pigs because they are affected more by the C type virus.

An emergency vaccination campaign was carried out to limit infection to the affected provinces and to prevent the spread of the disease to the rest of the country, especially the southern provinces where most of the large pig farms are located.

To supplement the stock of vaccine locally produced by the Waldmann method, 350 000 doses of trivalent vaccine and some 800 000 doses of monovalent C vaccine for pigs (including oil vaccine) were ordered from abroad. By the end of November one million cattle and the breeding stock of the pig farms in the infected provinces had been vaccinated.

In January 1973, virus O appeared again in Romania. In the province of Bihor sporadic foci were found in the same area which had been affected by virus C. The origin of the infection remains unknown.

As there had been no FMD since 1968 no routine vaccination programme had been applied. The country was again declared free of FMD on 19 March 1973.

U.S.S.R. The overall situation in the Soviet Union is favourable. 569 outbreaks were recorded in 1972 principally in the areas where outbreaks had occurred in previous years. Young animals were principally affected and types A<sub>22</sub> and O<sub>1</sub> virus were involved. In October 1972, however, type C virus was responsible for three outbreaks in the Trans-Carpathian area. Ring vaccination, stamping-out and veterinary police measures brought the situation under complete control.

Bulgaria. No outbreak of FMD was recorded in Bulgaria between 1966 and 1972.

The problem for Bulgaria is the need to maintain buffer zones against exotic FMD in the south-eastern part of the country. The reappearance of A<sub>22</sub> in Thrace in the Spring of 1972 made it necessary for Bulgaria to re-establish a buffer zone along the borders with Turkey; and 47 256 cattle and 272 006 sheep were vaccinated with A<sub>22</sub> vaccine while a 3 km deep belt along the borders was kept entirely free of domestic animals as long as the danger of infection persisted for Bulgarian livestock.

During meetings held with Greek and Turkish colleagues, control and quarantine measures were agreed upon to prevent any possible spread of virus from one country to another. The very active frontier movement, especially during the summer, was a matter of great concern for the authorities of the three countries involved.



The measures taken were successful in preventing the spread of the A<sub>22</sub> virus to Bulgaria even though outbreaks occurred at the beginning of 1973 in the border areas adjoining Bulgaria and Romania. An outbreak was first found in the district of Silistra and was followed by two more outbreaks at Staro Selo and, a few days later, at Malak Preslavez, 25 km from the first focus of infection. In all cases the causal virus was A<sub>5</sub>: the subtyping results obtained at Sofia were confirmed by the World Reference Laboratory, Pirbright.

An intensive vaccination campaign was immediately undertaken with vaccine obtained from Denmark and Italy. The delivery of the vaccine was prompt and permitted a large area of Bulgaria to be covered within a few days, thus blocking the spread of the infection to other regions. On 27 March the country was declared free from FMD.

The lesson drawn from recent events is that basic prophylactic schemes should be introduced to counteract the dangers deriving from the steadily increasing trade in animal and animal products.

#### 5. Strains of virus involved

The Secretary drew attention to the investigations carried out by the World Reference Laboratory, Pirbright and the IFFA laboratories, Lyons, concerning the strains which had been isolated in Romania, Hungary, Yugoslavia and Spain (see Appendixes II, III, IV and V).

There was general agreement that the specimens of C virus collected in the Danube region were all related to an old European strain.

As to the A strain isolated in Spain, provisionally called Santander, the delegation of Spain informed the Session that the immunity conferred by the vaccine available in Spain (A<sub>5</sub>) against A Santander appeared to be short-lived with a duration of approximately one month.

#### 6. Vaccination of pigs

In 1972 Foot-and-Mouth Disease vaccine was used extensively in pigs both in the Danube region and in Spain.

In Romania alone 208 000 pigs were vaccinated around and on infected farms.

Practical observations suggested that in these circumstances there was merit in using vaccine in pigs. Where very large pig herds were infected there was no choice but to use vaccine.

In Hungary a Waldmann-type vaccine had been used in pigs at a dosage level of  $2\frac{1}{2}$  cattle units per pig. This, however, did not give any substantial immunity in contrast to the claims of 3 months' immunity provided by 1 cattle dose of a vaccine in which a saponin adjuvant had been incorporated. A single cattle dose of either Frenkel or TC vaccine provided an immunity of only three weeks. Revaccination, however, gave an immunity of about three months' duration.

It was recorded that there had been problems in Hungary with imported type C vaccine after this had passed innocuity tests. Within 5-9 days after vaccination, 8 percent of suckling sows were said to show evidence of infection. It was customary to quarantine all farms for three weeks after vaccination had been completed.

#### 7. Vaccine production methods

In the discussion on the FMD situation in Europe, criticism was voiced on the method of virus production by the Waldmann technique. Apart from the limitations of this technique for the economic production of large volumes of FMD vaccine, there are inherent dangers resulting from the need to inoculate large numbers of animals and the problems connected

with their safe disposal.

The opinion was strongly expressed that in order to stimulate the early introduction of the more modern methods of FMD vaccine manufacture, the export of virus prepared by the Waldmann method should be banned.

After a lengthy discussion, there was agreement on the following resolution:

Recommendation. The production of vaccine by the Waldmann method should be discontinued as soon as possible. Until this objective has been reached Waldmann vaccine production centres should discontinue the export of virus: such a measure would not only provide a safeguard against the spread of foot-and-mouth disease, but also encourage the establishment of modern methods of vaccine production in the countries concerned.

## II. SWINE VESICULAR DISEASE

### 1. Position and control of S.V.D. in U.K.: Research carried out at the Pirbright and Plum Island Institutes

The Chairman introduced this subject by referring to the report of the ad hoc consultation in Rome in January 1973 and especially to the recommendations (Appendix VI).

The United Kingdom delegate welcomed the opportunity to report to the Commission on this disease and said that he would try to pick out from a paper which had been circulated, the salient points on the field control of swine vesicular disease in the United Kingdom since it was first recognized in December 1972. Since that date there had been 87 outbreaks, comprising 72 in England, 6 in Wales and 9 in Scotland.

Until more was known of the epidemiological character of the virus, the full veterinary sanitary precautions which were used for foot-and-mouth disease were applied. The policy was one designed to eradicate the infection by the slaughter of all pigs on affected farms.

It became obvious at an early stage that SVD virus was not as diffusible as FMD virus. Nevertheless, infection could be spread from pig to pig through contact or by the exposure of susceptible pigs to infected urine and excreta in addition to the risk from garbage. The resistance of the virus to disinfectants was also noted as outbreaks occurred owing to the survival of the virus in livestock transport vehicles and markets, even after these had been subjected to normal cleansing and disinfection processes.

The initial infection was disseminated by the movement of pigs in the incubative stage through markets. This cycle of infection was broken by the introduction of regulations which prevented the selling of store pigs through markets, thus preventing spread of the disease from garbage-fed pigs in markets.

Attention was also given to the cleansing of livestock transport vehicles and special advice was given on the correct disinfectants to use.

Evidence of some recycling of infection through the human food chain, especially in raw uncured sausage meat, has been obtained. The high titre of SVD virus present in all tissues of an infected pig is such that one pig carcass could infect the pig meat products prepared in a batch from one hundred pigs.

The situation in Great Britain had improved markedly and in the last 14 to 20 days only four new cases had been confirmed. Since December 1972, 26 districts had been involved but now, after the most intensive veterinary police effort involving over 100 veterinary officers, 16 districts could be claimed as free of infection.

In the series of outbreaks, over 42 000 pigs had been slaughtered and destroyed at a cost of about £ 1 000 000. It could be asked if the disease was sufficiently serious to justify an expensive eradication programme. In the opinion of the United Kingdom authorities this must be the goal as the clinical symptoms of the disease were identical to those of FMD; thus, if the disease became endemic the control of FMD would be seriously impaired, and the export of live pigs and of pig meat and meat products seriously disrupted. The pig presented for sale or slaughter with chronic evidence of a vesicular disease involving the claws would have to be cleared by differential diagnosis before the absence of foot-and-mouth infection with A, O, C or more exotic virus strains could be assumed.

The persistence of the virus on infected farms had recurred after the normal cleansing and disinfection procedures as used for FMD had been completed. The restocking of infected farms 4 weeks after the completion of disinfection with a limited number of pigs, up to 50, had resulted in two recrudescences out of three farms restocked. Disinfection was repeated and the period, before restocking was permitted, was extended to 8 weeks; even after this period, one further farm had been involved in a recrudescence, while pigs on ten other farms had thus far remained healthy.

Further field studies were being undertaken with the assistance of the Animal Virus Research Institute, Pirbright, to determine the points on farm premises where the virus could be persisting in sufficient titre to infect susceptible pigs.

The overall position was hopeful as the recycling of infection through waste food was slowing down and only in four areas of Great Britain were there current outbreaks and at no point was a series of cases occurring.

Dr. Brooksby, in introducing the paper which had been circulated to participants pointed out that it covered further work carried out at Pirbright and supplemented the information presented at the meeting in Rome in January 1973 (Appendix VII).

The research work carried out identified the high titre of swine vesicular disease virus in all tissues of pigs in the incubative stage of the disease and for several days after the appearance of clinical disease. The period of survival of virus in a wide range of organs and tissues of slaughtered pigs had been examined: and while the work had not been completed, it was clear that there was only a slight drop in virus titre even after prolonged storage. Other work had indicated that the virus could survive in pig faeces for very long periods.

A wide range of disinfectants had been tested against swine vesicular disease and those based either on phosphoric acid and iodine or sodium hydroxide with chlorine were effective especially if, under farm conditions, a cleansing detergent was added.

A study of the relationship between the various strains was in progress. An information sheet from the World Reference Laboratory showed differences between Italy 1/66, France 1/73, Hong Kong 36/71 and UK 27/72 strains and preliminary tests suggested that Austria 1/73, Italy 3/73 and Poland 1/73 were similar to UK 27/72 (Appendix VIII).

Six strains of virus have now been inoculated into similar groups of pigs and the severity of the disease produced had been assessed on a scoring system. The minor differences which appeared to exist are insufficient to explain the variation in the clinical picture presented by the countries affected in Europe.

Dr. Sellers reported that susceptible pigs inoculated with virus strains obtained from Europe had all shown exactly similar clinical symptoms after an incubation period of about two days.

Tribute was paid to the valuable applied research work carried out by Dr. Brooksby and his colleagues at Pirbright. In a very short period of three months most of the epidemiology of the disease had been worked out and veterinary sanitary measures adapted to meet the challenge to the pig industry from this virus.

Dr. J.H. Graves of the Plum Island Animal Disease Laboratory, U.S.A., in response to an invitation from the Chairman, spoke of work which was being carried out in the United States.

Examination of banked pig sera and the sera of pigs recovered from a wide range of viruses causing porcine disease had revealed no evidence of neutralizing antibodies to swine vesicular disease virus.

The sera from employees at the Plum Island Animal Disease Laboratory had been examined against swine vesicular disease virus and a high proportion of them had been positive. The relationship between the virus and the Coxsackie virus group of human enteroviruses was being investigated.

It was concluded that swine vesicular disease is not present in the United States. Dr. Graves submitted a paper on his work (Appendix IX).

2. Position of swine vesicular disease in other European countries, general discussion and recommendations

The delegation from Austria referred to the appearance of swine vesicular disease in Austria in pigs imported from Poland in December 1972 and to outbreaks in two other localities shortly thereafter, but in areas remote from the first outbreak. In February and March 1973, two further outbreaks occurred, but only a few pigs were affected. All strains isolated in Austria were shown to be closely related to those isolated in the United Kingdom and in Italy, and the disease was easily reproduced by inoculation.

The observer from Poland stated that no outbreaks had been reported in his country since December 1972.

The delegation from Italy reported 23 outbreaks in 1972, all since the month of October, and 17 in the first three months of 1973. 2 277 pigs out of a total of 4 747 showed clinical symptoms but there were few deaths and the disease was benign. Legal provisions were made for the application of the same veterinary police measures as in the case of foot-and-mouth disease; however, stamping-out was not enforced because of the benign nature of the disease.

The observer from France said that 8 outbreaks had been encountered since the beginning of 1973. Quarantine of infected herds was applied until a final laboratory diagnosis was made. If foot-and-mouth disease was encountered, a stamping-out policy was applied, but in swine vesicular disease a 15 days' quarantine period was used during which the herd was closely supervised. The only movement of pigs then allowed was to the abattoir.

The Chairman said that he would try to take a neutral stand but he suggested that delegates should note the sharply contrasting level of swine vesicular disease in Great Britain compared with other countries where the disease had been recorded. It seemed difficult to believe that the marketing, sale and transport of pigs in Great Britain was so very different from that in Europe where the disease appeared to have spread to only a limited extent. The swine vesicular disease outbreak in Great Britain had required the services of 100 veterinary officers for three months to hold the disease at under 90 outbreaks. It might be assumed that the reported incidence of the disease in a country where the virus was present was in direct proportion to the intensity of the veterinary police effort expended. If this was so there was occasion for concern lest swine vesicular disease became endemic in a country and spread from it.

The value of serological surveys to confirm the absence of swine vesicular disease in those countries where there was no clinical evidence of the disease and the duration of significant antibody levels in recovered pigs was discussed. It was considered that random serum surveys might not be significant although the results would have some importance if positive titres were revealed. Information was given that the antibody response in affected

pigs rose rapidly in a few days and on information from Italy it seemed that in older pigs high titres could persist for two years, although in the same herds no serological evidence of the disease in younger pigs was present.

The techniques for the rapid diagnosis of swine vesicular disease were discussed and Dr. Brooksby, referring to his earlier statement, suggested that results could be available in most cases within 24-36 hours.

Dr. Brooksby re-emphasized the importance of speed in differential diagnosis. Tissue culture followed by complement fixation tests was the method most relied upon but recent research indicated that a fluorescent antibody test might save several hours.

The Chairman, in closing the technical discussion on swine vesicular disease, drew the attention of delegates to the recommendations agreed at the ad hoc meeting held in Rome on 9 January, 1973.

The Danish delegate, acknowledging the progress already made in the control of the disease in Great Britain, and the growing knowledge of the disease, said that he would support the recommendations as every effort must be made to eliminate the disease. The recommendations gave Member Countries guidelines on which to operate for the next 12 months though it was acknowledged that they might have to be changed in the light of experience gained in the future.

The following recommendations were unanimously accepted:

1. The disease should be described as swine vesicular disease and, to avoid confusion with other vesicular diseases, it should be described in statistical reports with the addition in parenthesis of the words "caused by a porcine enterovirus".
2. It should be made notifiable and countries should report its occurrence to OIE and FAO so that information on the disease may be included in the FAO/WHO/OIE Animal Health Yearbook.
3. From the information available at present, it would appear that the disease is limited in its distribution to some European countries and to Hong Kong. It is urged that every effort be made to eradicate it when it does occur, using the stamping-out method for the slaughter of affected and in-contact pigs, as applied in FMD control.
4. Because of uncertain knowledge of the possible epidemiological role of other classes of livestock, e.g. cattle and sheep, it is recommended that the movement of such animals from infected premises be restricted for a period of six weeks after the completion of slaughter of infected and in-contact pigs.
5. Bearing in mind that the disease has been associated with garbage feeding in some countries, it is essential that all carcasses including offal on the infected premises be disposed of by burning or burial, or that such material be adequately sterilized.
6. Importing countries should make certain that appropriate steps have been taken in the exporting countries to prevent dissemination of the disease.
7. The laboratories in countries where outbreaks have occurred should undertake serological surveys to determine whether or not inapparent infection may be important in the disease.
8. Among the points requiring attention are problems relating to disinfection, since it is already known that disinfectants against FMD may not be efficient for swine vesicular disease.
9. There is a need for continuing exchange of information between laboratories, as well as for research on several aspects of the disease, and it is recommended that the World Reference Laboratory should coordinate research activities.

### III. POSITION OF A<sub>22</sub> INFECTION IN SOUTHEASTERN EUROPE AND ACTION TAKEN TO REESTABLISH BUFFER AREAS AND A DISEASE-FREE ZONE IN THRACE

The Chairman in introducing this item asked delegates from Greece and Turkey to report further on the situation.

Greece. In the absence of the delegate of Greece, the Secretary made the following statement based on the report submitted by the Greek veterinary authorities:

Virus O. As had been reported at the Nineteenth Session some outbreaks of foot-and-mouth disease had been due to virus type O. This had occurred in two different regions at the beginning of 1972. Five outbreaks had been in the buffer zone (Evros province) not far from the Turkish and the Bulgarian borders. There had been two outbreaks in the Athens area in which garbage-fed pigs were involved and the origin was attributed to imported frozen meat.

Virus A<sub>22</sub>. On 8 April 1972, A<sub>22</sub> virus was responsible for the first outbreaks of the Greek epizootic at Sophicon, in the northern part of the Evros district, near the Turkish border. Since only a few animals were involved, stamping-out methods were applied and for two months no secondary cases of the disease appeared in the Evros area which for the past ten years had constituted the buffer zone against SAT<sub>1</sub> and A<sub>22</sub> virus.

Unfortunately, owing to the intense traffic of animals and the movement of people for the preparation of the Easter holidays, a deep penetration of the disease into the country occurred. Before the middle of April and the first week of May, outbreaks were discovered in the provinces of Xanthi (8 municipalities), Drama (2 municipalities), Serrai (5 municipalities) and further west at Thessaloniki. In addition to these incidents in north-eastern Greece, two municipalities near Athens (Acharnai) and the municipalities of Argos (Peloponnesus) were also infected through the transport of calves from the north for slaughter purposes.

The situation seemed to improve by the middle of May, but later a new introduction of the disease in southern Evros caused further infection in the buffer zone, while in the Attika province the disease seemed to assume a rather enzootic character. In Evros, 8 of the 9 herds grazing in the river delta became infected. In Attika repeated foci of infection spread among the cattle of Acharnai and Aspropyrgos municipalities involving 16 farms. A further outbreak of the disease was recorded in Karditsa province (Thessaly) when the municipalities of Soplades and Moschoulurion became infected. The last foci were declared on 5 September 1972. Altogether 246 foci in 26 municipalities of 8 different provinces were infected by this exotic virus. The number of animals infected were 2 252 cattle (distributed over 224 foci), 225 sheep and 375 pigs.

The virus appeared to be more pathogenic for cattle than for other species. Mortality was common among calves, especially at Drama at the beginning of the epizootic.

#### Virus O (second and third wave)

In the Evros province 3 municipalities (Peplos, Karissos and Ferai) were involved in O type outbreaks towards the end of the year. Sixty-three foci were recorded between November 1972 and February 1973. Nine hundred and forty-six cattle and 84 pigs were infected.

A third wave of infection started in March 1973 with 38 foci appearing in the frontier province of Kastoria near Albania. One hundred and six cattle, 795 goats, 89 sheep and three pigs were involved. The origin of the outbreaks was attributed to garbage.

#### Sanitary and prophylactic measures

During the A<sub>22</sub> epizootic, 23 cattle and nine pigs were slaughtered under the stamping-out policy applied to primary small outbreaks only.

Vaccination was used extensively. On 5 May, 1972, 100 000 doses of A<sub>22</sub> vaccine arrived from Teheran (IFFA) thanks to the good offices of FAO. Soon afterwards, 15 000 doses were obtained from Turkey. This vaccine was employed immediately in a ring vaccination campaign together with heterologous Greek vaccine (A Greece 1969) left from previous campaigns. At the beginning of May, the Athens Institute was able also to produce an homologous A Greece 1972 vaccine with strains collected at Xanthi and successfully adapted to tissue culture.

#### First vaccination campaign against A<sub>22</sub>

The campaign had to be planned to take account of the progress of the epizootic in various provinces. Between May and September the following number of animals were vaccinated with A Greece 1969 vaccine: 34 000 cattle, 111 248 sheep and 2 540 pigs. A<sub>22</sub> vaccine was given to 136 676 cattle, 301 441 sheep and 1 804 pigs.

#### Second vaccination campaign

The Greek Government was in complete agreement with the FAO/OIE mission which visited Greece at the end of September 1972, in recognizing that a revaccination campaign against A<sub>22</sub>, to be undertaken in the same year, would have been desirable in order to prevent a new flare-up of the disease. FAO supplied Greece with 186 000 doses of A<sub>22</sub> vaccine produced at the Animal Virus Research Institute, Pirbright, United Kingdom. This vaccine was used in the winter between November 1972 and January 1973 together with A<sub>22</sub> and O<sub>1</sub> vaccines produced at the Athens Laboratory. Bivalent vaccination was administered in the province of Evros.

The programme included all those areas which had been exposed to the A<sub>22</sub> virus between May and September 1972 and vaccination involved 93 000 cattle, 134 159 sheep and 76 pigs distributed over seven provinces. Bivalent vaccine was given to 52 209 cattle and 84 536 sheep. Mild allergic post-vaccination reactions were observed in the province of Evros.

#### The Foot-and-Mouth Disease Institute, Athens

The Athens Institute produced 325 600 doses of A<sub>22</sub> vaccine in 1972. Almost the same amount of O vaccine had been produced. Since March 1973 a new production unit has been operating which has almost doubled the production capacity of the Institute.

Tissue culture in cell suspension is envisaged as the method of choice for vaccine production in the future. To this end the Government recently made an allocation of 1 500 000 Greek Drachmae.

The Greek authorities expressed their gratitude to FAO and to the Institutes at Pirbright, Lyons and Ankara for the assistance received in connection with the difficult situation which had arisen in the last 12 months.

#### Turkey

Dr. Nazlioğlu made the following statement on the position and control of foot-and-mouth disease in Turkey.

#### Epizootiological information

The Region of Thrace. After more than three years free from the disease, cases of A<sub>22</sub> virus infection were found in Thrace at the beginning of Spring 1972. This coincided with a sudden spread of the virus in various provinces of Anatolia.

Five outbreaks occurred in March in the Istanbul province, two of which were on the European side of the Bosphorus.

The disease spread into the other provinces of Thrace (Edirne, Kirklareli and Tekirdag) where nine villages became infected during the month of May and 10 villages became infected during June and September 1972. Later in the year sporadic outbreaks of O<sub>1</sub> virus occurred while A<sub>22</sub> was no longer recorded in the region.

In all 48 outbreaks (36 caused by virus A<sub>22</sub>) were reported in Thrace, including the Anatolian side of the Istanbul province.

As a result of repeated previous vaccinations in the area, only young animals showed disease, as a rule.

A<sub>22</sub> has not been reported since 23 September 1972 and O<sub>1</sub> since 10 February 1973.

#### Position during the period January-March 1973

Thrace:            three outbreaks between 8 and 10 February;  
Anatolia:        45 outbreaks in January  
                  11 in February and 10 in March.

The majority of field specimens were typed as virus O<sub>1</sub>.

#### Vaccination campaigns

The Ankara Institute produced in 1972 a total of 3 625 610 doses of A<sub>22</sub> vaccine. Production strains are A Mahmatli for A<sub>22</sub> and O Manisa for O<sub>1</sub>.

In Thrace, general vaccination was carried out in the Spring of 1972 involving 2 003 975 ruminants.

In Anatolia, vaccination was carried out as area vaccination in various provinces of the Marmara region (614 849 animals), as border area vaccination along the southern and eastern borders of the country (352 754 animals); and in ring vaccination operations wherever outbreaks occurred (1 030 257 animals). The animals living on state farms were also vaccinated (450 000).

The total was of 4 451 835 vaccinations carried out against either A<sub>22</sub> or O<sub>1</sub> virus.

In the Autumn, vaccination was carried out on 42 256 young animals in the region of Thrace.

#### Programme for 1973

To improve the efficacy of prophylactic programmes it has been decided that from the beginning of 1973 vaccination should be bivalent (O<sub>1</sub>/A<sub>22</sub>) throughout Turkey.

The vaccination in Thrace started on 1 March 1973 and 850 000 doses of bivalent vaccine have already been distributed.

General vaccination will be carried out in the autumn on all cattle under one year of age.

The buffer zone of Thrace will be extended, to include the southern provinces of the Sea of Marmara.

Vaccination will also be further extended in Anatolia, especially in the southeastern border areas.

. The control of animal movement across the Bosphorous will be further improved; and to relieve the Istanbul area from the excessive flow of slaughter animals a new stock-yard will be organized at Sakarya.



### Work at the Institute

The Turkish delegate expressed deep appreciation for the assistance received from the UN Special Fund through FAO in the development of vaccine production facilities at the Ankara Institute for Foot-and-Mouth Disease.

Dr. Girard presented a report in which the work so far carried out in the Institute under the project directed by him was described. In particular, he drew attention to the installations which have recently been developed for the production of tissue culture using the cell suspension technique. This has permitted the target of 6 million doses of vaccine to be reached. The testing of the vaccine produced has given very satisfactory results both in the laboratory and in the field.

The production strain A Mahmatli used in the manufacture of A<sub>22</sub> vaccine has demonstrated high antigenicity against all strains isolated in Turkey since 1964; this includes A Polatli (A<sub>28</sub>) and also A Bandirma, which is the strain involved in the 1972 epizootic and is presumed to be quite similar, if not identical, to A Greece 1972.

### Report of the Secretary on the A<sub>22</sub> Campaigns

The Secretary summarized the paper "Foot-and-Mouth Disease Position and Campaigns in southeastern Europe in 1972" which is attached as Appendix X to this report.

Attention was drawn, in particular, to the first action taken by FAO, Greece and Turkey in April and May 1972 when emergency operations were implemented thanks to the residual funds from previous campaigns.

Surveys of the disease situation followed and were carried out independently by FAO and OIE (April-May 1972) and jointly (FAO/OIE mission, see Appendix Xa). The situation was evaluated, future prophylactic campaigns were planned and the necessary documentation was produced in view of the requests for further financial support from individual European countries and the European Economic Community.

The Secretary furthermore provided a summary of the action taken in autumn 1972, thanks to the funds received from several countries in response to the appeal launched by the Director-General of FAO.

The revaccination campaign which was carried out between November 1972 and January 1973 in the invaded territories of Greece, allowed a strengthening of the precarious immunity conferred by the first emergency vaccination against A<sub>22</sub>.

The Secretary also mentioned the series of serological studies carried out at Pirbright on various A<sub>22</sub> strains received during the year from Greece, Turkey and northern and eastern Africa. The relevant information sheets at the World Reference Laboratory are attached to the above-mentioned document (Appendixes Xb, Xc, Xd, Xe, Xf).

In further comments, the Chairman referred to the appeal of the Director-General for continuing financial support by European countries and he pointed out the importance of the need for the EEC contribution which would provide funds for the maintenance of buffer zones in southeastern Europe, beginning in Spring 1973.

### Significance of A<sub>22</sub> for Europe

Prof. Lucan informed the Session that recent experiments have demonstrated that the A type vaccine usually applied in Western Europe gave no protection against challenge with the A<sub>22</sub> virus (Greek strain 1972) even when animals were used which had been vaccinated several times and/or revaccinated prior to challenge. This demonstrates that vaccination programmes carried out in western Europe offer no protection against A<sub>22</sub> and fully justify the joint efforts made since 1964 to control and eliminate this virus in southeastern Europe and Anatolia.

### Seed virus for emergency operations

At the request of the Secretary, Dr. Brooksby gave information on the position of the stocks of seed virus of FMD strains held at the Animal Virus Research Institute, Pirbright, on behalf of the European Commission. The strain of the stock suitable for immediate production of A<sub>22</sub> vaccine is labelled USSR 116.

The position of the seed virus stocks is given in Appendix XI.

Dr. Girard added that A Mahmatli seed virus, the strain of virus used in Turkey since 1965 with good results for the preparation of FMD vaccine either by the Frenkel or tissue culture methods (including cell suspension), is always available at the Ankara Institute.

## IV. DISEASE POSITION IN THE NEAR EAST AND OTHER REGIONS OF EPIZOOTIOLOGICAL IMPORTANCE TO THE EUROPEAN CONTINENT PREVENTIVE MEASURES AND IMPORT POLICIES

### 1. Near East

Dr. Boldrini, at the invitation of the Chairman, reviewed the position in the Near East and other world regions (see sections III, IV, V of Appendix I).

He said that the document "Position and Control of Foot-and-Mouth Disease since the last Session" included a short statement on the position in this region. No significant change had been observed from previous years. Type O virus has possibly been introduced into the Persian Gulf area and Saudi Arabia with animals from eastern Africa, as insufficient veterinary control still prevails in the region. Israel is the only country applying routine vaccination to the whole national herd and there has been no outbreak of FMD in Israel for two years.

### 2. Africa

The Swiss delegate referred to the commendable efforts made by the Government of Kenya for the establishment of disease-free zones in that country. There was much interest in developing disease-free zones elsewhere but initiatives of this kind would be successful only if well-functioning veterinary services existed in the countries concerned.

### 3. Far East

Dr. Griffiths mentioned that the situation in the Far East deteriorated in 1973 with the introduction of FMD into Southern Thailand and Malaysia, areas free from FMD for many years.

### 4. South America

The Secretary introduced information on the situation in South America and drew attention to the subtype positions in the major exporting countries (see Table Ib of Appendix I), which remained practically unchanged from previous years. Dr. Brooksby said that the World Reference Laboratory has not received recently any samples from this continent which would suggest that no significant change has occurred in the situation.

### 5. Import and export policies and illegal trade of meat

The Chairman reminded the delegates of the recommendation on the importation of boneless meat only from South America into Member Countries, and the necessity of having continuous information on the virus types present in the continent. The Secretary emphasized that the

importing countries should request the exporting countries to supply samples to the competent regional laboratories and that the World Reference Laboratory should be in a position to give up-to-date information on the subtype situation in the various regions whenever it is needed.

In discussing import policies the Swiss delegate referred to last year's meeting where problems related to meat and bonded warehouses were extensively dealt with. Further cases were seen in 1972 and the whole question of illegal transport of meat needed serious consideration. Several delegates gave information of the situation in their respective countries, and it was suggested that any knowledge of such practices should be forwarded to all concerned as early as possible.

It was pointed out that veterinary officers carrying out port duties might have a clearer understanding of the international trade in meat if they could, through the good offices of the Customs Authority, examine the "ships manifest" of vessels engaged in carrying meat from other continents.

#### V. AMENDMENTS TO THE CONSTITUTION

The Chairman introduced this subject and referred to the document containing the "Proposed Amendments to the Constitution, Rules of Procedure and Financial Regulations (Appendix XII). He said that the Nineteenth Session of the European Commission accepted the proposals of the Executive Committee that regular sessions of the Commission should be held every two years instead of annually, and that the membership of the Executive Committee should be increased from six to eight members. The Commission requested the Executive Committee to consider these proposals in detail at its next meeting in October 1972 "and to prepare the necessary constitutional amendments for consideration and approval by the Commission at its next Session in April 1973". He added that the proposed amendments were discussed and endorsed by the Executive Committee, subject to some modifications. The Executive Committee therefore decided to recommend to the Commission the adoption of the proposed amendments (as modified) in accordance with the provisions of Article XIV of the Constitution, Rule XVI of the Rules of Procedure, and Financial Regulation 7.2, respectively.

The Legal Office further explained that the proposed amendments to the Constitution are mainly intended to provide for regular sessions of the Commission to be held every two years (instead of annually as hitherto) and for the introduction of the biennial budget cycle which is an inevitable consequence of the two-year intervals between regular sessions of the Commission. Moreover, a redraft was suggested with regard to Article XIII, as it was considered appropriate to propose the deletion of the obsolete provisions which referred to the first five-year period after the entry into force of the Constitution and, at the same time, to revise the text of the paragraph concerning annual contributions of new members of the Commission. Further, for the Financial Regulations more substantial changes had been proposed, mainly because all provisions had to be adapted to the concept of a biennial administration and also because they should conform as much as possible to the Financial Regulations of FAO, as provided in Article VIII of the Constitution.

The Chairman submitted these proposals to the consideration of the delegates. He pointed out that although the new rules envisaged biennial sessions this did not preclude meetings at shorter intervals if this was considered necessary. The Executive Committee which would hold more frequent meetings could invite the attendance of delegates from any member countries with an immediate interest in its deliberations.

After short discussions on the proposed amendments, as set forth in appendix referred to above, the delegates of the 19 countries present unanimously gave their approval. The document was accepted as presented for discussion.

The amendments will now be submitted to the FAO Council for final approval after review by the appropriate Standing Committees.

## VI. FINANCIAL POSITION OF THE COMMISSION AND PROPOSALS FOR INCREASE OF CONTRIBUTIONS - ADMINISTRATIVE ACCOUNTS AND BUDGETS

### Increase of contributions

The Chairman in introducing the document "Increase of contributions" (Appendix XIII) drew attention to the recommendation of the Executive Committee made at its meeting in London in October 1972 to the effect that the member countries should be asked to increase their contributions by 30 percent in order to cover the effects of inflation and to provide sufficient funds for the "special functions" as specified in Art. V of the Constitution.

The document, as presented, was fully endorsed by 18 of the 19 delegations present. The delegate of Portugal abstained, as his government had not had the time to study the proposal. The delegate of Turkey stated that the financial year for government budgets and accounts starts on 1 March and that, therefore, the government of Turkey could pay the increased contribution only as of 1 March 1974. The Commission agreed that, in the case of Turkey, the increase will be payable only as of this date.

### Accounts

The provisional accounts for the year ended 31 December 1972 (Appendix XIV) were unanimously accepted. It was pointed out that these accounts will be forwarded for auditing.

### Budgets

The proposed budgets for 1973 and 1974 (Appendix XV) were accepted. The Commission noted that, owing to the adherence of the Federal Republic of Germany to the Commission in March 1973 and the 30 percent increase in contributions as of 1 January 1974, it would be necessary to revise the budgets. It decided that the budgets for 1973 and 1974 be amended accordingly and that the additional funds be allocated to Chapter II.

The Commission also agreed that the budget covering 1975, in the event that the biennial budget cycle is approved by the FAO Council, would be based on the revised 1974 budget as approved by the Commission, subject to such minor adjustments as may be necessary in the light of developments of salaries and other costs in the course of the biennium. Such adjustments would be submitted to the Executive Committee.

## VII. REPORT OF THE EXECUTIVE COMMITTEE ON THE COMMISSION'S ACTIVITIES

### 1. General and Particular Activities of the Commission

The Secretary, in introducing the "Report of the Executive Committee" (Appendix XVI) referred briefly to the activities carried out by the Commission and the Secretariat during the past year.

The activity of the Secretariat was linked, more than in the past, with the work of FAO in general and of the Animal Production and Health Division in particular, also because of the increasing action taken in FMD control in other regions of the world. Close

collaboration was given to the Division in problems and studies connected with the establishment of disease-free zones in Asia and Africa and on projects for setting-up new facilities for vaccine production in a number of countries.

The Chief of the Animal Health Service further explained this situation and indicated the great benefits deriving to the Organization and the developing countries from the participation of the Commission's Secretariat in the daily activities of his Service.

A brief mention was then made of the particular activities carried out by the Secretariat in connection with the epizootic which had taken place in central eastern and southeastern Europe. This included visits to veterinary services, field surveys, a special evaluation mission jointly carried out with OIE representatives and dissemination of reports between sessions to all interested Governments and specialized institutes.

An account was also given of the mission carried out by the Chairman and the Secretary to Spain and Portugal in February 1973. The possibility that Spain may soon become a member of the Commission and the advantages of such a decision for both Spain and the Commission were referred to by the Chairman.

Attention was finally drawn to the assistance offered by the Commission to staff members of FMD institutes in Europe. A staff member of the laboratory of Athens and one from Sofia were given *per diem* allowance to cover a stay of approximately six weeks at Pirbright and Brescia respectively. The Secretary informed the meeting that thanks to the improved financial situation of the Commission such an important activity could be continued and further expanded. He appreciated the generous collaboration given by the above-mentioned institutes and other European Centres in assisting a number of FAO trainees during the past year.

Several delegations expressed their satisfaction and appreciation for the numerous and difficult tasks carried out by the Secretariat in 1972. All activities were approved.

## 2. Meetings

Section III of the Executive Committee Report makes reference to the consultation meeting held on swine vesicular disease and contains the full reports of the meetings held by the Executive Committee and the Research Group during the year.

Since swine vesicular disease and the evolution of FMD had been extensively discussed during the session no additional comments were made on these subjects.

### Activities of the Executive Committee

Some miscellaneous points which had been discussed by the Executive Committee in London were presented by the Chairman.

- submission of specimens to the World Reference Laboratory, Pirbright: The need was emphasized for Governments to submit material for virus typing from primary outbreaks or where a possibility exists for any change in the virus subtype position.

- attitude of the Commission towards export programmes of non-member countries: It was agreed that the Commission would not undertake the study and approval of specific plans for the export of meat from non-member countries. Advice, however, would be given along the lines proposed by the FAO/OIE working group which reported on the establishment of disease-free zones (Paris, September 1971).

### Activities of the Research Group

Dr. van Bekkum in introducing the report of the meeting held by the Research group at Pirbright in October 1972 (see Appendix XVI-3) referred in particular to the

following points:

#### The Future Rôle of the Research Group

The Group considered that its future activities should be covered by:

- (a) annual meetings of the Group only, with invited guests, where research developments and matters referred from the Executive Committee could be discussed;
- (b) larger scientific meetings with participation of a more extended representation approximately every three years;
- (c) increasing training activities under the current fellowship programme augmented by shorter specialized courses on selected new techniques at members' laboratories every three to four years.

The meeting endorsed these proposals unanimously.

#### Functioning of the World Reference Laboratory

In describing the rôle and work of the W.R.L., Dr. Brooksby advised the Commission that detailed information on types and subtypes will be supplied more frequently to the Secretariat of the Commission for distribution to all interested countries (Appendix XVIa).

He confirmed that in case of need, sufficient amounts of seed virus will be made available to start industrial production of exotic vaccines.

#### Election of the Members of the Research Group

The Commission unanimously approved the reappointment of the present membership of the Research Group of the Standing Technical Committee, i.e. Dr. J. van Bekkum (Chairman), Dr. J.B. Brooksby, Dr. L. Nardelli, Dr. E. Michelsen, Dr. J. Leunen, Dr. G. Kubin. In addition, Dr. M. Mussgay was elected a member of the Group.

#### Security at FMD Laboratory

The Group was particularly impressed by the security arrangements at the Animal Virus Research Institute, Pirbright, and the modern isolation units which have recently been constructed (Appendix XVIc).

The Commission recommends Member Governments to study these with reference to security systems in their own laboratories.

The information given by Mr. Bruce, Security Officer of the Pirbright Institute, which is recorded as an appendix to the report of the Research Group Meeting was much appreciated. Further details can be obtained from the Director of the Institute.

#### Meeting of the Research Group in 1973

The Commission agreed that this meeting should be held at Lelystad, towards the middle of October and approved the following agenda:

- (a) further discussion of security measures;
- (b) innocuity and potency testing of inactivated vaccines.

The Commission considers that these two items are of the highest priority at the present time in view of the evidence of the increasing number of vaccine induced outbreaks.

### 3. Future Activities

In reviewing the future activities of the Commission and the Secretariat as outlined in Section IV of the report of the Executive Committee, the Commission agreed that the reestablishment of a favourable FMD position in Europe will be its main objective.

## VIII. ELECTIONS

Chairman of the Commission - A. Nabholz

Proposed by C. Werdelin  
Seconded by J.A. Azevedo

Vice-Chairmen of the Commission - C. Werdelin. L. Bellani

Proposed by B. Henricson  
Seconded by M. Mazlioğlu

Members of the Executive Committee (\*):

1. A. Docquier
2. R. Vollan
3. A.C.L. Brown
4. W. Eckerskorn
5. V. Benko

Proposed by R.P. Gaier  
Seconded by K. Polydorou

## IX. ADOPTION OF THE REPORT

The draft report of the Twentieth Session was approved as presented subject to the amendments made at the meeting and to any necessary editorial changes.

## X. ANY OTHER BUSINESS

It was finally agreed that the XXI Session will be held from 8-11 April 1975.

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\* The change from 5 to 8 Members of the Executive Committee is contained in the amendments to the Constitution, Rules of Procedure and Financial Regulation and attention is drawn to the fact that they are subject to the approval by the Council.

APPENDIX I

POSITION AND CONTROL OF FOOT-AND-MOUTH DISEASE SINCE THE LAST SESSION

INTRODUCTION

This note deals primarily with the evolution and control of foot-and-mouth disease on the European continent. Additional information is provided on the disease position in other regions of the world because of the significance which the disease elsewhere may have in relation to the epizootiology of FMD in Europe itself.

I. POSITION IN EUROPE

The year 1972 marked a serious deterioration of the disease pattern as a whole. The vulnerability of Europe and the persisting weakness of the prophylactic system in a number of countries were amply demonstrated.

Major events were:

1. The return of A<sub>22</sub> virus in southeastern Europe. After four years of disease freedom several outbreaks occurred in Turkish Thrace caused by A<sub>22</sub> virus. The disease penetrated deep into Greece in April 1972 and reached Attika and also Argolis (Peloponnesus). By September the situation had been brought back to normal. Information on the disease situation and the emergency operations undertaken by FAO during the period April to June 1972 was circulated by the Secretary together with the report of the 19th Session. The evolution and control of A<sub>22</sub> virus in southeastern Europe are dealt with in APPENDIX X and also in the Report of the Executive Committee (APPENDIX XVI).
2. The C virus epizootic in central-eastern Europe. The Danube region was the scene of an epizootic in 1968. A similar situation which was however more serious because of a particular sensitivity of swine for the viral agent occurred in October 1972 when 4 countries were suddenly involved in a virus C epizootic. In the following months two other countries had outbreaks. Many farms, mainly piggeries, became exposed to the infection and drastic measures had to be taken in order to prevent the disease from spreading further before vaccination could be applied over large areas. In some instances movement of the human population had to be restricted.

The costs of the prophylactic campaigns against C virus in eastern Europe were rather high because of the large quantities of vaccine which had to be imported from western Europe to protect millions of pigs and the high dosage required in dealing with this species.



Fortunately, general agreement was rapidly reached among laboratories (see World Reference Laboratory Information Sheet No. 19 and IFFA findings attached as Appendix 1, 2 and 3) that all specimens of virus collected in the region were related to an old European C strain. As a result of these findings and the efficient enforcement, both of quarantine measures in and around outbreaks and of movement control of animals and meat supplies within the affected countries it was possible to limit and even to waive severe restrictions on the international trade in live animals and animal products.

In December 1972 and January 1973, reports on the disease situation and measures adopted by the countries for its control were distributed to interested governments by the Secretary (see section II of the Report of the Executive Committee APPENDIX XVI).

3. O virus in central-eastern Europe. When the campaigns against C virus were nearing successful conclusion, cases of O virus infection were reported from Czechoslovakia, Romania and Yugoslavia. The origin and possible interrelationship of these outbreaks have so far remained obscure.

4. Type A in the Iberian Peninsula. In the beginning of November 1972 type A virus appeared in Spain for the first time after a long period during which only types O and C had been observed. The location of the first outbreaks which occurred near the disembarkation port for animals introduced from overseas, and the characteristics of this strain of virus isolated which had a similarity to A<sub>26</sub>, suggested that the origin of the infection was in all likelihood South America.

The disease was brought under control in December 1972 by the combination of a slaughter policy with vaccination using A<sub>5</sub> vaccine carried out over a large area in northern Spain. The results of studies carried out by IFFA, Lyons, on the virus isolated in 1972 are attached as APPENDIX IV (2nd section).

The disease, caused again by A type virus, reappeared in the same region in February 1973.

5. Type A in Bulgaria. After seven years of disease freedom type A started to spread in northern Bulgaria in January 1973. The strain was identified at Sofia as A<sub>5</sub> and Pirbright confirmed the findings on 22 January 1973 (APPENDIX V).

6. Swine vesicular disease was reported in Austria, Italy and Poland and the United Kingdom towards the end of 1972. Outbreaks have since occurred in France. Problems of differential diagnosis, case reporting, disease control and prevention were considered to be of sufficient importance to justify the convening of an emergency consultation at FAO Headquarters which took place on 9 January 1973 and the report of the meeting as well as the ensuing recommendations were immediately circulated to all interested national and international authorities APPENDIX VI. Outbreaks continued to occur in the following months, especially in the United Kingdom.

Disease latency. In addition to the above, sporadic cases of foot-and-mouth disease occurred in various countries and in widely dispersed areas, thus showing that problems of disease latency are far from being solved in Europe. In some cases outbreaks were correlated with the movement of infected animals, in others the infection appeared rather to have connections with previous vaccinations. Safety of vaccines, subclinical infections and the carrier state are therefore still very important problems.

Table 1 indicates the outbreaks reported in 1972, the types and the dates of the last occurrence, where appropriate.

The epizootiological significance of figures indicating the "outbreaks" reported in Table I will be better understood, especially in the case of eastern countries, in conjunction with the information (see country reports) on numbers relative to the animals actually existing "in the outbreaks" (cooperative farming - industrial piggeries etc.).

## II. CONTROL MEASURES AND PROPHYLACTIC SCHEMES IN EUROPE

The application of the stamping out policy, on occasions combined with ring or area vaccination, has served in western Europe to restore a favourable situation rapidly each time sporadic outbreaks have occurred. This policy has been implemented under the cover of general vaccination which has been applied, as in the past, in France, Belgium, Luxembourg, the Netherlands, Italy, the Federal Republic of Germany, Switzerland and the Democratic Republic of Germany. This applies also to Spain where general vaccination with bivalent vaccine has been further extended to cover the whole of the country. A large proportion of the pig population in Spain has also been submitted to vaccination.

Schemes of general vaccination have been conducted in the U.S.S.R., using bivalent vaccines while area vaccination has been carried out in Czechoslovakia in frontier areas, Hungary, Greece and Turkey.

In the other parts of central, eastern and southeastern Europe, the animal population remained once again unprotected until emergency programmes had to be carried out under pressure of the disease.

Table 2 shows the position of prophylaxis in Europe (regular vaccination only).

## III. THE NEAR EAST (AND NORTHERN AFRICA)

The disease pattern in the Near East did not change significantly in 1972. Most affected were Iran, Iraq and Lebanon, but the disease was also enzootic in other countries. According to the typing results of the World Reference Laboratory and the laboratories at Teheran and Cairo virus type O has been dominant over type A in the region. The O strains found in the Persian Gulf area and in Soudi Arabia may have been introduced into the region with imported animals, the major source of a steadily increasing traffic being eastern Africa. Insufficient veterinary control over animal imports into the region still prevails.

Bivalent vaccines consisting of A<sub>22</sub> and O viruses, produced chiefly at Teheran, were used. Monovalent O vaccination has been applied in ring vaccination operations in the Arab Republic of Egypt and also in some northern African countries.

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Israel has been free of foot-and-mouth disease for two years. General vaccination cover is provided for the animal population of the country.

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Table 1a gives the outbreaks and types recorded in the Near East and northern Africa.

## IV. SOUTH AMERICA

Table 1b gives some statistical data on disease incidence and virus subtypes in those South American countries (or states) which are particularly important in international trade. There was no major change in 1972 in disease incidence or in type distribution. No new subtype of virus has been announced by the Pan American Foot-and-Mouth Disease Center, Rio de Janeiro, or by the World Reference Laboratory, Pirbright.

Progress has been made in the planning of new prophylactic schemes, especially in Brazil, and the organization of new vaccine production units in Colombia.

Difficulties persist in acceptance of the concept that more consistent results could be achieved if prophylaxis could be based on systematic and controlled application of potent vaccines rather than in the frequency of uncontrolled vaccinations carried out by farmers.

A disease-free zone has been reestablished in Patagonia after the outbreak reported in December 1972 was stamped out. This programme continues with success.

The disease-free area concept and possibilities to implement it in various countries are receiving increasing consideration in South America and might lead to important developments both in northern countries of the continent, especially Colombia, and in the southern exporting countries.

#### V. EAST AFRICA

The epizootiological importance of East Africa for Europe is fully recognized. SAT1 and possibly A<sub>22</sub> found their way through the Near East in 1962 and 1965 respectively into Turkey and southeastern Europe.

Dangers of infection have not ceased; on the contrary, the increasing demand for meat both in the Near East and Europe may favour new introductions of virus, if utmost safeguards are not taken, especially in controlling the illegal traffic of animals and meat.

The implementation of the disease-free zone concept has advanced encouragingly in Kenya where feedlots have been organized within a specially controlled area. Difficulties have already been experienced in maintaining such zones free from foot-and-mouth disease but local authorities are determined to restore the situation by improving the efficiency of the prophylactic measures currently used. Virus SAT2 has recently become a major problem in eastern Africa.

Initiatives for the establishment of disease-free zones are being taken in Tanzania and Sudan; they are also under consideration in Ethiopia.

TABLE I  
Outbreaks of foot-and-mouth disease and virus types recorded in Europe during 1972  
(Dates in brackets relate to the last outbreak recorded)

EUROPE	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Iceland never had FMD												
Norway (1952) Sweden (1966)												
Finland (1959) Ireland (1941)												
Denmark (1970)												
U.K. Great Britain (1968)												
U.K. North. Ireland (1941)												
Belgium (August 1971)												
Netherlands	7											
	0											
Luxembourg (1963)												
France				2								
			0									
Fed. Rep. of Germany (1)	1		9	2	3	1	2					
	C		A C	A C	A	C	C					
Italy								2	3	2	1	2
								0	0	0	A	0 C
Malta (1946)												
Switzerland (3)												
Austria (2)												
Albania (1959)												

Notes: A blank indicates no outbreak. Subtypes: A = A<sub>7</sub> (A<sub>5</sub>) 0 = O<sub>1</sub>

- (1) The majority of "outbreaks" were "cases" of disease in farms where vaccination had been applied 10-20 days previously.
- (2) Outbreaks (C and O viruses) occurred between January and April 1973.
- (3) One outbreak (post-vaccination) caused by virus O in March 1973.

Table I (contd.)

	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
EUROPE												
Spain	35	22 0	42	33 C	26	7 C	5		5	9	132 A* C	45 A* C
Portugal (November 1971)												
German Dem. Republic												
Poland (July 1971)												
Yugoslavia										9 C	3 C	
Hungary										7 C	11 C	
Czechoslovakia											9 C	6 C
Romania								1 0		5 C	6 C	
Bulgaria (1)												
U.S.S.R. (2)	31 OA*	38 OA*	51 OA*	22 OA*	25 OA*	37 OA*	45 OA*	37 OA*	50 OA*	97 0 A* C	73 0 A* C	63 OA*
Cyprus (1964)												
Turkey	10 OA*	13 OA*	22 OA*	63 OA*	116 OA*	206 OA*	251 OA*	199 OA*	187 OA*	125 OA*	76 OA*	83 OA*

Notes: A blank indicates no outbreak. Subtypes: 0 = O<sub>1</sub>; A\* = A<sub>22</sub> (incl. A<sub>28</sub>); A\*\* = A Spain 1972(A<sub>26</sub> ?); C = C<sub>1</sub> Group

(1) Outbreaks occurred in January 1973 (virus A<sub>5</sub>).

(2) Soviet Republics of Lithuania, Lettonia and Estonia disease free since 1966.

Table Ia  
Outbreaks and virus types recorded in the Near East and northern Africa during 1972

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
<u>NEAR EAST</u>												
Lebanon	2	2	3	1	7	10	19	7	15	4	7	21
Jordan								1	1	+	2	
Syria				1							14	
Iraq	1	2	4	4	6	11	11	12	7	2	2	4
Iran	12	15	27	32	133	178		157	77	41	28	51
Kuwait, Bahrain, Saudi-Arabia, Aden					+	+						
Israel (last outbreak: February 1971)	-	-	-	-	-	-	-	-	-	-	-	-
<u>NORTHERN AFRICA</u>												
Egypt (Arab Republic)	1	1	4	-	1	-	-	-	-	-	-	-
Lybia												
Tunisia	-	-	5	11	9	19	7	3	4	-	1	1

Notes: A blank indicates no information received      A dash indicates no outbreak      + indicates presence of disease

Types and subtypes: Type O dominant in the region  
Type A was found in Iran, Lebanon and once in the Arab Republic of Egypt (A<sub>22</sub>).

Table Ib  
Outbreaks recorded in some countries of South America in 1972  
Types and subtypes of the FMD virus

SOUTH AMERICA	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Argentina	35 O A C	44 O A C	34 O A C	20 O A C	46 O A C	83 O A C	107 O A C	142 O A C	250 O A C	181 O A C	312 O A C	203 O A C
Chile	2					2	1	-	-			
Uruguay	1			6 O A	1 A	4 A	5 O A	17 O A C	4 A			
Paraguay	16	2	16		3	-	2	5	4			2 O C
Rio Grande do Sul			84		57 O A C	81 O A C	119 O A C	148 O A C	132 O A C		76	372 O A C
Colombia	19	41		20	9	27	26	107	148	132		
Venezuela	3 O A	6 O A	6 O A	6 O A	5 O A	1	6 O A	6 O A	5 O A	7	4	

Notes: A blank indicates no information received A dash indicates no outbreak recorded.

Subtype position in 1972 (\*): Argentina O<sub>1</sub>, A<sub>24</sub>, A<sub>26</sub> (sporadic), C<sub>5</sub> (= C Argentina 1969)  
 Chile O<sub>1</sub>, A<sub>26</sub>, C<sub>2</sub> (= C 997)  
 Uruguay O<sub>1</sub>, A<sub>24</sub>, A<sub>26</sub>, C<sub>2</sub>  
 Paraguay O<sub>1</sub>, A<sub>24</sub>, C<sub>2</sub> (sporadic), C<sub>3</sub> (= C Resende)  
 Brazil O<sub>1</sub>, A<sub>24</sub>, C<sub>3</sub>  
 Colombia O<sub>1</sub>, A<sub>18</sub> (sporadic), A<sub>24</sub> (sporadic), A<sub>27</sub>, A<sub>32</sub> (sporadic)  
 Venezuela O<sub>1</sub>, A<sub>32</sub>

(\*) Information kindly supplied by the Pan American Foot-and-Mouth Disease Center, Rio de Janeiro.

Table II  
Position of Foot-and-Mouth Disease Prophylaxis in Europe 1972

Country	VACCINATION PROGRAMMES				VACCINES	
	Species vaccinated	Period of vaccination	Territory covered by vaccination	Valencies cattle dose cost	Potency required Results	
Netherlands	A. All cattle above four months	From 1 Feb to 15 April	The entire country since 1953	Trivalent OAC (O <sub>1</sub> A <sub>10</sub> C) Cattle: 15 cc. 1.50 D.Fl. Vaccine + injection: D. Fl. 3.45 (1)	At least 5 cattle PD <sub>50</sub> . Resistance to generalization after intradermolingual challenge with 10,000 cattle ID <sub>50</sub> . PD <sub>50</sub> are calculated from three groups of 5 cattle. Average results of state control: between 6 and 10 cattle PD <sub>50</sub> .	
	B. All cattle born after 1 Oct. of previous year	From 1 Sept. to 15 Dec.	The entire country since 1967			
Belgium	All cattle above three months of age	From 1 Dec. to 31 March	The entire country since 1962	Trivalent OAC (O <sub>1</sub> A <sub>5</sub> C <sub>2</sub> ) cattle: 70 cc. sheep: 5 cc. 20 B.Frs.(2)	More than 5 cattle PD <sub>50</sub> the challenge being 10,000 ID <sub>50</sub> intralingually (pigs: twice the cattle dose)	
	The maximal interval between two consecutive vaccinations is 13 months					
Luxembourg	All cattle above two months of age	From 27 Nov. to 31 Dec.	The entire country since 1966 180,686 cattle vaccinated in 1972	Trivalent OAC (O <sub>1</sub> A <sub>5</sub> C <sub>2</sub> ) Cattle: 5 cc. Price 23.50 B. Frs. incl. injection (3)	More than 5 cattle PD <sub>50</sub> the challenge being 10,000 ID <sub>50</sub> intralingually.	

Notes: (1) vaccine and vaccination cost borne by the owner.

(2) vaccine and vaccination cost, i.e. 50 B. Frs. for the first and 35 B. Frs. for the following animal, is entirely borne by the owner.

(3) vaccine free of charge; vaccination cost borne by the owner.



Table II contd.  
Position of Foot-and-Mouth Disease Prophylaxis in Europe 1972

Country	VACCINATION PROGRAMMES			VACCINES	
	Species vaccinated	Period of vaccination	Territory covered by vaccination	Valencies cattle dose cost	Potency required and results
France	A. All cattle above six months	All the year round but mainly from Nov. to May	A. The entire country since 1962	Trivalent OAC (O Allier 1960, O Lausanne, A C Vosges 1960) cattle: 5 cc. sheep: 1.7 cc. Price: 2.18 FF. (triv. dose) (1)	Principle: 85% protection rate in cattle against generalization by intralingual challenge. Methods and minimums: Index K (Lucam) = 1.2 Index C = 10 <sup>2</sup> Index S = 1.5
	B. Sheep and goats	Before transhumance	B. The frontier departments of the Pyrennees		
Switzerland	All cattle born before 1 January 1.627.840	From 15 Feb to 15 May	The entire country	Trivalent OAC Cost of vaccine: SF.1.6 (2); cost of injection SF.1.7	Vaccines almost entirely imported from France.
Federal Republic of Germany	All cattle above four months	Late in winter before admission to pasture	The entire country since 1965	Trivalent OAC (O <sub>1</sub> A <sub>5</sub> C) Dose: 5 cc. cost: DM 3.- (3)	Three cattle per type are challenged by rubbing a virus suspension on the tongue. No generalization admitted.
German Democratic Republic	All cattle above five months	From 1 Oct. to 31 Dec.	The entire country	Trivalent OAC (2)	

Notes: (1) vaccine and vaccination paid by owner; (2) Vaccine and injection (total cost: S.Fr. 3.30) free of charge to owner; (3) In some "Länder" vaccination is free of charge, in others the owner is charged 50% of cost.

Table II contd.  
Position of Foot-and-Mouth Disease Prophylaxis in Europe 1972

VACCINATION PROGRAMMES				VACCINES	
Country	Species vaccinated and age	Period of vaccination	Territory covered	Valencies cattle dose cost	Potency required and results
Italy	All cattle above three months (and sheep and goats sent to alpine pastures)	A. From 15 Sept. to 15 Dec. B. From 1.4 to 30 June	The entire country since 1968, the Po valley since 1964	Trivalent OAC (O <sub>1</sub> A <sub>7</sub> C) 5 cc. Lit. 180 (1) (2)	8 PD <sub>50</sub> measured on cattle Very good results obtained so far.
Spain	A. All cattle above 4 months and sheep and goats in special areas.	Spring and Autumn.	The entire country. Animals vaccinated Cattle: 4,245,067 Sheep: 1,738,570 Goats: 275,771	Generally O/C. OAC at border areas with France. (3)	A method of testing based on the cattle PD <sub>50</sub> determination has been started.
	B. Swine: compulsory for gilts, sows and boars above 30 kg of weight	All the year round	The entire country. 884,446 pigs vaccinated in 1972.	O/C concentrated Dose: 2 cc monovalent 5 cc trivalent (BHK vaccine) 8 cc. (Cerdod)	Willem's method.
Cyprus	All cattle above 6 months, sheep and goats	Spring and Autumn	The whole country (cattle) selected areas (sheep and goats).	Trivalent OAC (1)	
U.S.S.R.	All cattle above three months (85 million) sheep, goats, pigs	Any time of the year according to local needs.	Frontier areas and all other territories of the Union exposed to infection.	Monovalent O or A <sub>22</sub> or A <sub>7</sub> cattle= 5cc sheep= 5cc 6 Kop. (1)	5 cc of monovalent O protected 5 out of 6 cattle against generalization; 5 cc of monovalent A <sub>22</sub> protected 6 out of 6. PD <sub>50</sub> value for guinea pigs: lower than 0,35 cc.

Notes: (1) Vaccine and vaccination programme paid by Government

- (2) Veterinarians receive the following reimbursement fee from the State  
Herd fee= Lit. 800 for 1 to 5 vaccinated animals; Lit. 600 for 6 to 20 vaccinated animals plus a fee of Lit. 200 or 100 respectively for each vaccinated head of cattle or sheep.
- (3) Vaccine free of charge; vaccination paid by owner.

Table II contd.  
Position of Foot-and-Mouth Disease Prophylaxis in Europe 1972

VACCINATION PROGRAMMES				VACCINES	
Country	Species vaccinated	Period of vaccination	Territory covered	Valencies cattle dose cost	Potency required and results
Hungary*	Cattle above three months of age	One program 1 March to 30 April	60% of the national territory	Trivalent OAC (1)	80% protection rate in cattle against generalization by intradermolingual challenge
Czechoslovakia*	Cattle above three months	In Spring and Autumn	The frontier areas in a depth of 15-20 km; around FMD institutes and all other areas exposed to infection	Bivalent O A (O <sub>1</sub> A <sub>5</sub> ) occasionally monovalent C Cz. Kr. 5.60 (1)	Five cattle per type are challenged by rubbing a virus suspension on the tongue. One generalization tolerated.
Denmark	Cattle, sheep and goats (18,000 animals)	Autumn and Spring	Within a 25 km radius around the FMD Institute (Lindholm)	Trivalent OAC 30 cc (1)	2 cattle challenged intradermally with 20,000 mice ID <sub>50</sub> and 2 cattle challenged by friction on the tongue. Neutralization test. In tubes: minimum titre 1/32. In mice minimum titre 1/128.
Austria*	Cattle, sheep, goats and pigs	A. Autumn B. Spring	Around the FMD Institute (Vienna) Animals to be sent to mountain pastures	OAC cattle 25cc. sheep 12 cc. 15 A. Shillg.(1)	6 cattle are vaccinated with 8 cc of 1 : 8 dilution of monovalent vaccine and challenged intradermolingually with 10,000 ID <sub>50</sub> . Maximum number of generalizations admitted : 3.

Note: (1) Vaccine and vaccination free of charge to owner.  
\* Emergency operations are not considered in this table (see country reports).

Table II contd.  
Position of Foot-and-Mouth Disease Prophylaxis in Europe 1972

Country	VACCINATION PROGRAMMES			VACCINES	
	Species vaccinated	Period of vaccination	Territory covered by vaccination	Valencies cattle dose cost	Potency required Results
Turkey	Cattle, buffaloes, sheep and goats	March-June in buffer zones Ring-vaccination all year round	A. Turkish Thrace including Istanbul province B. Frontier areas in eastern and southern Anatolia C. State and dairy farms	O <sub>1</sub> /A <sub>22</sub> dose: 5cc. (sheep 2 cc.) vaccination fee: 30 Kurus for cattle, 20 Kurus for sheep (1)	6 cattle per batch (3 cattle per type are challenged intradermally (4 controls)
Greece	Cattle and sheep above 3 months of age	A. campaign: Jan - March 1972 B. May-July 72 C. Campaign Nov. 1972 - Jan. 1973	A. Buffer zone in Evros (Thrace) (km. 120 x 30) B. Evros, Attika and other districts C. See B.	A. Monov. O <sub>1</sub> dose: 5 cc (sheep 2 cc) B. Monov. A <sub>22</sub> C. Monov. A <sub>22</sub> followed by O <sub>1</sub> in Evros. (1)	3-4 cattle challenged intralingually with 10,000 I.D. <sub>50</sub> No generalization admitted.
Bulgaria *	Cattle and goats above three months	Spring and autumn	30 km buffer zone along frontiers with Turkey and Greece and at frontier posts	Trivalent O A C (1)	A. 100% protection against generalization in 4 cattle intralingual challenge with 20,000 I.D. <sub>50</sub> B. seroneutralization index above 3.
Yugoslavia Poland and Romania *	vaccinate only in case of outbreaks				Potency requirements in Romania: 2ml of the ordinary dose must contain 8 cattle PD <sub>50</sub> as a minimum.

Notes: (1) Vaccine and vaccination free of charge to owner;

\* Emergency operations are not considered in this table (see country reports Chapter I).

THE ANIMAL VIRUS RESEARCH INSTITUTE

APPENDIX II

W.R.L. INFORMATION SHEET NO. 19

FMD TYPE 'C' STRAINS FROM ROMANIA AND HUNGARY

Type 'C' viruses have been isolated from material received from outbreaks in Romania and Hungary, they are as follows:-

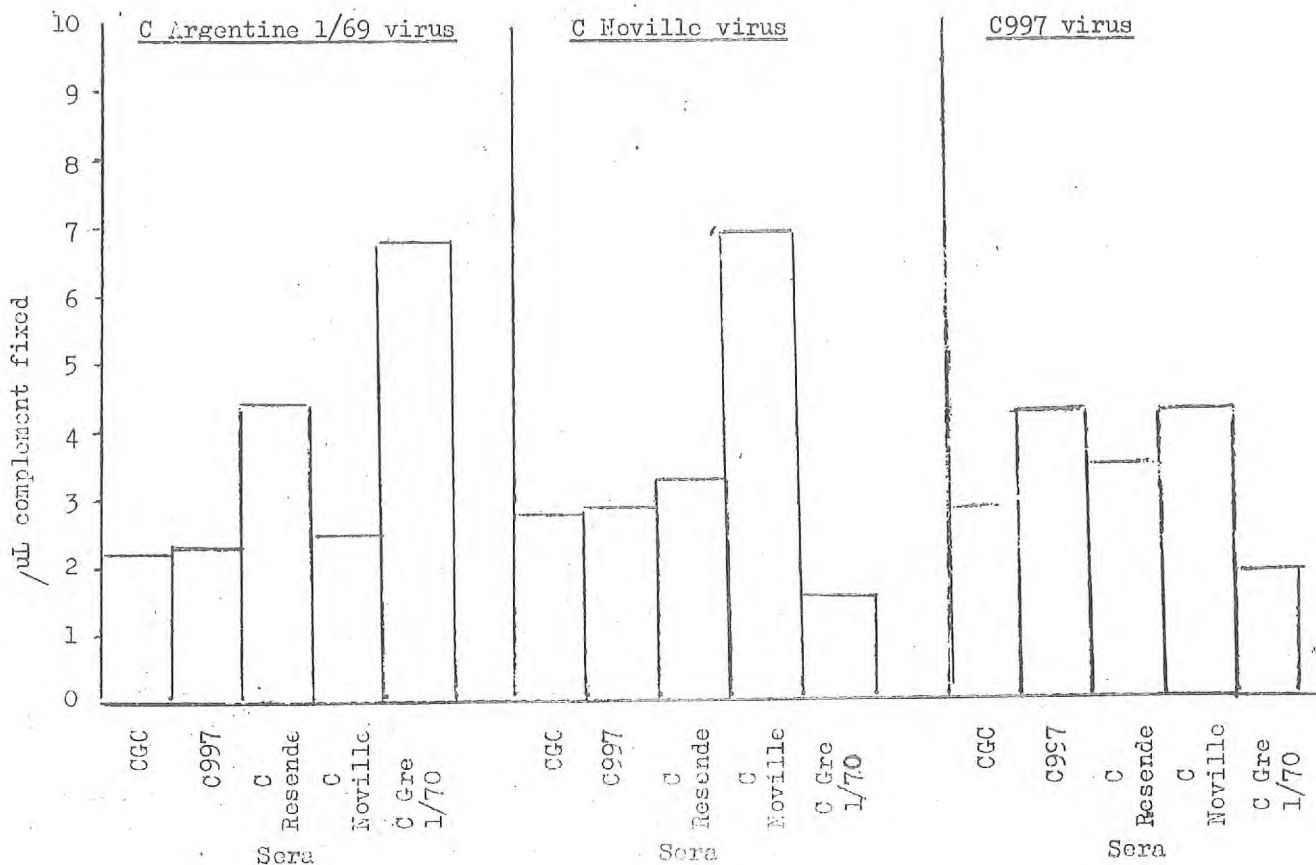
Rom 1/72 - Received from Dr. Munțiu, 30.11.72. No further details given.

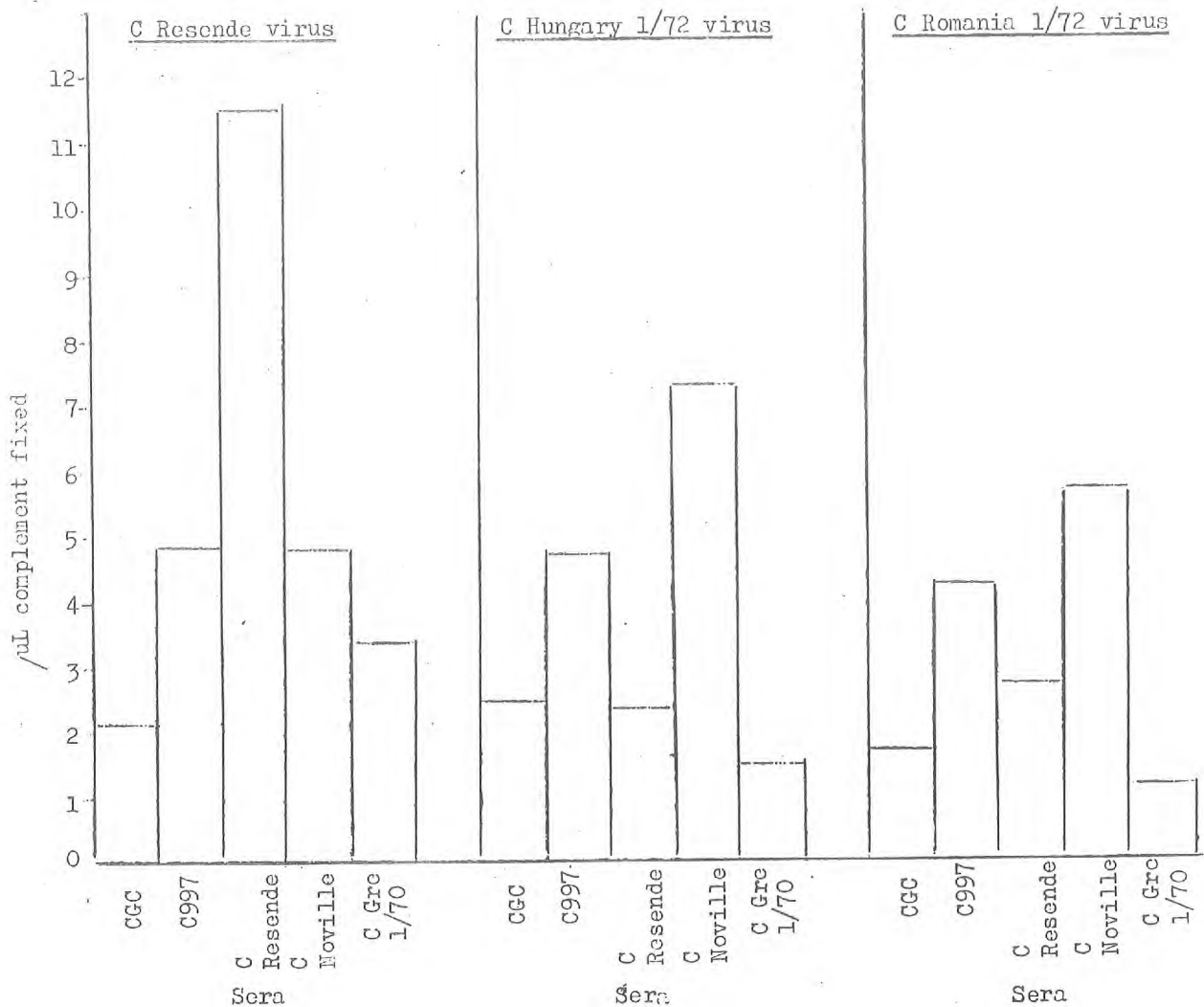
Hun 1/72 - Received from Dr. Bognár Károly, 30.11.72. This was a field sample, otherwise no further details provided.

These new viruses have been compared in one-way complement fixation test with four reference strains, which were:-

- C Argentine 69 - for details see Information Sheet No. 8
- C997 ) - see Information Sheet No. 3
- C Resende )
- C Noville - C Vaccine Strain received from T.V.F. Pay, Esq., Burroughs Wellcome.

Because no high-titred C Argentine 69 hyperimmune guinea-pig serum was available, antiserum to Gre 1/70 virus, previously shown to be related to C Argentine 69 and C Belgium 69, has been employed in these tests.





Comments on results

1. C Rom 1/72 and C Hun 1/72 have similar profiles.
2. Both the new strains have a greater fixation with C Noville antiserum and cross-fix to a lesser extent with C997 serum.
3. Little fixation with Grc 1/70 serum indicating no similarity with the group of strains including Bel 1/69 and Arg 1/69.
4. In view of the good reaction with C Noville serum and the general similarity between C Noville and other European vaccine strains (see report to European Commission meeting (Ankara 1971)), the current European C vaccine would seem best likely to protect against the new strain.

21st December, 1972

A.E.M. ARROWSMITH

RESULTS OBTAINED FROM SAMPLES OF VIRUS C TAKEN DURING THE PRESENT  
EPIZOOTIC OF FOOT-AND-MOUTH DISEASE IN EUROPE\*

A. Brun, H. Favre, J. Fontaine, H. Gilbert, Y. Moreau, J. Terre

I. INTRODUCTION

Since autumn an epizootic caused by virus C has been rampant in Europe, particularly in Central Europe. Various sanitary and prophylactic measures have been taken in order to bring the disease under control and we have been able to study the samples taken in:

- Hungary (PHYLAXIA - Dr. M. Szent-Ivanyi)
- Yugoslavia (Veterinarski Fakultet Beograd)
- U.S.S.R.
- Romania (Dr. Muntiu)

II. RESEARCH CARRIED OUT BY IM-IFFA

We have carried out both serological and immunological studies and our initial findings are presented below:

1. Serological study:

Table 1

Immune sera Antigens	C Vosges 60	C Belgium 69	C Greece 71
C1 Vosges 60	1,00	0,19	0,20
C Belgium 69	0,32	1,00	-
C Greece 71	0,29	0,42	1,00
C Hungary 72	<u>0,90</u>	0,13	0,10
C Yugoslavia 72	<u>0,67</u>	0,11	0,14
C U.S.S.R. 72	<u>0,80</u>	0,17	0,13
C Romania 72	<u>0,70</u>	0,15	0,11

(\*) Research carried out at IFFA-MERIEUX 254, rue M. Mérieux 69342 Lyons, Cedex 2  
Director: Dr. C. Mackowiak

This study shows that all strains are relatively close to C Vosges 60, classified within the subtype C<sub>1</sub>. None of these samples could be classified within another subtype.

This is a one-way serological study and requires more precision and should be completed by a reciprocal study, especially as regards the sample taken in Yugoslavia which will be carried out as soon as possible, thus affording measurement of the degree of relationship according to the formula:

$$R = 100 \sqrt{r_1 \times r_2}$$

2. Immunological Studies:

For this study virus C Yugoslavia, which in the one-way serological test proved to be the least related to virus C Vosges, was chosen.

The results obtained are presented in tables 2, 3 and 4.

Table No. 2

Monovalent type C vaccine

Homologous test: C Vosges 60

	Ton- gue	Mon- th	Feet		
1 dose					Average antibody titer in respect of virus C Vosges:  1,52

	Ton- gue	Mon- th	Feet		
1/4th dose					Average antibody titer in respect of virus C Vosges:  1,6

























	Ton- gue	Mon- th	Feet		
Controls					< 1

Average bovine potency: > 5,5



Table No. 3

Monovalent type C vaccine  
Heterologous test: C Yugoslavia 72

	Ton- gue	Mou- th	Feet			
1 dose						
"						
1/4th dose						
Controls						

Average antibody titer in respect to virus C Vosges:

1,84

1,42

< 1

Monovalent type C vaccine

Post vaccination test: C Yugoslavia 72

Vaccination with one dose of vaccine.

Booster, 25 days after vaccination with one dose of vaccine.

	Ton- gue	Mou- th	Feet	
1 dose				
+ 1 dose				

Average antibodies in respect of virus C Vosges:

2,38

	Ton- gue	Mou- th	Feet	
Controls.				

These findings cannot be considered for immunological comparison as the controls did not generalize when infected with virus C Yugoslavia. Nevertheless, important tongue lesions as well as other lesions were observed on the controls whereas lesions in the inoculated animals were absent or minimal. To make these tests immunologically valid they must be repeated with virus adapted to cattle.

III. CONCLUSIONS

The findings of the one-way serological study are in line with those obtained by the World Reference Laboratory for Foot-and-Mouth Disease, Pirbright, United Kingdom.

The strain virus C Yugoslavia that has been studied is closely related to the strains used at present for the preparation of the foot-and-mouth disease vaccines and particularly to those used by our Institute.

An interesting feature of the virus under investigation should be noted: it seems to be of low virulence for cattle. It is important to note, however, that only one sample has been tested in cattle but this same virus caused generalized disease in pigs in less than 48 hours. It will therefore be necessary to adapt this strain to cattle before immunological conclusions can be drawn.

January 1973

APPENDIX IV

Study on two types of foot-and-mouth disease strains  
concerning the present epizootic in Europe

A. Brun, H. Favre, J. Fontaine, H. Gilbert, Y. Moreau, J. Terre

Introduction

Pursuing our study on various samples of foot-and-mouth disease virus taken during the present epizootic, we submit the following information:

- an immunological study of C virus from Yugoslavia adapted to cattle;
- a serological study on a type A virus, isolated in Spain during 1972.

I. Immunological study of the Yugoslav C strain

7 days after the test, we obtained the results as set out in the following page.

Conclusion

This immunological test confirms therefore the results of the preceding serological tests.

The present vaccine protects well when challenged with strains of the 1972/73 epizootic.

\* Research carried out at IFFA-MERIEUX, 254, rue M. Mérieux 69342 LYON CEDEX 2  
Director: Dr. C. Mackowiak

YUGOSLAV STRAIN: Immunological test

The reading of the lesions was done on the seventh day.

1 dose

Ton- gue	Mou- th	Feet		

Average antibody titer in respect to virus C Vosges:

1,7.

1/4th dose

Ton- gue	Mou- th	Feet		

<1,43

Controls

Ton- gue	Mou- th	Feet		

<1

Cattle potency 7/8

II. Serological study of the Spanish type A virus

This virus was isolated in Spain in the region of Santander in October 1972.

The results obtained are outlined in the following table:

Immune sera Antigens	A Allier 1960	A <sub>22</sub> USSR 550	A <sub>25</sub>	A <sub>26</sub> Argentina 1966
A Allier 1960	1	0,20	-	-
A <sub>22</sub> USSR 550	0,18	1	-	-
A <sub>25</sub> Argentina 1959	-	-	1	-
A <sub>26</sub> Argentina 1966	-	-	-	1
A Spain 1972	0,26	0,4	0,4	0,82

Conclusion

This strain is rather distant from the A virus used for the production of vaccine (A Allier 1960) and seems very similar to A<sub>26</sub> Argentina 1966.

(February 1973)

THE ANIMAL VIRUS RESEARCH INSTITUTE

APPENDIX V

W.R.L. INFORMATION SHEET NO. 20

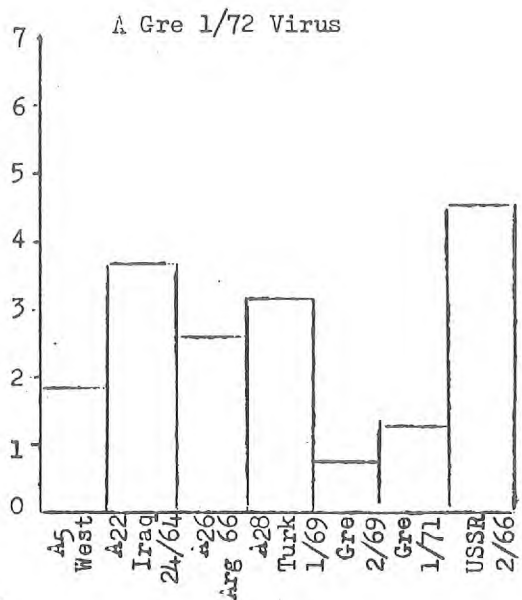
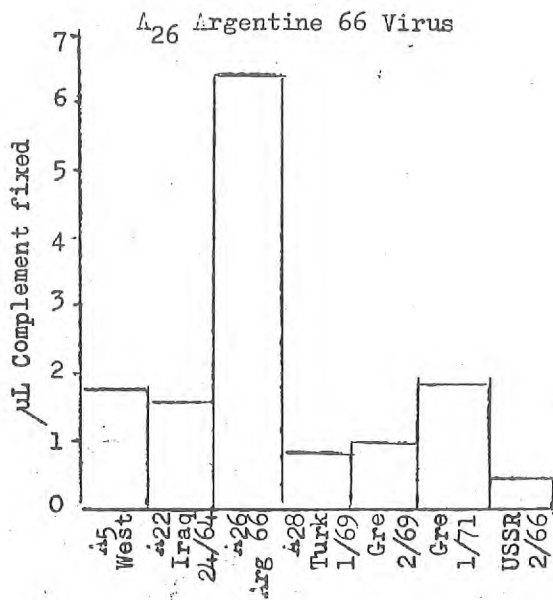
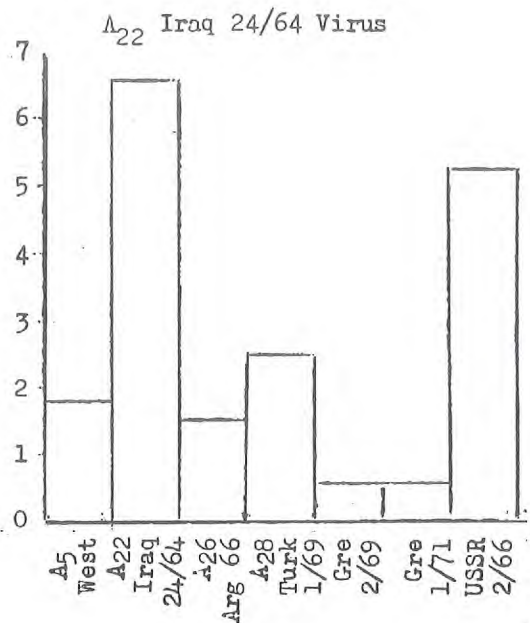
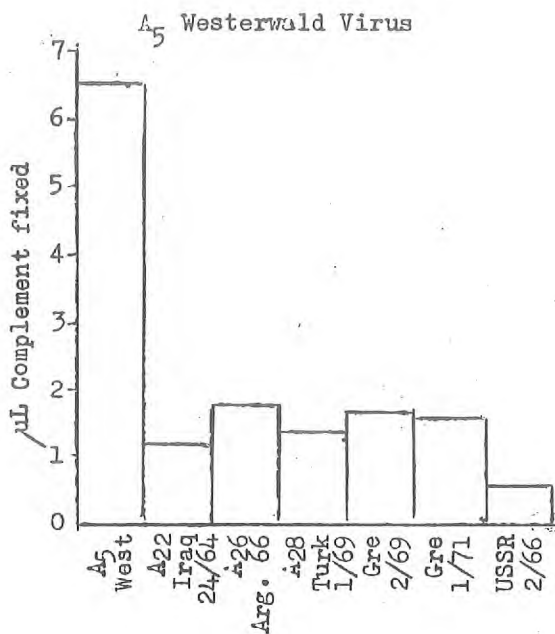
FMD TYPE "A" STRAIN FROM BULGARIA

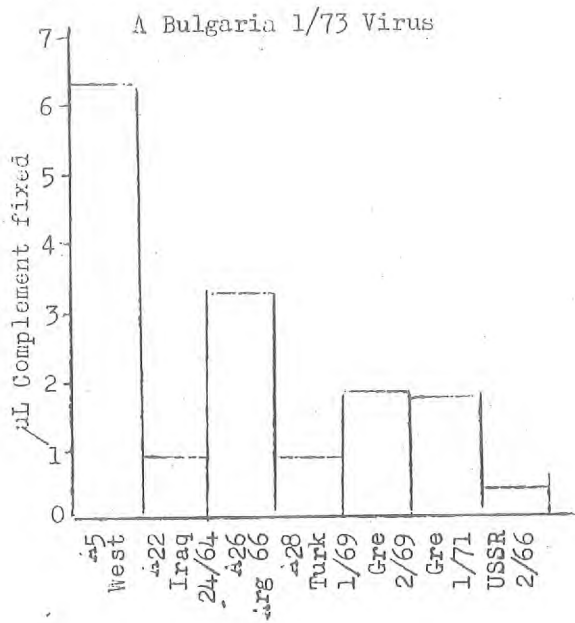
An 'A' strain of FMD virus has been received from Bulgaria, and examined on one-way complement-fixation tests employing the reference strains as used for Gre 1/72 (WRL Sheet No. 13).

Details of the new isolate are as follows:-

BUL 1/73

A samples received from Dr. Chenchev on 8.1.73 from an outbreak in cattle in Nova Cherna village, district of Silistra, Bulgaria.





Comments on Results

1. Profiles of A<sub>5</sub> Westerwald and A. Bul 1/73 viruses are similar.
2. With A. Bul 1/73 there is some cross-fixation with A<sub>26</sub> Argentine antiserum, greater than that with A<sub>5</sub> virus.
3. The new virus shows no similarity with the profiles of A<sub>22</sub> Iraq 24/64, A<sub>26</sub> Argentine, or Gre 1/72.
4. The high fixation with A<sub>5</sub> serum suggests that the use of A<sub>5</sub> vaccine would best protect against the new strain.

22nd January, 1973

A.E.M. ARROWSMITH

APPENDIX VI

Report of the Ad hoc Consultation on Swine Vesicular Disease and the  
Foot-and-Mouth Disease Position in Eastern and Southeastern Europe

Rome, 9 January 1973

On 29 December 1972, Dr. A.G. Beynon, Chairman, European Commission for the Control of Foot-and-Mouth Disease, and Dr. R.B. Griffiths, Chief, Animal Health Service, FAO, discussed the appearance in 1972 in several European countries of a disease in pigs, provisionally described as swine vesicular disease, that resembles foot-and-mouth disease (FMD) clinically but which has a distinct etiology, the responsible virus having been already recognized in some countries as an enterovirus. It was felt that the problem of differential diagnosis between FMD and swine vesicular disease, and the requirements for control of the latter disease, are such that an ad hoc consultation among authorities in the countries affected, and with other interested countries, should be held. Accordingly, a meeting was convened under the auspices of the FAO European Commission for the Control of Foot-and-Mouth Disease at FAO Headquarters on 9 January 1973. The opportunity was also taken at the meeting to review the FMD situation in Eastern and Southeastern Europe.

The participants were as follows:

- Dr. A.G. Beynon (United Kingdom), Chairman, European Commission for the Control of Foot-and-Mouth Disease
- Dr. J.B. Brooksby (United Kingdom), representing OIE
- Dr. E. Andersen (Denmark) representing Dr. Chr. Werdelin (Denmark)
- Dr. R.P. Gaier (Austria)
- Dr. G. Kubin (Austria)
- Dr. L. Bellani (Italy)
- Dr. L. Nardelli (Italy)
- Dr. I. Kolacs (Poland)
- Dr. G. Wisniewski (Poland)
- Dr. L. Dhennin (France)
- Dr. R.E. Reichard (U.S.A.)

FAO Secretariat:

- Dr. R.B. Griffiths, Chief, Animal Health Service
- Dr. G.M. Boldrini, Secretary, European Commission for the Control of Foot-and-Mouth Disease
- Miss Doris D. Guarino, Administrative Assistant, European Commission for the Control of Foot-and-Mouth Disease

FAO Staff:

- Dr. W. Ross Cockrill, Assistant to Director, Animal Production and Health Division
- Dr. T. Szent-Ivanyi, Senior Officer, Animal Health Service
- Dr. H.O. Königshöfer, Animal Health Officer (Disease Intelligence), Animal Health Service



Dr. R.B. Griffiths, in welcoming the participants on behalf of the Director-General, FAO, spoke of the importance of the problem now facing European countries following the appearance of swine vesicular disease in several countries of the continent.

Dr. A.G. Beynon was then appointed Chairman and in his introductory remarks he stressed the need to obtain the fullest possible information on swine vesicular disease. He drew attention to the occurrence in Italy in 1966 in the Po Valley of outbreaks of a disease in pigs simulating FMD but caused by an enterovirus and he referred to similar outbreaks observed in Hong Kong in 1971. He said that swine vesicular disease was of great importance not only as a disease of pigs per se, but as a complicating factor in the control of FMD; it would be extremely difficult to exert effective control of FMD if swine vesicular disease became widespread. It was necessary to provide guidelines on differential diagnosis and to make recommendations on the control of swine vesicular disease to assist countries to deal expeditiously with the problem.

#### 1. SWINE VESICULAR DISEASE

The meeting had before it a number of working papers which are listed at the end of this report\*.

Dr. Beynon said that swine vesicular disease appeared in the United Kingdom for the first time on 11 December 1972. There had been 15 outbreaks in the West Midlands area up to 8 January 1973. Five of these were considered to be primary outbreaks and occurred on premises where garbage was fed to the pigs; the remaining outbreaks were secondary, related to pig movements and market contacts. In the first outbreaks it was suspected that the disease might be FMD and therefore the slaughter of ruminant stock in contact with affected pigs, as well as the slaughter of the pigs, was undertaken. When it became clear that the disease was not FMD, but swine vesicular disease, the slaughter policy was restricted to pigs. Nevertheless, movement restrictions were imposed on in-contact ruminant stock for six weeks on infected farms because of the possibility that cattle and perhaps other ruminants might harbour the virus and act as carriers for a limited period. Extensive tracing activity, including detailed examination of garbage, had not revealed the source of the infection. It was, however, of considerable epidemiological interest that outbreaks of a disease resembling FMD, but etiologically distinct from FMD, had been reported also in Austria in December 1972 in live pigs imported from Poland, as well as in Italy in the last quarter of 1972.

Dr. Brooksby from the United Kingdom gave a detailed account of the investigations which had been undertaken at the Animal Virus Research Institute, Pirbright, into the etiology of the disease described by Dr. Beynon. The causal virus was found to be highly resistant against a number of disinfectants which are used in the United Kingdom and found effective against FMD virus.

The delegation from Austria reported that pigs showing lesions clinically indistinguishable from FMD were received from Poland in two consignments, on 11 and 12 December 1972. It was at first suspected to be FMD but this was disproved by laboratory examination. The pigs in both consignments were slaughtered and the carcasses including offal were destroyed. On 21 December, however, there was an outbreak of the disease in pigs on a farm in Lower Austria and a second outbreak occurred in Vorarlberg. These two outbreaks were far removed from the location where the disease had been seen originally in the importations from Poland. An interesting feature of the cases in Austria was that whereas only 2 out of 30 pigs in the first outbreak showed lesions, all pigs on the affected premises in the second outbreak showed lesions and there were 4 cases of abortion. Austria slaughtered all the pigs in their first outbreak but the disease was allowed to run its course in the second.

The delegation from Poland reported on the action taken following the receipt of information from Austria that an FMD-like disease had been observed in pigs imported from Poland. A detailed investigation of piggeries was undertaken in Gorlitz, the district of

(\*) Copies of the working papers are available on request from the Secretariat of the European Commission for the Control of Foot-and-Mouth Disease.

origin of the pigs sent to Austria, but no disease was found. On 13 December, however, an FMD-like disease was seen in a small piggery in Yaslo district which lies close to Gorlitz district, and on 27 December an outbreak occurred in a State piggery in Rzeszow district. Laboratory examinations revealed that the disease was not caused by FMD virus but the exact etiology has not been determined. Slaughter of affected and in-contact pigs was carried out on both farms, the meat from apparently healthy pigs being subjected to boiling before release for human consumption. It was not possible to explain how affected pigs reached Austria in view of the absence of clinically apparent disease in the districts from which the pigs consigned to Austria were derived. There was, however, a suspicion that a rail wagon had been used successively for the transport of pigs, first in the Yoslo district where the disease had been identified, and secondly in Gorlitz district from which pigs were exported to Austria. The time factors involved in the use of such transport would indicate a relatively short incubation period for the FMD-like disease in Poland.

In a discussion which followed it was pointed out that the incubation period for swine vesicular disease through contacts was found in Austria to be usually 7 days, but it had been observed in the United Kingdom that it usually ranged between 4-6 days, although it might be much longer and could be as short as 2 days in the face of heavy infection.

The delegation from Italy reviewed the two outbreaks of an FMD-like disease caused by an enterovirus which occurred in the Po Valley in 1966. At that time a slaughter policy was not adopted; the disease ran its course and there was no spread. Follow-up investigation in 1968 revealed high neutralizing antibody titres in a small number of sows which were present on the farm at the time of the original outbreaks but negative findings were obtained in pigs born later. There have been several recent outbreaks; early in October 1972 there were about 20 outbreaks on small farms near Naples affecting chiefly young pigs; later in October 1972, there were some outbreaks in Latina, and in the last week of December 1972 one outbreak occurred in the Province of Rome. The source of these outbreaks has not been determined. A slaughter policy for pigs is in operation.

The delegation from France said that it would be premature to report that swine vesicular disease exists in France but it is strongly suspected to occur. Early in January 1973 an FMD-like disease appeared on a farm at Cadillac near Bordeaux. Laboratory examinations have shown that it is not caused by FMD virus. A slaughter policy has not been adopted.

#### Differential Diagnosis of Swine Vesicular Disease

In the case of an outbreak of vesicular disease affecting swine and not cattle it is important to establish as quickly as possible the differential diagnosis from FMD, and especially to determine that FMD is not present either alone or in mixed infection with swine vesicular disease. The following list indicates, in the order which they may be applied, the most important methods to be used:

1. The growth of the virus in a number of different tissue culture systems. The porcine enterovirus causing swine vesicular disease grows in certain tissue cultures of porcine origin (IB-RS-2 cell line, primary pig kidney culture, etc.) but not in those of bovine origin (calf thyroid, bovine kidney, etc.).
2. The demonstration of resistance of the virus to pH 5.0 and its stabilization by M MgCl<sub>2</sub> against heating at 50°C for one hour.
3. The demonstration of specific complement-fixation and/or serum neutralization between the new isolate and known antisera.
4. Additional criteria are:
  - (a) Failure to infect cattle and guinea pigs by experimental inoculation.
  - (b) Demonstration of particles of about 30 nm in the electron microscope (compared with about 25 nm for foot-and-mouth disease).

- (c) Determination of buoyant density of virus particles at 1.32-1.34 as compared with 1.43-1.44 for FMD.
- (d) Demonstration of infection of day-old mice (differentiating from the virus of vesicular exanthema but not from FMD).

It was agreed that the various laboratories currently investigating outbreaks of swine vesicular disease should prepare antisera against their strain of virus and should exchange virus samples and the appropriate antisera with the World Reference Laboratory for Foot-and-Mouth Disease, Pirbright, Surrey, United Kingdom. It is important to establish whether current outbreaks are all produced by an antigenically similar virus, or whether distinct new strains have developed in the various countries affected.

#### Recommendations

1. The disease should be described as swine vesicular disease and, to avoid confusion with other vesicular disease, it should be described in statistical reports with the addition in parentheses of the words "caused by a porcine enterovirus".
2. It should be made notifiable and countries should report its occurrence to OIE and also to FAO so that information on the disease may be included in the FAO/WHO/OIE Animal Health Yearbook.
3. From the information available at present, it would appear that the disease is limited to some European countries and to Hong Kong in its distribution. It is urged that every effort be made to eradicate it when it does occur, using the stamping-out method for the slaughter of affected and in-contact pigs, as applied in FMD control.
4. Because of uncertain knowledge of the possible epidemiological role of other classes of livestock, e.g. cattle and sheep, it is recommended that the movement of such animals from infected premises be restricted for a period of six weeks after the completion of slaughter of infected and in-contact pigs.
5. Bearing in mind that the disease has been associated with garbage feeding in some countries, it is essential that all carcasses including offal on the infected premises be disposed of by burning, burial or that such material be adequately sterilized.
6. Importing countries should make certain that appropriate steps have been taken in the exporting countries to prevent dissemination of the disease.
7. The laboratories in countries where outbreaks have occurred should undertake serological surveys to determine whether or not inapparent infection may be important in the disease.
8. Among the points requiring attention are problems relating to disinfection, since it is already known that disinfectants against FMD may not be efficient for swine vesicular disease (see note).
9. There is a need for continuing exchange of information between laboratories, as well as for research on several aspects of the disease, and it is recommended that the World Reference Laboratory should coordinate research activities.

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Note: At a meeting of specialists held on 24 May 1973 during the XI<sup>th</sup> General Session of the OIE Committee it was decided that the attention of members should be drawn to the recommendations of the ad hoc Consultation on Swine Vesicular Disease held at FAO Headquarters in Rome on 9 January 1973. These recommendations are still valid but in view of recent experience it is suggested that No. 8 on disinfection should be modified as follows:

8. Attention is drawn to the marked resistance of the virus to many disinfectants. For the disinfection of farm building etc. which have housed infected pigs the use of 1% hydroxide solution is recommended.

## 2. FMD POSITION AND CONTROL IN EASTERN AND SOUTHEASTERN EUROPE

The main events concerning the evolution of FMD in Europe were discussed. In particular, attention was drawn to the virus C epizootic in Eastern Europe and to the progress of the campaigns against the A<sub>22</sub> virus epizootic in Greece and Turkey.

### The C Virus Epizootic in Eastern Europe

The Secretary of the Commission circulated his second report on the disease position, together with Information Sheet No. 19 of the World Reference Laboratory, Pirbright.

Dr. Gaier gave a detailed account of the situation as seen from the Austrian standpoint and of his visit recently paid to Hungary, also on behalf of the Commission, as well as of the frequent exchange of information he had with the veterinary authorities of Czechoslovakia and Yugoslavia.

The energetic prophylactic effort made by all countries affected by the C virus epizootic, especially in Hungary, was noted. It was stressed that the extensive use of vaccination, together with a very efficient control of animal movements, made it possible to avoid a massive spread of the disease out of the originally infected provinces.

The action developed by Dr. Gaier in connection with the disease situation and the control of international transports of animals and meat during the last months was greatly appreciated by the meeting.

### A<sub>22</sub> Situation and Campaigns

The Secretary reported that for the last few months no new outbreaks had been declared either in Greece and/or in Turkish Thrace. However, in Thrace the O virus was present and had caused great concern, especially in Greece.

To consolidate the results obtained in Greece when dealing with the A<sub>22</sub> infection, both in the border areas in the north and in the centre of the country (especially Attika), a revaccination campaign has been suggested according to the recommendations made by the FSO/OIE mission which visited Greece and Turkey in September 1972.

In Spring 1973, a new vaccination should take place and the area to be covered should include the frontier areas of both Greece and Bulgaria. Turkey is expected to carry out a bivalent O/A<sub>22</sub> vaccination campaign in Turkish Thrace at the same time.

To avoid a repetition of the 1972 experience with the A<sub>22</sub> virus it is essential that buffer zones should be maintained in southeastern Europe, and it was noted with satisfaction that the European Economic Community was formally considering to give their financial support to this operation.

### Working Papers:

1. Swine Vesicular Disease Outbreak in England in 1972/73  
- Animal Health Division, Ministry of Agriculture, Fisheries and Food, United Kingdom.
2. Interim Notes on Laboratory Examinations of Swine Vesicular Disease - Animal Virus Research Institute, Pirbright, Surrey, United Kingdom.
3. Laboratory Examination of suspected Swine Vesicular Disease in Austria - Dr. G. Kubin.

ANIMAL VIRUS RESEARCH INSTITUTE, PIRBRIGHT

NOTES ON SWINE VESICULAR DISEASE

These notes are intended to supplement those presented at the ad hoc meeting in Rome on 9th January, 1973. They represent only some of the salient points which have emerged from our studies.

1. Diagnosis

The laboratory has now received 259 samples for diagnosis. Obviously, many of these are derived from the same premises but it has been the custom to test samples from more than one animal with a view to arriving at an answer as quickly as possible. In spite of the comments made in the recommendations of the last meeting, greatest emphasis has been placed on specific complement fixation. On this basis, 11 samples have been positive on a short test and a further 26 on an overnight test; 95 samples have been positive after a single passage in RS cells and a further 21 at the second passage.

Our conclusion is therefore that the laboratory cannot hope to provide a diagnosis more rapidly on the average than in 24-36 hours, i.e. after a tissue culture passage and a test using prolonged fixation.

Differential diagnosis of the disease in a country where it has not occurred would still, of course, be carried out by a combination of the methods recommended in the previous paper.

2. Interrelationship of Strains

The problem of the interrelationship of the various strains found in Europe is still under study. It is hoped to present data at the meeting.

3. Excretion of the Virus by Infected Swine and its Persistence

In Table 1 is shown the appearance of the virus in the tissues of pigs exposed to infection. It will be noted that virus has appeared before lesions are detected in all three tissue examined. The very high titre in skin observed in the pig tested at 5 days was due to the development of a lesion at that site. It will also be noted that, 13 days after slaughter, the virus was present in high titre both in lymph node and in bone marrow.

Similar data on the appearance of virus are presented in Table 2, which indicates the very rapid build-up before lesions are seen.

In Table 3 the information presented for the duration of virus recovery from infected pigs indicates that the animal itself may cease to be a hazard after, say, two weeks from the appearance of infection and the risk lies in the persistence of excreted virus.

In studies of virus in faeces and floor sweepings after the removal of infected pigs from a loosebox, virus was demonstrated for 8 weeks and no endpoint has been found. Survival has been found after 68 days at 4°C in contaminated slurry. Once again this is certainly not an endpoint.

An artificially contaminated faecal slurry had a titre of  $10^8$  at day 0. At day 38, with storage at 5°C, the titre was  $10^{4.2}$ .

4. Disinfection

The virus is heat-labile, being destroyed at 60°C within 30 minutes.

Data will be presented on the range of pH resistance of the virus. This range is much wider than foot-and-mouth disease; reliable inactivation has not been obtained above pH 2 and lower than pH 12.5.

The present indication is that the most effective mixtures include oxidizing agents, acids and detergents. Sulphuric acid appears to be the best acid component of these mixtures. Iodophors, acid and detergent in a proprietary mixture appear effective. Another mixture which has given good results is potassium permanganate 1/1000 with sulphuric acid 1/2000.

On the alkaline side, mixtures of Chlorox and washing soda and of Chlorox, sodium hydroxide and detergent have been effective.

Formalin is effective at 1/10 but 1/100 is not satisfactory.

In the long term, 1% sodium hydroxide is effective and its efficiency is increased by raising the temperature but under farm conditions the temperature rise might become ineffective through fermentation of the material which was being disinfected.

28th March, 1973

J.B. Brooksby

TABLE 1

APPEARANCE OF VIRUS IN PIG TISSUES

Days pig exposed	Stage of disease	Skin	Muscle	Lymph node
2	Negative	3.4		
3	Negative	2.5	2.3	1.94
3	Negative	2.6	2.4	2.5
4	Viraemia	4.0	3.0	4.0
5	Early lesion	8.6	4.3	6.1
13 days after slaughter		Lymph node: $10^3$ and $10^{4.5}/gm$ Bone marrow: $10^3/gm$		

TABLE 2

VIRUS FROM RECIPIENT PIGS EXPOSED TO INFECTED DONORS

	Days after inoculation of donors				
	1	2	3	4	5
Nasal swab	0.3	2.4	4.0	4.7	3.9
Pharyngeal sample	0	2.4	3.5	5.0	3.9
Serum	0	0	0.8	2.2	2.0
Rectal swab	0	2.6	4.3	4.0	4.0

TABLE 3

DURATION OF VIRUS RECOVERY FROM INFECTED PIGS

<u>Sample</u>	<u>Days</u>
Nasal swab	7 - 10
Mouth swab	7 - 8
Pharynx	8 - 12
Rectal swab	6 - 12

APPENDIX VIII

ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET ON SWINE VESICULAR DISEASE NO. 1

Preliminary data on strains from England, Italy, Hong Kong,  
Austria and Poland

The relationship of several strains of this virus have been investigated in complement fixation tests. Homologous sera against England 1972, Italy 1/66, France 1973 and Hong Kong 1971 have been prepared and cross-fixation tests carried out between these four strains. Antisera to Austria 1973, Poland 1973 and Italy 1973 are in the process of preparation and meanwhile these viruses have been compared on one-way tests.

Strains of Swine Vesicular Disease Virus employed in this work were as follows:-

England 1972 (W.R.L. Ref. UKG 27/72) - vesicular fluid from an outbreak in Staffordshire in December 1972.

Italy 1/66 - received in 1968 from Dr. Nardelli. Sample of epithelium from an outbreak which had occurred in Italy, October 1966.

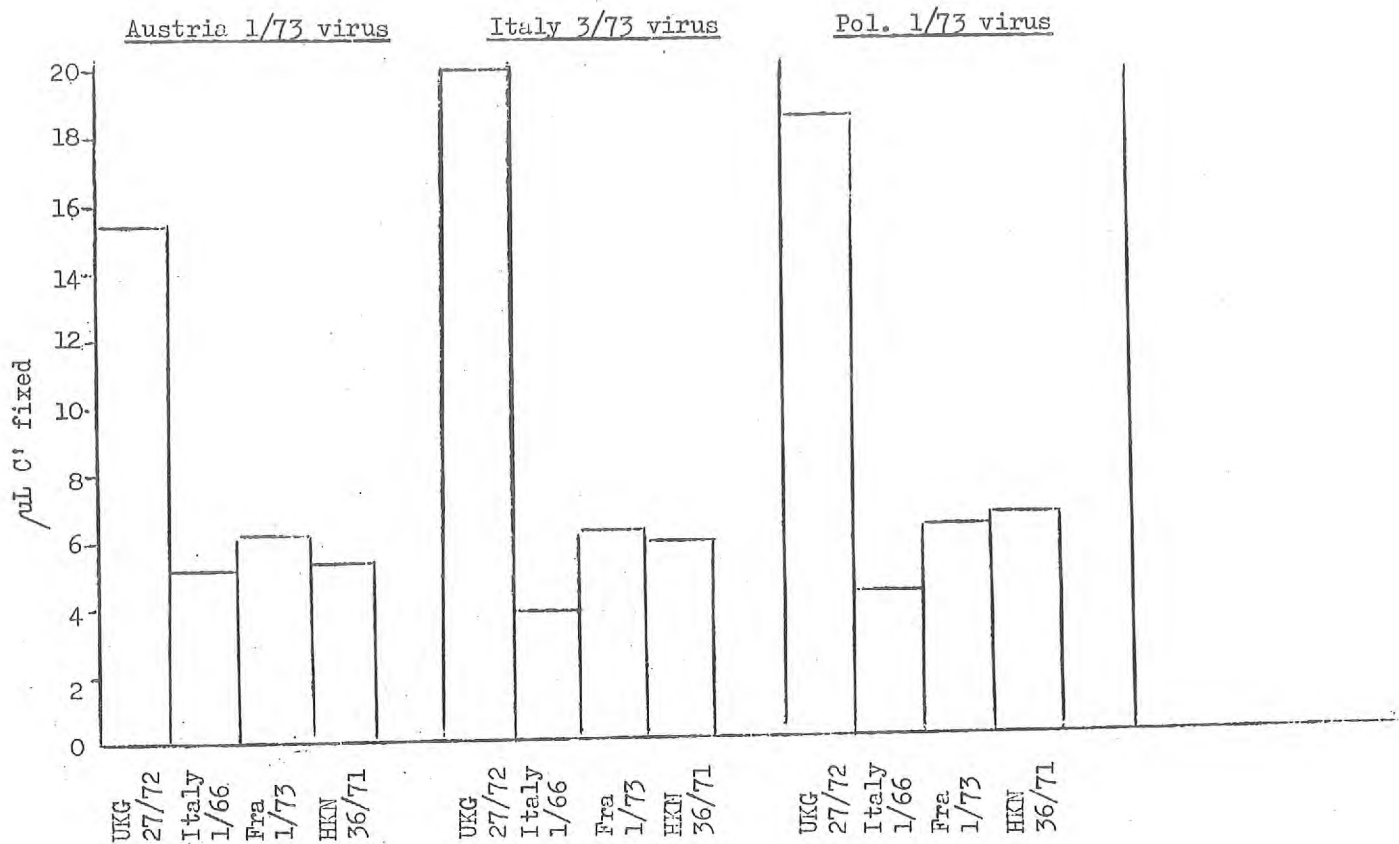
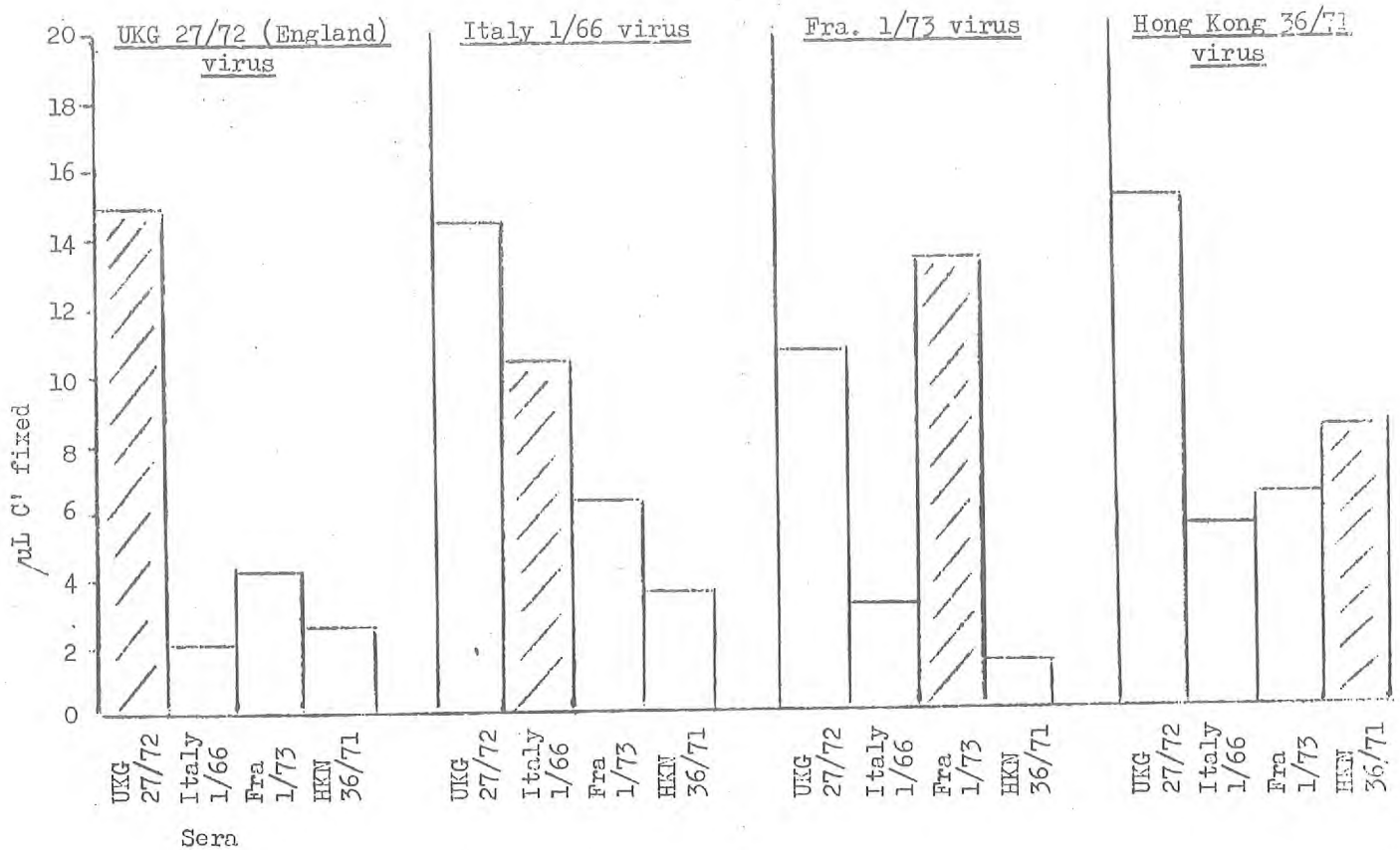
Austria 1/73 - received in January 1973 from Dr. Kubin, a sample of epithelium.

France 1/73 - received in January 1973 from Dr. Dhennin, a sample of epithelium.

Italy 3/73 - received in January 1973 as a sample of 3rd passage IBRS<sub>2</sub> tissue culture derived from an outbreak in Latina, November 1972 - designated in Italy as "Strain '113' Italy 1972".

Poland 1/73 - received from Poland, March 1973, a sample of tissue culture derived from an outbreak in that country.





'R' values

England 1972	100			
Italy 1/66	45	100		
Hong Kong 36/71	54	46	100	
France 1/73	47	38	28	100
	England 1972	Italy 1/66	Hong Kong 36/71	France 1/73

'r' values

virus serum	England 1972	Italy 1966	Hong Kong 36/71	France 1/73	Austria 1/73	Italy 3/73	Poland 1/73
England 1972	1.0	0.97	1.02	0.69	1.02	1.33	1.24
Italy 1/66	0.20	1.0	0.53	0.30	0.49	0.37	0.42
Hong Kong 36/71	0.29	0.41	1.0	0.16	0.40	0.68	0.79
France 1/73	0.32	0.47	0.47	1.0	0.46	0.46	0.47

Comments:

The data in this information sheet suggests that differences exist between some of the strains of Swine Vesicular Disease which are similar in magnitude to those between subtypes in FMD.

6th April, 1973

A.E.M. ARROWSMITH

SWINE VESICULAR DISEASE

Summary Report

John H. Graves

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Work done at the Plum Island Laboratory primarily with the Hong Kong strain of Swine Vesicular Disease (SVD) virus has shown the disease to be of considerable potential importance as an exotic disease to the United States. The disease in experimentally-infected swine is indistinguishable from the clinical appearance of foot-and-mouth disease (FMD). All swine of various ages inoculated with tissue culture grown virus by various routes have developed clinical disease within 2 to 7 days. The clinical picture is characterized by fever, severe lameness, vesiculation of the feet and frequently the metacarpal and metatarsal regions. Vesiculation of mouth and tongue epithelium is less frequently seen. Occasional neurological signs have been seen in the form of mild flaccid paralysis. In our opinion, SVD could be a serious disease of swine in addition to the difficulty of distinguishing it from foot-and-mouth disease.

We have found the disease to be highly contagious and readily transmitted from infected to susceptible swine primarily by fecal contamination. The virus is readily isolated from the feces of diseased pigs. Pigs have been routinely infected by eating virus-contaminated meat and have shown clinical signs of SVD within 48 hours of feeding.

Our studies confirm those reported by others that the virus is of the entero-virus group of picornaviruses and is acid and ether stable. It does not grow in primary bovine kidney or baby hamster kidney (BHK-21) cell line but does grow in primary swine kidney cell cultures and swine kidney cell line (PK-15). The virus readily kills day-old baby mice within 3 to 5 days particularly after intracranial inoculation. Cattle inoculated on the tongue or by intranasal exposure to virus have not developed clinical disease nor could virus be isolated from OP samples.

Of particular interest are the observations of the serological properties of the virus. Because it was isolated from swine, we tested serums from pigs recovered from infection with a variety of other swine viruses. Serums from pigs recovered from Teschen disease, pseudorabies and infection with San Miguel sealion virus all failed to neutralize SVD virus in tissue cultures. None of approximately 100 different serums from normal pigs from various parts of the United States have shown any evidence of neutralization of SVD virus. Thirty serum samples from pigs vaccinated or recovered from infection with various types of foot-and-mouth disease virus all failed to neutralize the virus. Only pigs vaccinated or recovered from infection with either the Hong Kong or Italian strains of SVD virus neutralized the Hong Kong virus. In addition, several cattle serums from normal or FMDV vaccinated animals showed no neutralizing activity against SVD virus.

The interesting observations in the first report on SVD that the virus was lethal for baby mice led us to examine its possible relationship to the Coxsackie group of human viruses. These viruses are the only picornaviruses other than foot-and-mouth disease virus that are uniformly fatal for suckling mice. We obtained serums of the World Health Organization human enterovirus typing pools used for identification of isolates of human

viruses. These eight horse serum pools are organized in such a manner that any one of 42 human enteroviruses can be identified from the neutralization pattern observed. We found on repeated trials that pools C and E readily neutralized SVD virus in tissue culture. This pattern of neutralization conforms to human Coxsackie B-5 virus. This test was repeated in day old mice by mixing a serum-dilution of each pool with a dilution of SVD virus and intracranially inoculating the mice in each of 8 litters with a different pool serum-virus mixture. Again, serum pools C and E protected all the mice whereas with the other pools all mice were dead within 5 days. In light of these observations we then tested the serums of 16 of our laboratory workers and all showed significant neutralization of SVD virus.

In conclusion, it is our opinion that SVD is an exotic disease to the swine of the United States and probably North and South America. The interesting observation that the virus may have been of human origin remains to be verified.

APPENDIX X

FOOT-AND-MOUTH DISEASE POSITION AND CAMPAIGNS IN SOUTHEASTERN EUROPE IN 1972

1. Reappearance of A<sub>22</sub> virus in southeastern Europe

Shortly after the conclusion of the XIXth Session of the European Commission for the Control of Foot-and-Mouth Disease an emergency situation was reported in Greece because of the sudden appearance and rapid spread of A<sub>22</sub> virus in various provinces in the country.

The first outbreak occurred at Sophicon, near the Evros river, on 8 April 1972 and was followed a few days later by 8 outbreaks near Xanthi, the western province of Greek Thrace. By 20 April, the disease started spreading in Macedonia (in the province of Drama, Serres and Thessaloniki) and also in Attika (near Athens) and Argolis (in the Pelopponesus); 21 municipalities were affected by the disease between April and the beginning of May.

On 8 June the disease reappeared in Evros, near the Turkish border. During the following three months sporadic outbreaks occurred in Evros and Attika, where the disease assumed an enzootic character, and in Karditza (Thessaly). In all, 27 municipalities were involved, with less than 3 000 animals including sheep, goats and pigs contracting the disease out of a total of some 10 000 animals exposed (Table 1).

On 30 September the country was declared free of the disease.

After nearly 4 years of disease freedom, cases of A<sub>22</sub> virus infection were detected in Turkish Thrace during March 1972. Since the animal population of this region (buffer zone) had been submitted to regular vaccination during the previous years, disease was actually confined to young animals in the infected villages. Between March and September 1972 A<sub>22</sub> virus persisted in the area and outbreaks occurred in 41 villages. Later in the year sporadic cases of O virus infection were reported (November 1972) near the Greek borders while A<sub>22</sub> virus (Table 2) could not be detected anymore.

Specimens of infected material collected from the first outbreak in Greek Thrace were submitted to the World Reference Laboratory for foot-and-mouth disease (WRL), Pirbright, for examination and virus A<sub>22</sub> was identified: further submission of specimens took place from Greece and also Turkey and the results continued to indicate A<sub>22</sub>. Further investigations on the strains involved were carried out later at Pirbright, Teheran and France (see later).

The Greek outbreaks were closely related to each other; people and animal movements during the Easter holidays favoured a massive spread of the disease in northeastern Greece

i.e. in Thrace and eastern Macedonia and investigations and the implementation of control measures were delayed.

The first outbreaks in Attika and Argolis were caused by slaughter animals moved from their municipality of origin in the North, while incubating the disease.

The disease was rather severe among the fully susceptible Greek livestock, the mortality rate among calves being high, especially in the northern province of Drama.

In Turkish Thrace only a relatively small number of animals, less than 5 percent, showed symptoms of disease, evidently because of the resistance to infection conferred by previous vaccination and, in particular, by the revaccination campaign initiated in March 1972 in the Edirne province.

It is worth while to note that the occurrence of A<sub>22</sub> virus in Evros and its further spread in Greece was facilitated by the fact that almost four years had elapsed since the last regular vaccination programme had been carried out in Greek Thrace with A<sub>22</sub> vaccine, the animal population having therefore become fully susceptible again to this virus.

The outbreaks in Turkey and Greece seem to have been the consequence of a sudden change in the epizootiological pattern which took place in Anatolia during March, with the A<sub>22</sub> virus infection simultaneously being recorded in various regions of the peninsula. At almost the same time a flare-up of the A<sub>22</sub> infection occurred in some southern republics of the U.S.S.R. Thus during Spring 1972, all countries in southeastern Europe, including Romania, found themselves more or less directly exposed to the exotic virus.

## 2. First action taken by Greece and FAO and emergency operation

On 17 April, the European Commission was informed about FMD outbreaks and that the causal virus was suspected to be exotic; the veterinary services of Bulgaria and Yugoslavia were immediately advised by the Secretary to strengthen control measures at their frontiers and to prepare for an emergency situation pending the identification of the virus by Pirbright. Turkey was also advised to investigate the situation in Thrace and to speed up the vaccination programme against A<sub>22</sub> which had already been started in the Edirne province during March 1972. This province had been covered with vaccination against O virus and also rinderpest at the beginning of 1972.

When the virus A<sub>22</sub> was identified by the World Reference Laboratory, Pirbright, strict measures were applied in the province concerned: all animal movements from the effected premises were prohibited and importation of meat from Turkish Thrace into Greece was suspended.

The Greek veterinary authorities had meetings with government officers of Bulgaria, Yugoslavia and Albania, and measures were agreed upon to prevent the introduction of virus from Greek territory. There was close cooperation among all parties concerned. A meeting between Greek and Turkish veterinary authorities was also proposed, which took place later on in autumn.

Stamping-out was applied only on four occasions when primary outbreaks were dealt with in Evros, Xanthi, Serres and Argolis. 39 animals were destroyed.

Ring vaccination was immediately applied using supplies of vaccine remaining from the last vaccinations against A Greece 1969; in the meantime, the new virus strain was adapted to tissue culture in the Athens institute with satisfactory results and the preparation of homologous vaccine was speedily undertaken.

To meet the emergency situation resulting from seven provinces already infected, and because of the serious risk of spread of the disease to other areas both in Greece and Bulgaria, Yugoslavia and Albania, homologous vaccine was requested by Greece, Yugoslavia and Bulgaria in great urgency from FAO.

The Secretary of the European Commission reached Athens from Ankara on the day following the identification of the virus and informed the Chairman of the Commission and the Chief of the Animal Health Service at FAO Headquarters about the situation.

After consultation with the Director of OIE, the decision was taken to mobilize the remaining funds of the SAT1/A<sub>22</sub> campaigns for the urgent delivery of 100 000 doses of A<sub>22</sub> vaccine to Greece. At the same time, vaccine was requested from Turkey in exchange for Greek vaccine. Turkey agreed to supply 15 000 doses of A<sub>22</sub> vaccine at a token price, but was not in a position to make further deliveries because of heavy national requirements for vaccine resulting from the spread of FMD in Anatolia and later in Turkish Thrace.

Fortunately, A<sub>22</sub> vaccine was available at Teheran, produced by the French laboratories at the Razi Institute. Thanks to the prompt collaboration of all concerned, the supply of the French vaccine was effected in less than 10 days from the day of order and the same was true for the Turkish vaccine.

Ring vaccination was carried out around outbreaks in the provinces of Xanthi, Drama, Serres, Thessaloniki, Attika and Argolis. The Evros province, where stamping out had been applied, was left unprotected because of lack of sufficient quantities of vaccine.

Vaccination in this province was started in June, when emergency ring vaccination had been completed in the other northern provinces and homologous vaccine became available in the State Laboratory.

This operation was conducted under the pressure of new outbreaks which, in the meantime, had occurred in a swampy border area situated in the municipality of Ferrai in the delta of the Evros river. Some groups of animals had to be revaccinated.

All vaccine used, either produced at Teheran or Athens or Ankara, proved to be of great value. On various occasions vaccination was able to stop the occurrence of new cases of disease on the 6th or 7th day from its application.

### 3. Surveys of the Secretary and action taken for the re-establishment of buffer zones in southeastern Europe

#### 3.1 Survey in southeastern Europe

In May 1972, the Secretary visited for the second time the veterinary directorate in Athens and then proceeded to Bulgaria and Turkish Thrace. The main purpose of the travel was to assess the disease situation in Greece where ring vaccination was in full operation, to participate in a bilateral emergency meeting between Bulgarian and Turkish veterinary authorities at Edirne and to make a survey in Turkish Thrace, where cases of disease had been reported in the meantime.

In Greece it was appreciated that, while the situation was still serious, especially because of the rather wide spread of infection foci, no further progress of the disease had been observed after the first week of May except for the Thessalonica area. This was mainly due to the impressive involvement in the control measures of both the central and local authorities, veterinary and police authorities and the army as well.

In Bulgaria, very strict measures had been adopted along the frontier of the country with Greece and Turkey. This included the establishment of a belt free of livestock to a depth of 3 to 5 kilometres along the borders. Vaccination was carried out in the most exposed frontier districts with inactivated A<sub>22</sub> vaccine obtained from the U.S.S.R. Homologous vaccine had previously been requested from FAO also by Yugoslavia but without success, as FAO had to concentrate the residual campaign funds on the operation in Greece.

During the survey in Turkish Thrace, where the Secretary was accompanied by Dr. Girard and Dr. Bayramoglu, respectively the Project Manager and Section Chief of the Foot-and-

Mouth Disease Institute at Ankara, provincial and district veterinary offices, slaughterhouses and livestock markets, embarkation and frontier crossing points were visited.

One of the sites of an active outbreak in Thrace was visited at Karpuzlu near Ipsala and the Evros river. It was found that no more than 3 to 5 percent of the cattle population (several hundreds) of the village were showing disease symptoms, obviously because of the effect of previous vaccinations carried out in the area. It was reported that the same observation was made in other affected groups in Thrace.

It was noted during the survey that animal movements in Turkish Thrace and on all roads in Anatolia leading to the embarkation points on the Bosphorous where animals are transferred for slaughter into Thrace, were effectively controlled. It was shown that the Istanbul livestock market is actually a terminal for all animals arriving from Anatolia and the local authorities were doing their best to ensure enforcement of movement control both at the embarkation points and the market. However, possibilities of infringement appeared to exist, which may result in illegal movement of animals across the Marmara Sea with destinations other than Istanbul, thus stressing the necessity to have the animal population in Thrace solidly protected against FMD.

It was therefore concluded that buffer zones should not be limited to Turkish Thrace but should include also the frontier areas of Greece and Bulgaria, as has been the practice until 1968, with the assistance of FAO.

### 3.2 OIE mission to Greece and FAO appeal for continuation of the campaigns

The situation in southeastern Europe has been closely followed also by OIE, which sent a mission consisting of Dr. J.B. Brooksby and Professor F. Lucam to Greece at the end of May to collect first-hand information and discuss measures of disease control. The conclusions of the mission, and the report of the Secretary of the Commission on the action taken in Greece by FAO since mid-April, were presented at the XLth Annual General Session of OIE held in Paris from 15-20 May 1972. On this occasion, the Executive Committee of the European Commission held a meeting at which it was proposed that FAO should assist further in strengthening measures for the control of FMD caused by exotic viruses in southeastern Europe. The proposed action included the re-establishment of buffer zones in Greek and Bulgarian territories.

The OIE Assembly approved the outlines of the programme and the Director-General of FAO took immediate action by sending an appeal for funds to all European countries not yet involved in the A<sub>22</sub> infection. Governments were requested to make a contribution of U.S.\$1 cent per head of their cattle population, which would permit to finance the above-mentioned operation for a period of 3 to 5 years, during which time Turkey is expected to extend prophylactic schemes in Anatolia. Vaccine production facilities will be expanded in the meantime.

### 3.3 Further action in collaboration with OIE

The problem of persistence of exotic FMD in Greece and the action to be undertaken with international assistance to meet the situation in southeastern Europe were discussed at a special meeting convened by the Director of OIE at Paris on 30 June 1972, in which the bureaux of the OIE and FAO Commissions on FMD, a representative of EEC and a delegation from France participated.

In particular, the importance of reinforcing the immunity conferred by the first vaccination campaign against A<sub>22</sub> in northern Greece and of adopting stamping out measures whenever possible were stressed. It was suggested that, in order to explore such possibilities, a mission representing FAO/OIE should be sent to Athens. Support was given to the efforts developed in the meantime by FAO in order to secure financial means needed for the continuation of campaigns against A<sub>22</sub> in Greece and Bulgaria.



### 3.4 FAO/OIE Mission to Greece and Turkey

During the second half of September a mission of representatives from OIE (Dr. Brooksby and Professor Lucam) and FAO (Secretary of the European Commission) visited the Greek Veterinary Services in Athens. Professor Lucam and the Secretary of the Commission proceeded to Turkey in order to have discussions with the veterinary authorities of Ankara and Istanbul and to visit the Turkish Foot-and-Mouth Disease Institute.

Greece The situation was again evaluated in Greece in the light of the events occurred during the last three months. It was disquieting to note that, while the disease had been successfully controlled in all the frontier regions (Evros, Drama, Serres, Xanthi and Thessaloniki), foci of infection continued to occur in the province of Attika, thus giving the impression of an evolution towards endemicity.

The efforts developed by the Greek veterinary authorities to meet the emergency situation and block the spread of the disease over a vast territory, were highly appreciated. A programme of strengthened veterinary measures was agreed upon, which included a prolonged quarantine of the animals which had contracted the disease, a long period of movement restrictions for all animals suspected to have become virus carriers and the application of stamping out whenever such measure had chances of success and was compatible with the financial resources allocated to disease eradication.

A vaccination programme was also agreed upon, to be effected with international assistance before the end of 1972, taking into account that: (a) the vaccines used during the summer campaigns were to a large extent heterologous with respect to the A Greece 1972 strain; (b) the animals were vaccinated for the first time against A<sub>22</sub>; (c) there existed many potential carriers spread over various provinces of the country.

Said programme considered:

- (i) the extension of vaccination to the whole province of Evros for the purpose of re-establishing and extending the buffer zone in Thrace;
- (ii) the vaccination of the whole province of Attika, where disease appeared to have become endemic;
- (iii) the repetition of all ring vaccination operations to reinforce immunity against possible contamination from virus carriers in the other provinces.

Considering that the Greek vaccine production capacity was of about 20 000 doses per week, it was calculated that the needs for vaccine to be supplied with international aid, should amount to 500 000 doses.

The mission was of the opinion that also in Bulgaria and Yugoslavia the revaccination programme should possibly take place before the winter.

The Director of the Animal Virus Research Institute, Pirbright, promised that he would explore the possibility of furnishing vaccine at cost price.

Turkey The mission discussed the general situation of foot-and-mouth disease in the country and, in particular, the measures then adopted to control the disease in Anatolia, in the Bosphorous area and in Thrace. It was noted that the A<sub>22</sub> epizootic, after a period of recrudescence, which had caused the reinfection of Thrace, had entered a phase of regression and that the vaccine produced in the Institute had given excellent results, also against the more recently isolated A<sub>22</sub> strains.

The visit to the FMD Institute showed remarkable progress achieved, particularly in the technique of tissue culture in suspension, with the support of FAO and UNDP. The vaccine production capacity had reached 200 000 doses per week and the results of potency testing were satisfactory.

It was agreed that bivalent vaccination will be carried out as of 1973 as a rule all over Turkey and that laboratory experiments will be made in order to evaluate quantitatively the protective value of the production strain A Mahmatli 1965 (= A Iraq 1964) in respect to the A<sub>22</sub> strains, which had been isolated more recently in western Turkey.

Turkey accepted to carry out revaccination in autumn 1972 of all cattle under one year of age in Thrace and to start the general vaccination campaign in Thrace and Marmara areas in March 1973.

The report of the mission to Greece and Turkey is attached hereto as APPENDIX Xa.

### 3.5 Response to the FAO appeal and winter campaign in Greece

A favourable response to the FAO appeal for the continuation of the campaigns against A<sub>22</sub> in southeastern Europe (see 3.2) was received from seven countries between August 1972 and February 1973. Deposits were effected by U.K. in August 1972 (U.S.\$ 64 500) Norway in November 1972 (U.S.\$ 9 180), Austria in January 1973 (U.S.\$ 25 038) and Switzerland in February 1973 (U.S.\$ 9 400). The contributions of the U.K., Norway, Sweden and Switzerland correspond to 50 percent of the amount pledged and the remainder will be deposited in three instalments during the period 1973 and 1975. Hungary and Finland have promised to deposit their contribution in the near future and also the European Economic Community has taken a favourable attitude towards contributing to the campaigns.

Thanks to the funds collected so far it has become possible to carry out, with the cooperation of the Greek authorities, an important part of the programme suggested by the FAO/OIE mission, i.e. the revaccination in Greece of all areas which had been submitted to the first vaccination against A<sub>22</sub> during the period May - September 1972.

To this effect 186 000 doses of vaccine were obtained at cost price (cattle dose = U.S.\$ 0.10 CIF) from the World Reference Laboratory. It was sent to Athens, for application together with the Greek vaccine in the provinces of Evros, Xanthi, Drama, Serrai, Attika, Thessaloniká, Argolis and Karditsa. The operation was conducted between December 1972 and January 1973.

### 3.6 Investigations on virus strains and vaccination problems

It is essential for the European Commission to maintain up-to-date information on any change in the field strain position which may effect measures of disease control and prophylaxis in southeastern Europe as well as Anatolia.

For this reason, four specimens each were submitted from Greece and Turkey to the World Reference Laboratory, Pirbright, for subtype examination and comparison with the strains already classified since the start of the A<sub>22</sub> epizootic in 1964. As in the past, the collaboration of the World Reference Laboratory has been invaluable both for the countries concerned and the European Commission.

Additional A virus specimens received by the World Reference Laboratory from the Arab Republic of Egypt and eastern Africa were classified and compared with the virus isolated in Greece in Spring 1972.

The results of these studies, given in the World Reference Laboratory Information Sheets No. 13, 14, 15, 16 and 17 (attached as APPENDIXES Xb, Xc, Xd, Xe, Xf) indicate that:

- (a) no difference exists between the strains isolated in Greece in April and May 1972. A Greece 1972 was shown to be related to the A<sub>22</sub> subtype strain isolated in Iraq in 1964;

- (b) the virus specimens obtained from widely dispersed series of outbreaks in eastern and western Anatolia appeared to belong to the same virus strain. This finding seems to support the view of the Ankara Institute that A Mahmatli vaccine has so far conferred a good protection irrespective of the area where it was applied in Turkey;
- (c) similarity was shown between A Egypt 1972 and the strain (A Iraq 1964) which gave origin to the A<sub>22</sub> epizootic. (A Egypt was associated with the import of cattle from eastern Africa.);
- (d) similarity was also shown between an east African strain and A Greece 1972.

Serological and immunological research has been carried out in France and Iran in order to evaluate the relationships between A Greece 1972, a U.S.S.R. 550 (used in Iran as production strain for A<sub>22</sub> vaccine) and A<sub>5</sub> (Europe). IFFA and Razi Institute research workers confirmed the Pirbright findings on serological relationship between A Greece 1972 and various A<sub>22</sub> strains and also observed that the A<sub>22</sub> vaccine prepared at Teheran with A U.S.S.R.550 showed less protection against A Greece 1972 than against the production strain when used at a quarter of a dose.

Therefore, the Franco-Iranian, Russian and British vaccines, used in southeastern Europe against the Thrace field strain, were heterologous, though still within the subtype. The Turkish Government was invited to investigate whether the degree of protection conferred by the A Mahmatli vaccine against A Greece 1972 in the field can be confirmed in the laboratory.

At the Virology Institute, Lyon, it was found on the other hand that no protection at all was conferred by the conventional A<sub>5</sub> vaccine inoculated into cattle for the first time, if the challenge strain is A Greece 1972. Thus the exotic character of A<sub>22</sub> subtype and of A Greece 1972, in particular, was confirmed also experimentally.

### 3.7 Maintenance of buffer zones

The past experience taught that buffer zones should be maintained in southeastern Europe as long as A<sub>22</sub> or any other virus exotic to Europe exists in the region.

Vaccination should cover, as in the past, the whole of Turkish Thrace and the frontier areas of both Greek and Bulgarian Thrace to a depth of 30 to 50 kilometres. Spring vaccination should be followed up, at least in the frontier areas of the three countries by an autumn vaccination: all ruminants should be included in the scheme.

The presence of virus O in Turkey, makes it advisable that vaccination be bivalent (A<sub>22</sub>,O), in order to eliminate the diagnostic and prophylactic difficulties which had to be met in 1972 when O virus infection spread into the buffer zones of both Greece and Turkey.

The chances of maintaining a disease free zone in Thrace, largely depends on the possibility for Turkey to keep the disease under control in Anatolia.

This objective has been pursued by the Turkish Government for many years and the establishment of the Foot-and-Mouth Disease Institute at Ankara has been a major achievement.

With the assistance of FAO the Institute has developed modern techniques of vaccine production, including tissue culture in suspension. The present production capacity is 200 000 monovalent doses of vaccine per week. This will allow for more extended vaccination programmes to be carried out in Anatolia in the years to come. As of 1973, vaccination will be bivalent as a rule everywhere in Turkey (O/A<sub>22</sub>).

The Turkish Government stated that it is their intention to further expand vaccine production in order to enable them to cover the entire country with bivalent vaccination

once a year at least.

Phase II of the UNDP Project TUR/549, Assistance to the FMD Institute at Ankara, has the objective of producing 10 million monovalent doses by the cell suspension method; this production unit is to serve as a pilot plant and the experience gathered will be used for the installation to be accommodated in a new building to be constructed by the Turkish Government next to the existing laboratories.

APPENDIX Xa

FAO/OIE MISSION TO GREECE AND TURKEY TO REVIEW THE FMD SITUATION (A Greece 1972)  
AND MEASURES TO BE TAKEN

20-30 September 1972

At an emergency meeting of Executive Members of the Permanent Commission of OIE on Foot-and-Mouth Disease and the European Commission of FAO on the Control of Foot-and-Mouth Disease as well as an Adviser of EEC, convened by the Director of OIE and held in Paris on 30 June 1972, lines of action were suggested to deal with the FMD situation in Greece and Turkey.

This situation had arisen from the outbreaks due to the new sub-strain of A<sub>22</sub> which had been isolated in those countries.

It had been proposed, amongst other matters, that the Trust Fund for FMD Emergency Aid in this region should be replenished and destined to supply vaccine to the infected or threatened countries. The necessity of severe sanitary police measures to integrate the vaccination campaigns was emphasized.

To establish such a programme on a sound basis it was proposed to send a review mission to Greece and Turkey to study with the veterinary authorities of these countries the epizootiology and the means to control the disease.

MISSION TO GREECE  
(20-26 September 1972)

Dr. Brooksby, Professor Lucam and Dr. Boldrini visited Greece from 20-24 September and consulted with Dr. Vojatzis, the Director of Veterinary Services, Dr. Cardassis, Director of the Foot-and-Mouth Disease Institute at Athens and Dr. Sotiropoulos.

Evolution of the disease

The progress of the infection by A<sub>22</sub> in Greece in 1972 is shown on the attached Table 1. The dates indicate the first and last case observed in each province.

The initial phases of infection up to the end of May were dealt with in the reports by Dr. Boldrini, Dr. Brooksby and Professor Lucam. These earlier outbreaks originated from movement of meat and possibly even animals across the Turkish frontier and distribution in several northern departments.

Outbreaks (Attica A and Argolis) in the South were linked to dealers' movements and to an illegal movement of animals from Serres to Argolis.

Towards the end of May, however, there was a new outbreak in Evros which may also be connected with animal movement across the frontier.

The vaccination of the border area had not been completed at this time and 718 animals of 2 715 in nine foci became diseased.

Cattle dealers visiting the area are believed to have been responsible for transmitting infection to start a second outbreak in Attica (Attica B) beginning on 24 June and lasting till 10 August. An alternative possibility to explain Attica B is persistence of infection on the premises involved, possibly in carrier animals or in sheep with an in-apparent infection.

The outbreaks in Attica in turn gave rise to two in Karditsa by an illegal movement of animals in spite of the fact that the standstill order for the Attica area was still in force. There was a limited local spread at Karditsa. Tighter security on the control of animal movement is planned by the Greek authorities as a result of the Attica-Karditsa transfer. In all these new cases, ring vaccination round the foci of infection was carried out using homologous vaccine prepared in Greece.

It is disquieting to find outbreaks of A<sub>22</sub> still occurring in Greece almost five months from the initial invasion by the strain, even if it is considered that there have been two separate introductions of disease. The control of spread of infection is difficult when dealers appear to have effected a similar transfer of infection (Northern Greece to Attica) on two separate occasions. This and the illegal movement of animals, reinforces the need for efforts by the Greek Government to improve police sanitary measures.

The other possibility suggested by the recurrent outbreaks is persistence of infection at the original foci, for example in Attica. This is equally disturbing for the future of control programmes and a limited carrier survey in the neighbourhood of earlier foci of infection would give valuable information for forecasting the success of control procedures.

#### Future Control Programme

At the time of the first extension of A<sub>22</sub> in 1965-66 fairly severe measures were taken by some countries to attempt to eradicate infection. Nevertheless, the disease has become endemic in almost all the territory which it invaded. In view of the fact that Greece has had little freedom from infection for five months, it seems that, unless radical measures are taken, the situation might deteriorate and the country face the prospect of an endemic presence of A<sub>22</sub>. To take action, measures against the infection would therefore seem prudent and aid to Greece (and her neighbours) is highly desirable.

The measures to be taken should include:

1. Vaccination to restrict possible spread from areas in which carriers are present and to set up barriers against new importation of virus.
2. Police sanitary measures to prevent movement of cattle dealers, animals and animal products both into and within the country.

These two techniques are complementary and each alone would be unlikely to succeed. Action before a further wave of infection is much to be desired.

### Vaccination

Three possible schemes have been examined:

1. Vaccination of all animals in Evros, creating an extended buffer zone against Turkey, and in Attica which appears to be involved immediately the disease appears in the North.

A total of 308 000 cattle doses of vaccine would be required (sheep receiving half a cattle dose).

The aim is to prevent new importation of the disease. (N.B. The outbreaks in April by-passed Evros).

2. Vaccination of all animals in all departments where the disease occurred plus those of Rhodipi and Kavallas.

A total of almost 1.6 million cattle doses of vaccine would be required.

The aim is to create a very solid buffer zone in the North of the country and to blanket the infection in any carriers remaining from the outbreaks in the North and the three other areas involved.

Such an operation would be much too expensive at present.

3. Vaccination of all animals in Evros and Attica and re-vaccination of all those vaccinated in the 30 km zone around previous outbreaks.

This would require approximately 500 000 cattle doses. The aim is to cover Proposal (1) above and reinforce the buffer zone in Evros, and to deal with the undoubted risk of dissemination of disease should Attica become infected. The revaccination of animals would deal more economically with the carrier problem than Proposal (2).

This third proposal should be adopted and every effort made to complete the vaccination before the beginning of December 1972, as an insurance against a re-  
crudescence of infection in the Spring of 1973.

### Vaccine Supply

The Institut de la Fièvre Aphteuse, Athens, has a stock of 70 000 doses of vaccine against Gre 1/72 and production can be 20 000 doses per week. It is expected that this production will be doubled in 1973. The present stock would enable a start to be made in Evros, the most urgent problem.

The Animal Virus Research Institute has a stock of 300 000 doses of A<sub>22</sub> Iraq vaccine, not strictly homologous with the Greek strain but giving a good immunity to it on revaccination, which could be used in the next stage of the campaign, and further production of 300 000 doses is planned. For this it is hoped that a Gre 1/72 will be available.

Further enquiries are suggested from I.F.F.A., whose production of A<sub>22</sub> USSR might be employed with advantage.

### Sanitary Measures

The police sanitary measures applied in Greece at present on the appearance of foot-and-mouth disease are essentially as follows:

When an outbreak is discovered, vigorous isolation is imposed on the entire group of infected or potentially infected animals. Animals are not allowed to leave their stables during the isolation period even to feed. Fodder and water is brought from outside the area of the outbreak.

By law, the duration of the isolation period is 21 days from the recovery of the last case. However, when virus considered to be exotic is involved, the isolation period is increased to 8 weeks or more.

All movement and carriage of animals is forbidden, first within the perimeter of the outbreak area, which includes all stables exposed to infection in the village, and second in the protective zone which extends considerably from the initial outbreak and can comprise the whole territory of the department (province).

The authorities of the neighbouring departments take all necessary steps to prevent the introduction into their territory of all animals, animal products and agents which might help in the transmission of the virus.

Animals from stables where infection has been present are not allowed to leave the department after the isolation period except for slaughter.

The veterinary services are helped in the application of these measures, and those applied to the use of milk in infected areas, the carrying-out of disinfection, the restriction of artificial insemination, etc. by the police force.

Stamping out, with the destruction of carcasses by burial at the infected place, is provided for by law. However, taking into account the agricultural practice in rural areas, based on communal grazing, and the limited availability of funds, it is impossible to apply stamping out in all cases.

Nevertheless, a considerable effort has been made, since from 1964 7 million drachma have been spent in compensation for slaughter under stamping-out procedures.

The Greek Veterinary Services have made great efforts to control the disease and have achieved an indisputable success.

Nevertheless, the grave problem posed by the extension of the virus A Gre 1972 in the region which affects Greece and her neighbours emphasizes that sanitary measures should be intensified in accordance with the following proposals:

Four situations are envisaged:

1. An outbreak involving a small number of animals (for example, 12 at most) which have not had contact with other susceptible animals (e.g. at communal pasture). Complete stamping out will be carried out.
2. The number of animals in an outbreak is greater than 12 or there have been contacts with a group at common pasture. In this case all animals will be inspected and those infected or potentially infected will be marked by ear clipping or in other ways. All animals for fattening must be sent for slaughter within a maximum of 6 months.
3. When the outbreak is in milking cows, every effort will be made to hold them in the same farm for 2 years under veterinary supervision unless they are sent for slaughter.



4. When an outbreak appears in an area where all the animals have been repeatedly vaccinated, it is suggested that stamping out should be applied, but only to infected animals and not to those showing no clinical signs.

The Veterinary authorities of the Ministry of National Economy have taken part in these discussions and have agreed to the police sanitary measures outlined above.

MISSION TO TURKEY  
(26-30 September 1972)

Following a similar mission to Greece, Professor F. Lucam and Dr. G.M. Boldrini visited Ankara and Istanbul from 26 to 30 September 1972.

In Ankara they had conversations with Dr. O. Ozdural, the Under-Secretary of State to the Ministry of Agriculture, Dr. M. Durusoy, the Director-General of Veterinary Services, Drs. M. Nazlioğlu and N. Tekin, assistant directors of Veterinary Services, Dr. G. Karagözoğlu, Director of the Foot-and-Mouth Disease Institute, Dr. H. Girard, FAO Expert and scientific staff of the Institute. In Istanbul they met Dr. Hasan Ertan, Director of the provincial Veterinary Services.

Evolution of the disease in 1972

Table 2 shows that, as in the past, the incidence of the disease, expressed as the number of villages infected, reached its peak in Anatolia during the summer months; both the O and A types were continuously encountered but virus A was identified twice as often as virus O.

In Thrace only virus A has been identified, the latest focus of infection dating from August 1972.

The virus involved

Since 1965 a number of type A strains isolated in Turkey have been sent to the World Reference Laboratory, Pirbright, for identification.

The results are as follows:

- strains A Mahmatli 1965, A Civril 1970, A Izmir 1971, A Van 1971 and A Ankara 1972 are catalogued as A<sub>22</sub>. A Mahmatli corresponds to A Iraq 1964; A Civril is still known as A Turkey 1970;
- strain A Polatli 1968 is catalogued as A<sub>28</sub>.

The information concerning the serological studies performed at Pirbright on some of these strains has been circulated by OIE.

Prophylaxis of A virus infection

Prophylaxis is carried out by means of a monovalent vaccine prepared with the A Mahmatli 1965 strain. Vaccinations are effected:

- in Thrace: on all ruminants once a year. The latest vaccination was carried out between April and June 1972 and covered 1 885 537 animals, including over 500 000 cattle and buffaloes. Furthermore, it is pointed out that these same animals had previously been vaccinated with a monovalent vaccine;
- in Anatolia: every year on State farms and ring vaccination around foci. Ring vaccination had been carried out on 1 173 235 animals and State farm vaccination on 225 005 animals.

To further extend the protection of livestock in Thrace, the veterinary authorities are considering vaccination or revaccination between now and December 1972 of all cattle aged between four months and a year. In addition, mass vaccination in Thrace will be carried out with a bivalent O/A vaccine as of Spring 1973.

The same vaccine will be used on a large scale in Anatolia.

However, one problem remains open, despite the highly favourable results of vaccination: does the vaccine produced with A Mahmatli 1965 strain still cover the A strains which were more recently isolated in Thrace? To answer this question, the veterinary authorities plan to carry out an experiment at the Foot-and-Mouth Disease Institute with a view to evaluating the potency of A Mahmatli vaccine against the newly isolated A strain and, if appropriate, to round off this study by a cross-immunity test.

#### Sanitary police measures

The mission studied this point particularly with regard to Thrace.

In Istanbul, the Director of the Veterinary Services provided the following information: the Istanbul livestock market receives animals each year either from Anatolia (about 400 000 cattle and 1 100 000 sheep) or from Thrace (about 5 000 cattle and 250 000 sheep). All these animals without exception have to be slaughtered in the two Istanbul slaughterhouses.

Hence, Istanbul can be regarded as an effective barrier against the spread of foot-and-mouth disease due to the transport of animals from Anatolia to the European continent. However, one should recall that the disease can be transported by means other than livestock and should not rule out the possibility of illicit trade in which animals can bypass the regulations, in particular those regarding compulsory slaughter in Istanbul.

Therefore, in order to strengthen the effectiveness of existing measures, bivalent O/A vaccination should be compulsorily applied to all animals with Istanbul as their destination.

#### The Foot-and-Mouth Disease Institute

The mission found that this Institute was well designed and equipped and possessed highly trained personnel. However, its production capacity, which was increased recently to about 10 million monovalent doses per year, is still insufficient to meet the needs of prophylaxis in general which the veterinary authorities are aiming at. This would require 60 to 70 million monovalent doses per year.

To attain this target, it is necessary, while maintaining both the Frenkel technique and tissue culture method in roller bottles, to develop substantially the technique of virus production on BHK cells in suspension.

To this end, a UNDP technical assistance programme had been established, the first phase of which is completed. A second phase planned to last three years is being implemented. This is aimed at raising the existing production of virus by the cell suspension method to a level which will permit the production of 10 million doses of vaccine and serve as a pilot plant for the institute which will be constructed to produce the 60 to 70 million doses of vaccine needed every year.

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A D D E N D U M

Extension of prophylactic measures to other countries free of FMD in southeastern Europe

Although the objective of the missions was only Greece and Turkey, it was deemed advisable to draw attention to the possibility of spread of A Gre 1972 virus to the territories of neighbouring countries.

In order to face this possibility, the maintenance of the buffer zones, established in the summer of 1972 in Bulgaria and Yugoslavia, is highly recommended and the relevant operation should be implemented already before December 1972.

**TABLE I**  
**EPIZOOTIC OF FMD DUE TO THE SUBTYPE A<sub>22</sub> IN GREECE DURING 1972**

No.	Infected Departments	Period	Infected communes	Outbreaks *				Animals affected				Animals in outbreaks				Animals free of FMD				Stamping out									
				cattle	sheep	goats	total	cattle	sheep	goats	total	cattle	sheep	goats	total	cattle	sheep	goats	total	cattle	sheep								
1	EVROS (A)	8/4	1	1	-	-	1	6	-	-	-	6	11	-	-	-	11	5	-	-	-	5	11	-	-	-	11	-	
2	EVROS (B)	5/6-6/7	1	9	-	-	9	703	-	-	-	703	2700	-	-	-	2700	1997	-	-	-	1997	-	-	-	-	-	-	
3	XANTHI	14/4-29/4	8	64	7	6	77	177	140	12	1150	12	430	1150	12	253	1010	-	-	-	-	-	-	-	-	-	-	-	
4	DRAMA	19/4-9/5	2	89	-	-	89	172	-	-	-	172	265	-	-	-	93	-	-	-	-	-	-	-	-	-	-	-	
5	SERRAI	24/4-1/5	4	10	-	-	10	35	-	-	-	35	91	-	-	-	56	-	-	-	-	-	-	-	-	-	-	-	
5	ATTIKA (A)	20/4-1/5	1	2	-	-	2	148	7	-	12	-	162	12	-	-	14	-	-	-	-	-	-	-	-	-	-	4	
6	ATTIKA (B)	24/6-10/8	3	19	-	-	19	257	108	40	102	300	900	102	300	643	-	-	-	-	-	-	-	-	-	-	-	-	
6	SALONIKA	4/5-28/5	4	27	-	9	36	119	-	306	-	1500	424	-	-	-	305	-	-	-	-	-	-	-	-	-	-	-	
7	ARGOLIS	5/5	1	1	-	-	1	7	-	-	-	-	10	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	
8	KARDITSA	15/8-5/9	2	2	-	-	2	628	-	2	-	-	1305	-	-	-	677	-	-	-	-	-	-	-	-	-	-	-	
	TOTAL		27	224	7	15	246	2252	255	375	1829	6298	1264	1829	4046	1010	1454	25	5										

\* One outbreak means one farm.

Table II

Distribution of O and A<sub>22</sub> outbreaks (\*) in Turkey between January and October 1972 (\*\*)

Regions	Outbreaks of foot-and-mouth disease												Total
	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	
Thrace (buffer zone)	-	-	A 2	A 14	A 8	A 8	A 1	A 3	A 3				39
Anatolia	O <sub>1</sub> ,A 10	O <sub>1</sub> ,A 13	O <sub>1</sub> ,A 18	O <sub>1</sub> ,A 48	O <sub>1</sub> ,A 108	O <sub>1</sub> ,A 174	O <sub>1</sub> ,A 214	O <sub>1</sub> ,A 180	O <sub>1</sub> ,A 146	O <sub>1</sub> ,A 85			996
Total	10	13	20	62	116	182	215	183	149	85			1035

\* One outbreak means a village.

\*\* The official statistics for 1972 are in Table 1 of Working Document AGA:FUFWD/73/2

THE ANIMAL VIRUS RESEARCH INSTITUTE

W.R.I. INFORMATION SHEET NO.13

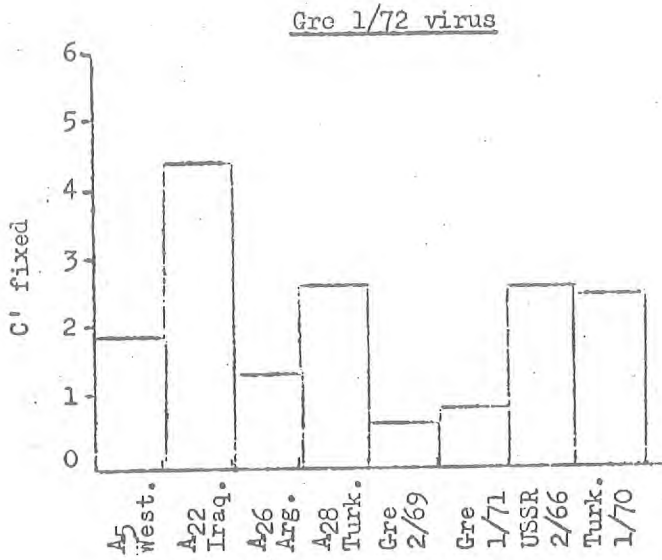
DATA ON FMD TYPE A STRAINS FROM GREECE

The relationships of FMD type A strains received in recent years from Greece have been compared by complement fixation tests with several other type A strains including those of the A<sub>22</sub> subtype isolated from outbreaks which occurred in the Middle East in previous years.

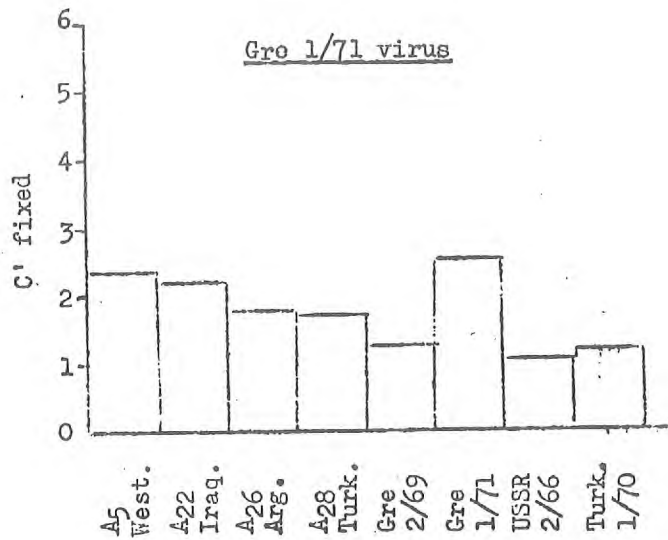
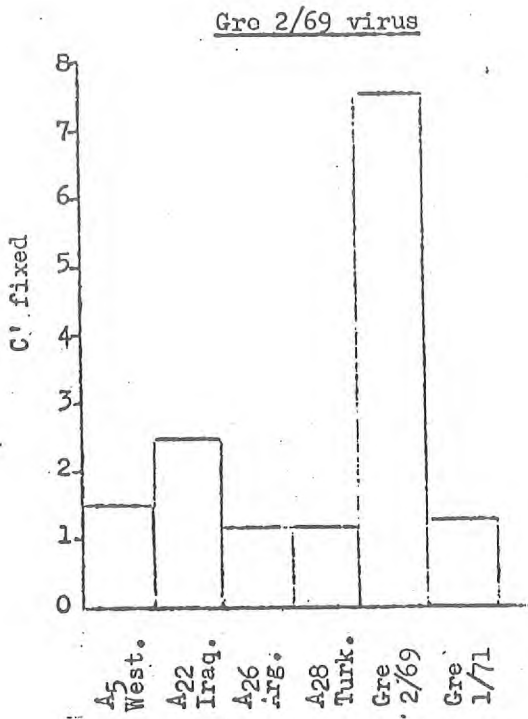
The strains employed in these investigations were:-

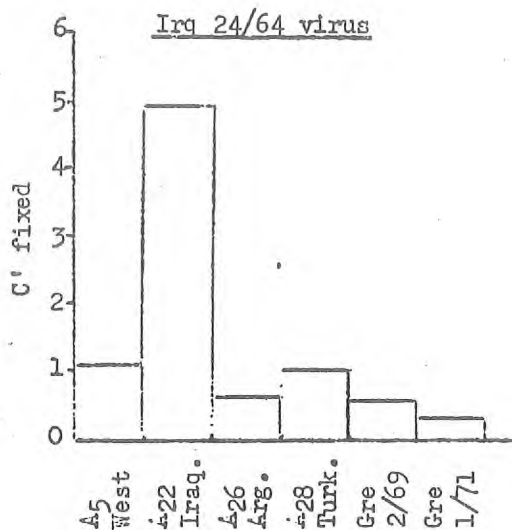
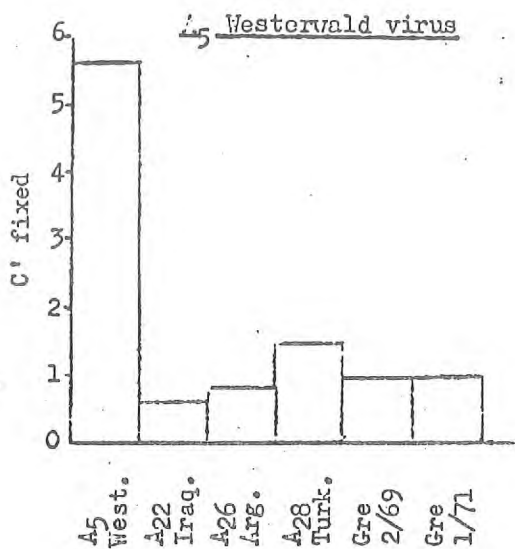
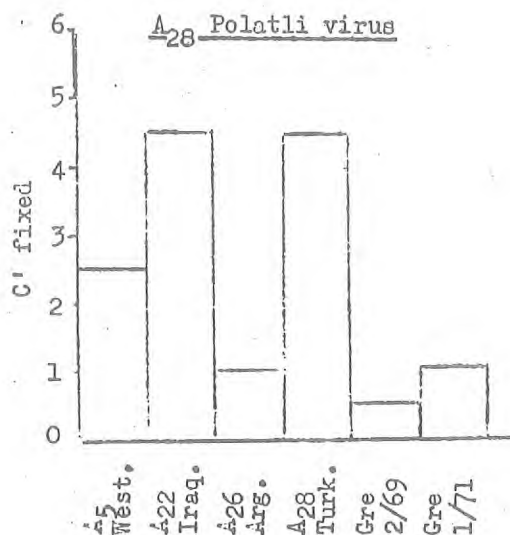
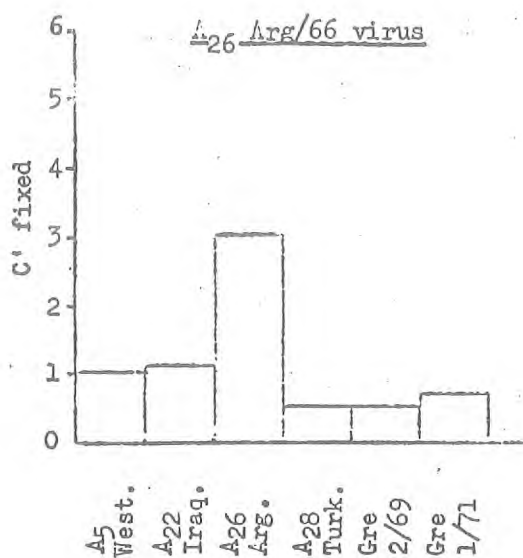
- Gre 1/72. Received on the 18th April, 1972 from Dr. Cardassis, and isolated from material obtained from cattle in the department of Xanthi, northern Greece. The outbreaks involved cattle, sheep and pigs.
- Gre 1/71. Received 17.3.71 from Dr. Cardassis as 4th passage virus on calf kidney tissue cultures. The original material was obtained from pigs affected with FMD in the Heraklion (Alikarnassos) region of Crete during February, 1971.
- Gre 2/69. Received 11.12.69 from Dr. Cardassis as original material taken from cattle affected with FMD in Serres (Macedonia), northern Greece. The outbreaks involved pigs and cattle. A previous examination of this isolate was the subject of the WRL Information Sheet No. 12 (5.4.72).
- Irq 24/64. Received from Dr. Berzanji, 12.11.64, Iraq, as original material from a cow affected with FMD in Mosul, Iraq. This was assigned the subtype no. A<sub>22</sub>.
- A<sub>26</sub> ARG./66. Received from Dr. Palacios of the Pan American FMD Centre, Nov. 1967.
- A<sub>28</sub> Polatli. Received from Dr. Karagozoglu 23.1.69 and isolated from cattle affected with FMD in the Polatli in the district of Ankara, Turkey. The cattle had been vaccinated with A<sub>22</sub> vaccine but had developed the disease between 2 and 4 months after vaccination. Cross-immunity tests in cattle and guinea-pigs indicated a slight difference between A<sub>22</sub> and the Polatli strain. On examination by the WRL by complement fixation, it was noted that when A<sub>22</sub> virus was tested with A Polatli serum the degree of differentiation (R = 78%) was in the subtype range, although cross-neutralisation tests between A Polatli and Irq 24/64 (A<sub>22</sub>) gave a value of R=40%. The Polatli strain was given the subtype No. A<sub>28</sub>.
- Tur 1/70. Received from Dr. Boz on 27.8.70 as first passage material in cattle. The original material was obtained from cattle affected with FMD in Civril, Denizli district, Turkey. One-way complement-fixation tests have indicated that this strain was very similar to the Irq 24/64 A<sub>22</sub> subtype strain.
- USSR 2/66. Received 2.2.66 and reasonably closely related to the A<sub>22</sub> subtype strains, Irq 24/64 and Iran 1/65.
- A<sub>5</sub> Westorwald. Used as the reference subtype strain of A<sub>5</sub> European A subtype.

In the absence of an homologous antiserum to Gre 1/72 for complement fixation tests, one-way tests with sera of the above viruses were as follows:-



Cross-complement fixation tests with the other strains gave results as follows:-





- Comments:
1. On the basis of one-way tests, the Gre 1/72 strain appears to have a close relationship to the A<sub>22</sub> (Iraq 24/64) subtype strain, and a less marked one with A Polatli, A<sub>28</sub>, with an equal reactivity with the USSR 2/66 (A<sub>22</sub>) strain. There is a relationship with the Tur 1/70 strain.
  2. The Gre 1/71 strain appears to differ from the Gre 1/72 and from the Gre 2/69 strains.
  3. The Gre 2/69 strain is also different but the assignment of a new subtype number to it must await tests with further A strains.

3rd May, 1972.

J. H. DARBYSHIRE



THE ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET NO.14

FURTHER DATA ON .F.M.D. TYPE 'A' STRAINS FROM GREECE

Since the preparation of W.R.L. Information Sheet No.13., two further type 'A' strains have been received from Greece. These are as follows:-

GRE 3/72

Received from Dr. Cardassis on 26.5.72. Tissue culture material treated with 1% chloroform for 24 hr. at 4<sup>o</sup>C. Derived from a sample received 14th May in Athens from Serres, N. Greece, from a cow vaccinated 10 days previously with  $\Lambda_{22}$  vaccine.

GRE 4/72

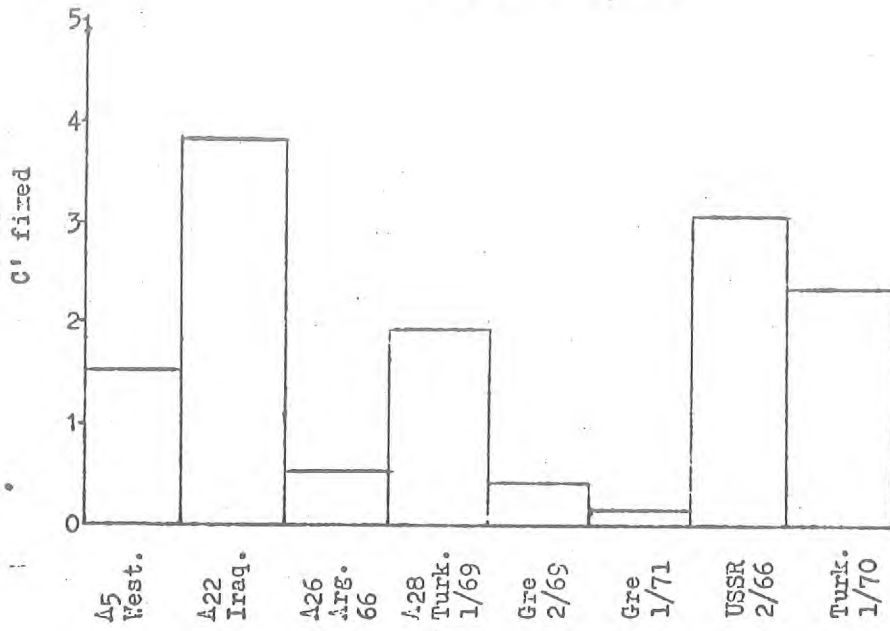
Received on 26.5.72. also from Dr. Cardassis. Tissue culture treated as for GRE 3/72 above. Original received in Athens 5.5.72. from one non-vaccinated cow in Thessaliniki. Seven cattle affected, one animal in each group of 5-6 animals vaccinated 6 days previously with  $\Lambda_{22}$  vaccine.

One-way tests with sera of these two viruses were carried out, using the same sera as were employed in the test of GRE 1/72 virus reported on page 2 of W.R.L. Information Sheet No.13. It will be seen that these strains have reacted in almost exactly the same pattern as the GRE 1/72 and therefore there is now further evidence for the identification of the new outbreak as being associated with a strain related to the  $\Lambda_{22}$  subtype.

14th June, 1972

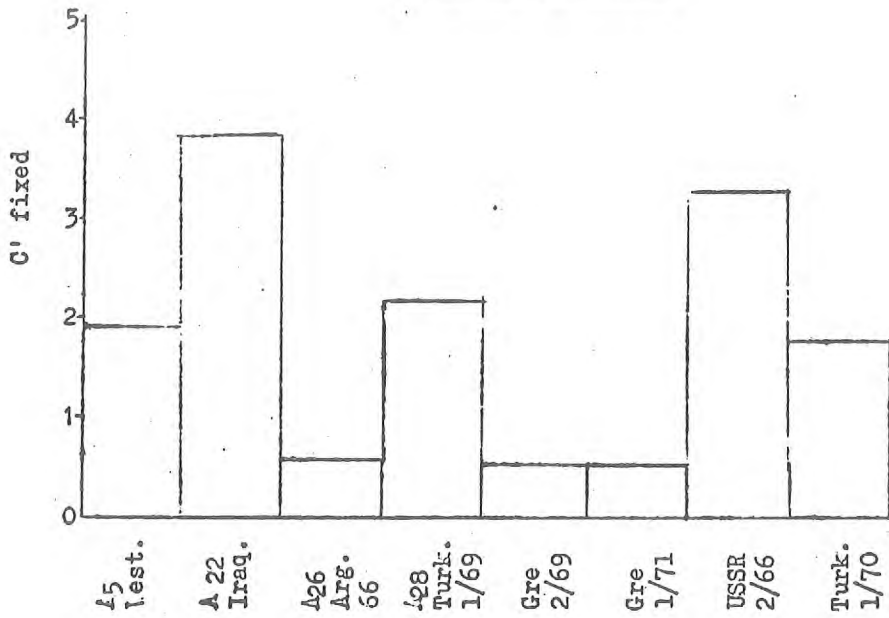
A.E.M. ARROWSMITH

Greece 3/72 Virus



Sera

Greece 4/72 Virus



Sera

THE ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET NO. 15

DATA ON FMD STRAINS FROM TURKEY

Since the reports on Gre 1/72, 3/72 and 4/72 (W.R.L. Information Sheets 13 and 14), four viruses have been received from Dr. Boz in Turkey. These are as follows:-

TURK 6/72

Received on 25.5.72. Sample of epithelium from an outbreak in Macun village in the district of Polatli, province of Ankara. Sheep, goats, cattle and buffalo were affected.

TURK 7/72

Received in W.R.L. on 19.6.72 as a sample of bovine tongue epithelium from an outbreak in the village of Hisarbeyli, district of Coloka in the province of Istanbul. Stock in affected village - cattle, sheep and buffalo. Sample collected from one day lesion.

TURK 9/72

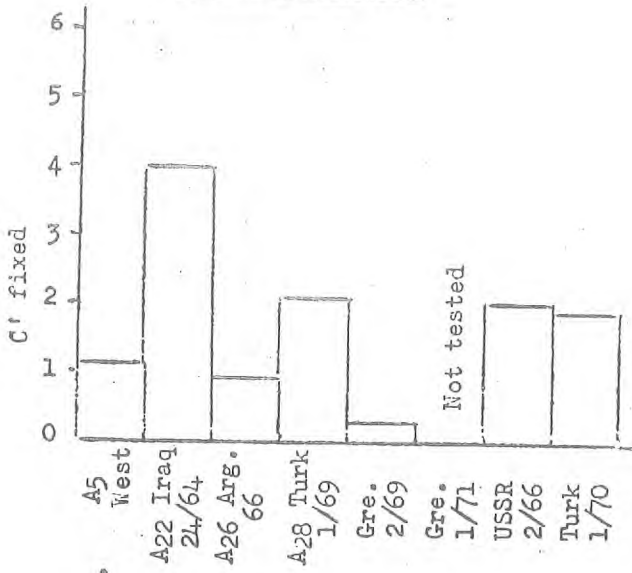
Received 19.6.72, a sample of epithelium from an outbreak in the village of Kocyalagi in the district of Erzincan, province of Erzincan.

TURK 10/72

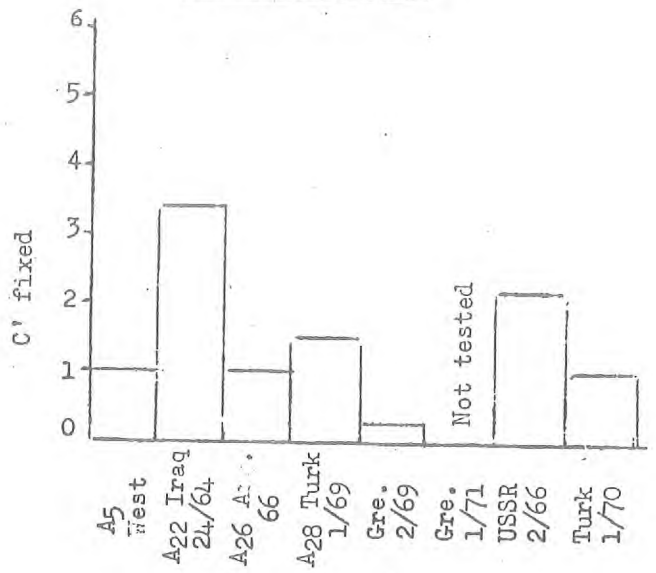
A sample of bovine epithelium also received on 19.6.72 from the village of Galkmak in the Kars district, province of Kars.

In the absence of homologous antisera to the above mentioned viruses, one-way complement-fixation tests with reference antisera as for Information Sheets Nos. 13 and 14 were as follows:-

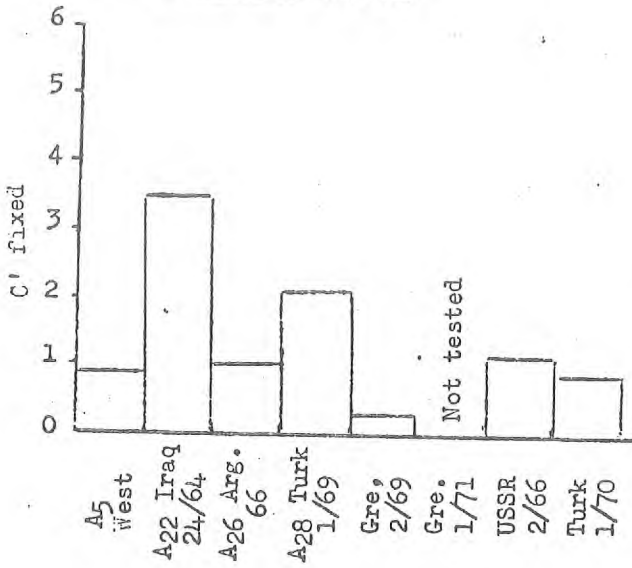
Turkey 6/72 Virus



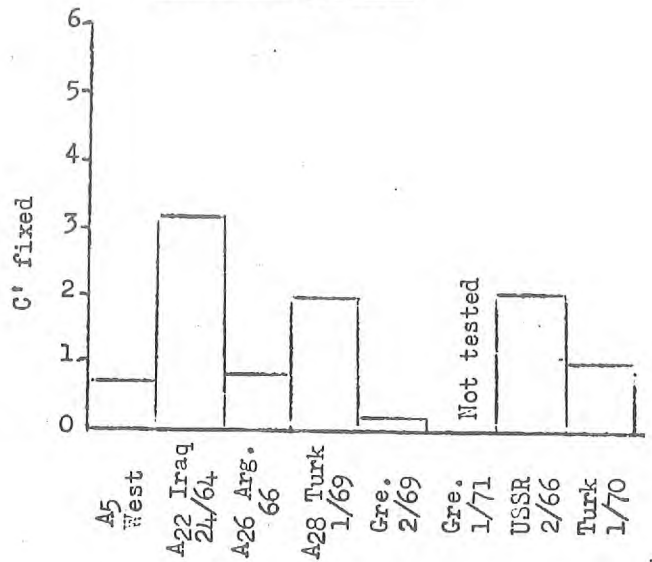
Turkey 7/72 Virus



Turkey 9/72 Virus



Turkey 10/72 Virus



These profiles strongly suggest that one strain of virus is involved in this widely dispersed series of outbreaks from Eastern Turkey to Northern Greece.

29th June, 1972

A.E.M. ARROWSMITH

W.R.L. INFORMATION SHEET NO. 16

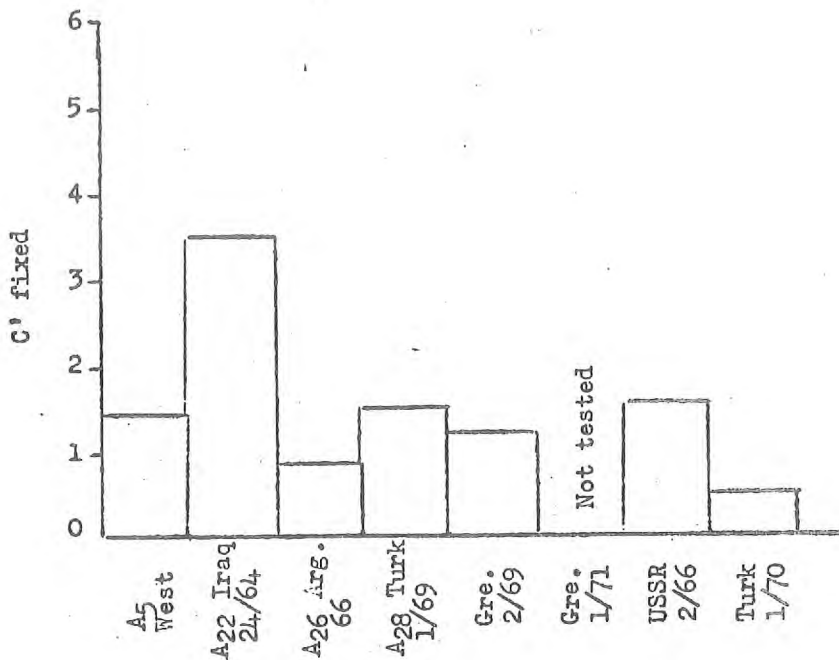
DATA ON FTD STRAIN FROM EGYPT

An 'A' strain has been received from Egypt, and has been compared with reference viruses on one-way complement-fixation tests using the same sera as those employed in previous tests with Gre. 1/72 reported in W.R.L. Information Sheet No. 13.

EGYPT 1/72

Received from Dr. Böhm on 7.6.72. Sample of epithelium from one local Baladi bovine, one of 51 animals affected at a quarantine station in Alexandria. Buffalo and imported cattle from Somalia in the same herd were not affected at that time.

Egypt 1/72  
virus



This profile suggests that the strain is one of the A22 group, but minor differences from those in Information Sheet No. 15 must be resolved before its relation to the current A22 outbreak in Turkey and Greece is established.

29th June, 1972

A.E.M. ARROWSMITH

ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET NO. 17

Further Data on a Foot-and-Mouth Disease Type A Strain from Greece

Since the publication of preliminary data on a number of strains from Greece, Turkey, Lebanon and Egypt (Information Sheets Nos. 13-16), a hyperimmune guinea pig serum has been prepared against the Gre 1/72 strain and employed in complement fixation tests to clarify the relationship between this strain and others from the area.

The viruses included in the present study were listed in Information Sheet No.13, with the exception of

Ken 140/69 received from Nairobi 23.7.69. Sample from an outbreak at Nakuru Ranch, Kenya.

The following tables summarise the results obtained. Some of the results on the interrelationship of strains listed have been given in earlier tables and are marked here as NR (not repeated).

Virus Serum	A5W	A22 Iraq	A26 Arg	GRE 2/69	USSR 2/66	GRE 1/72	KEN 140/69
A5W	1.0	NR	NR	NR	NR	0.07	NR
A22 Iraq	NR	1.0	NR	0.20	0.91	0.53	0.49
A26 Arg.	NR	NR	1.0	NR	NR	0.19	0.21
Gre 2/69	NR	0.09	NR	1.0	0.12	0.08	NR
USSR 2/66	NR	0.60	NR	0.16	1.0	0.33	NR
Gre 1/72	0.18	0.17	0.18	0.20	0.18	1.0	0.88
Ken 140/69	NR	0.35	0.17	NR	NR	0.54	1.0

Table 1. "r" values

Table 2. "R" values

A5W	100						
A22 Iraq	NR	100					
A26 Arg	NR	NR	100				
GRE 2/69	NR	14	NR	100			
USSR 2/66	NR	74	NR	14	100		
GRE 1/72	11	30	19	13	24	100	
KEN 140/69	NR	42	19	NR	NR	69	100
	A5W	A22 Iraq	A26 Arg	GRE 2/69	USSR 2/66	GRE 1/72	KEN 140/69

An effort has been made to relate the strain Gre 1/72 to the Tur 1/70 strain but the serum available against Tur 1/70 is of lower titre than usually employed and the result below is therefore open to revision at a later date.

R value Gre 1/72 v. Tur 1/70 R = 65%

r values

	Gre 1/72	Tur 1/70
Gre 1/72	1.0	0.56
Tur 1/70	0.75	1.0

#### COMMENTS

1. The R values shown confirm that Gre 1/72 is widely different from A<sub>5</sub> Westerswald, A<sub>26</sub> Argentina and Gre 2/69.
2. The R values for Gre 1/72 with A<sub>22</sub> Iraq and A<sub>22</sub> USSR are also low but it is noteworthy that the r values, using the sera against these strains, are not so low (0.53, 0.33) - which still suggests that Gre 1/72 is properly classed as a strain related to A<sub>22</sub>.
3. Gre 1/72 is probably (final result still awaited) not unlike Tur 1/70 (R = 65%), while Tur 1/70 is related to A<sub>22</sub> Iraq (R = 79%), but Gre 1/72 has given an R value of only 30% with A<sub>22</sub> Iraq. (This anomaly must be investigated).
4. Gre 1/72 is related (R = 69%) to Ken 140/69, which in turn is related to the other East African strains from Kenya and Tanzania. As indicated in Information Sheet No.2, the link between East African strains and A<sub>22</sub> is closer than the link between either of these and A<sub>5</sub> Westerswald.
5. The elucidation of the interrelationship of the A strains which have occurred in the countries of the Near and Middle East and Africa depends on further cross tests when homologous sera are available.

7th August, 1972

A.E.M. ARROWSMITH

APPENDIX XI

THE ANIMAL VIRUS RESEARCH INSTITUTE, PIRBRIGHT

Stocks of Seed Virus of Foot-and-Mouth Disease  
Strains held on behalf of the European Commission

At 31st December 1972, six-litre batches of the following strains are available for distribution should the need arise. These strains represent each of the five serotypes selected for storage. They are:

Type A: USSR 1/66 BTY 1 BHK 8 S 1  
Type SAT 1: Rho 5/66 BTY 1 BHK 5 S 1  
Type SAT 2: Uganda 6/70 BTY 1 BHK 12 S 1  
Type SAT 3: Bec 1/65 BHK 3 S 1 BHK 2 S 1  
Type Asia 1: Israel 3/63 BTY 1 BHK 7 S 1

BTY = Bovine thyroid culture  
BHK = BHK monolayer culture  
S = BHK suspension culture

The titrations of materials which have been stored for periods of up to nine months in liquid nitrogen indicate no detectable loss of infectivity.

Two strains, although available in small quantities, have still to be prepared on the six-litre scale. These are:

SAT 1 Turkey 323/61

SAT 2 Tanzania 5/68

These strains have already been adapted to BHK monolayer culture and tested for purity. They will be grown in suspension culture for storage as soon as possible.



APPENDIX XII

PROPOSED AMENDMENTS TO THE CONSTITUTION, RULES OF PROCEDURE  
AND FINANCIAL REGULATIONS

1. The Nineteenth Session of the European Commission accepted the proposals of the Executive Committee that regular sessions of the Commission should be held every two years instead of annually, and that the membership of the Executive Committee should be increased from 6 to 8 members. The Commission requested the Executive Committee to consider these proposals in detail at its next meeting in October 1972 "and to prepare the necessary constitutional amendments for consideration and approval by the Commission at its next Session in April 1973."
2. A series of draft amendments to the Constitution, the Rules of Procedure and the Financial Regulations of the Commission was presented to the Executive Committee for consideration at its meeting held in London from 23 to 25 October 1972.
3. The proposed amendments were discussed and approved by the Executive Committee subject to some modifications. The Executive Committee therefore decided to recommend to the Commission the adoption of the proposed amendments (as modified) in accordance with the provisions of Article XIV of the Constitution, Rule XVI of the Rules of Procedure, and Financial Regulation 7.2, respectively.
4. The draft amendments, incorporating the modifications introduced by the Executive Committee, are therefore submitted to the Commission in Annex I hereto.
5. In order to facilitate the examination of the proposed amendments, the Annex presents on the left-hand side the text of the Constitution, Rules of Procedure and Financial Regulations as now in force, and on the right-hand side the suggested new version. Whereas, in the case of the Constitution and the Rules of Procedure, only the provisions affected by the proposed amendments are given, the Financial Regulations are reproduced in full. To facilitate the identification of the proposed changes, the Financial Regulations are presented in such a way that the provisions at present in force are placed in juta-position to the corresponding text of the proposed new version; since the individual provisions of the new text appear in a different order, the paragraph numbers of the existing text no longer tally completely with those of the new provisions. 1/

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1/ The full text of all provisions at present in force may be found in Fascicle No. 1, Volume III of the FAO Basic Texts.

6. The proposed amendments to the Constitution are mainly intended to provide for regular sessions of the Commission to be held every two years (instead of annually as hitherto) and for the introduction of the biennial budget cycle which is an inevitable consequence of the two-year intervals between regular sessions of the Commission. Moreover, a redraft is suggested with regard to Article XIII, as it was considered appropriate to propose the deletion of the obsolete provisions which referred to the first five-year period after the entry into force of the Constitution and, at the same time, to revise the text of the paragraph concerning annual contributions of new members of the Commission.

7. The changes proposed with regard to the Rules of Procedure concern minor adjustments in Rule II, paragraphs (e), (h) and (i), and a correction in Rule XIV to harmonize its wording with an amendment made in 1962 regarding Article X, paragraph 2, of the Constitution in connection with the timing of the elections.

8. For the Financial Regulations more substantial changes are being proposed, mainly because all provisions have to be adapted to the concept of a biennial administration and also because they should conform as much as possible to the Financial Regulations of FAO, as provided in Article VIII of the Constitution.

9. If the Commission should decide to adopt the draft amendments, they will be submitted to the FAO Council for final action, after review by the appropriate Standing Committees. The amendments to the Constitution can only become effective with the concurrence of the Council, while the amendments to the Rules of Procedure and Financial Regulations could, in principle, take effect upon approval by the Director-General subject to confirmation by the Council. However, since the amendments to these three legal instruments are very closely connected, it seems appropriate to provide for the simultaneous effectiveness of all amendments, upon affirmative action having been taken by the Council. This should, in principle, make it possible for the Commission to plan for its biennial cycle to initiate on 1 January 1974, i.e. concurrently with the Organization's 1974/75 biennium.

CONSTITUTION  
of the  
EUROPEAN COMMISSION FOR THE CONTROL  
OF FOOT-AND-MOUTH DISEASE

Present Text 1/

Proposed Amendments 2/

ARTICLE IV

General Functions

The following shall be the general functions of the Commission:

.....

10. To consider and approve the report of the Executive Committee on the activities of the Commission, the [annual] accounts and the budget and programme for the ensuing [year] for submission to the Council of the Organization through the Director-General.

10. To consider and approve the report of the Executive Committee on the activities of the Commission, the accounts for the past financial period and the budget and programme for the ensuing biennium, for submission to the Council of the Organization through the Director-General.

ARTICLE VI

[Organization]

ARTICLE VI

Sessions

1. Each Member shall be represented at Sessions of the Commission by a single delegate who may be accompanied by an alternate and by experts and advisers. Alternates, experts and advisers may take part in the proceedings of the Commission but not vote, except in the case of an alternate who is duly authorized to substitute for the delegate.

(Unchanged)

2. Each Member shall have one vote. Decisions of the Commission shall be taken by a majority of the votes cast except as otherwise provided in this Constitution. A majority of the Members of the Commission shall constitute a quorum.

(Unchanged)

3. The Commission shall elect, at the end of each regular session, a Chairman and two Vice-Chairmen from amongst the delegates. These officers shall hold office until the end of the next regular session, without prejudice to the right of re-election.

(Unchanged)

1/ Words or provisions in square brackets to be omitted or amended.

2/ Amended or added words or provisions are underlined.

Present Text cont'd

Proposed Amendments cont'd

4. The Director-General of the Organization in consultation with the Chairman of the Commission shall convene a regular session of the Commission at least once a year. Special sessions may be convened by the Director-General in consultation with the Chairman of the Commission or, if so requested, by the Commission in regular sessions or by at least one third of the Members during intervals between regular sessions.

4. The Director-General of the Organization in consultation with the Chairman of the Commission shall convene a regular session of the Commission at least every two years. Special sessions may be convened by the Director-General in consultation with the Chairman of the Commission or, if so requested, by the Commission in regular sessions or by at least one third of the Members during intervals between regular sessions.

ARTICLE X

Executive Committee

1. An Executive Committee shall be established and shall be composed of the Chairman and Vice-Chairmen of the Commission and three delegates of Members selected by the Commission at the end of its regular session. The Chairman of the Commission shall be the Chairman of the Executive Committee.

1. An Executive Committee shall be established and shall be composed of the Chairman, two Vice-Chairmen of the Commission and five delegates of Members selected by the Commission at the end of its regular session. The Chairman of the Commission shall be the Chairman of the Executive Committee.

.....

.....

4. The Executive Committee shall meet at least once between any two successive regular sessions of the Commission.

4. The Executive Committee shall meet at least twice between any two successive regular sessions of the Commission.

.....

.....

ARTICLE XI

Functions of the Executive Committee

The Executive Committee shall:

.....

3. submit to the Commission the draft programme and Administrative Budget, and the annual accounts;

3. submit to the Commission the draft programme and Administrative Budget, and the accounts for the past biennium;

4. prepare the annual report of the activities of the Commission for approval by the Commission and transmission to the Director-General of the Organization;

4. prepare the report on the activities of the Commission during the past biennium for approval by the Commission and transmission to the Director-General of the Organization;

.....

.....

Present Text cont'd

ARTICLE XII

Administration

.....

2. The expenses of the Commission shall be paid out of its Administrative Budget except those relating to such staff and facilities which can be made available by the Organization. The expenses to be borne by the Organization shall be determined and paid within the limits of an annual budget prepared by the Director-General and approved by the Conference of the Organization in accordance with the Rules of Procedure and the Financial Regulations of the Organization.

.....

ARTICLE XIII

Finance

1. Each Member of the Commission undertakes to contribute annually its share of the administrative budget in accordance with a scale of contributions to be adopted by a two-third majority of the membership of the Commission. For the first five years after the Constitution has come into force, these contributions shall be in accordance with the scale indicated in Appendix I 1/. The budget for the administrative activities of the Commission for the first five years shall be on the basis of U.S. \$50,000 annually, subject to any modification which during this period might be made by constitutional amendment to Appendix I. To this sum shall be added any contribution made by Members in conformity with Paragraph 2 below 7.

2. Contributions to be paid by Members not listed in Appendix I shall be determined by the Commission. For this purpose the methods used for calculating

1/ In view of its temporary character, the Appendix I is not reproduced.

Proposed Amendments cont'd

2. The expenses of the Commission shall be paid out of its Administrative Budget except those relating to such staff and facilities which can be made available by the Organization. The expenses to be borne by the Organization shall be determined and paid within the limits of the biennial budget prepared by the Director-General and approved by the Conference of the Organization in accordance with the General Rules and the Financial Regulations of the Organization.

1. Each Member of the Commission undertakes to contribute annually its share of the administrative budget in accordance with a scale of contribution. This scale of contribution shall be adopted by the Commission with a two-third majority of its Members in accordance with the Financial Regulations of the Commission.

2. Contributions of States which acquire membership between two regular sessions of the Commission shall be determined by the Executive Committee in accordance with the Financial Regulations of the Commission; for this purpose such criteria as may be specified in the Financial Regulation shall apply. The determination made by the Executive Committee shall be subject to confirmation by the Commission at its next regular session.

Present Text cont'd

Proposed Amendments cont'd

the above-mentioned scale shall apply 1/7.

3. Annual contributions provided for under paragraphs 1 and 2 above shall be payable before the end of the first month of the [financial] year to which they apply.

.....

7. At the end of each financial [year], any uncommitted balance of the Administrative Budget shall be placed in a special account to be available for the purposes outlined in Articles IV and V.

3. Annual contributions provided for under paragraphs 1 and 2 above shall be payable before the end of the first month of the year to which they apply.

.....

7. At the end of each financial period, any uncommitted balance of the Administrative Budget shall be placed in a special account to be available for the purposes outlined in Articles IV and V.

RULES OF PROCEDURE

Rule II - Agenda

2. The provisional agenda for a regular session shall consist of:

.....

(e) [Annual] report of the Executive Committee on the activities of the Commission (Articles IV and XI of the Constitution).

.....

(n) [Adoption of Scale of Scale of Contributions to be paid by Members not listed in Appendix 1 to the Constitution (Article XIII of the Constitution)].

.....

(e) Report of the Executive Committee on the activities of the Commission during the past biennium (Articles IV and XI of the Constitution).

.....

(n) Any modifications of the Scale of Contributions including the confirmation of the determination of the contribution of any States having acquired membership since the last regular session (Article XIII of the Constitution).

[1]The scale of contributions as set out in Appendix I was calculated on the basis of national income of each country as expressed in the Scale of Contributions to FAO, the relative position of each country in regard to possible infection with foot-and-mouth disease and the number of livestock to be protected in each country.]

Present Text cont'd

- (i) Audited accounts for the preceding financial [year] (Articles IV and XI of the Constitution).

.....

Rule XIV - Election of Officers

1. At [the beginning of] each session, nominations shall be called for by the Chairman from the floor for the offices of Chairman and Vice-Chairmen of the Commission for the ensuing term of office as provided for in the Constitution.

Proposed Amendments cont'd

- (i) Audited accounts for the preceding financial period (Articles IV and XI of the Constitution).

.....

1. At each regular session, nominations shall be called for by the Chairman from the floor for the offices of Chairman and two Vice-Chairmen of the Commission for the ensuing term of office as provided for in the Constitution.

FINANCIAL REGULATIONS

Regulation I - Applicability

- 1.1 These regulations shall govern the financial administration of the European Commission for the Control of Foot-and-Mouth Disease.
- 1.2 The financial rules and procedures of FAO shall apply to the activities of the Commission unless otherwise provided.

(Unchanged)

Regulation II - The Financial [Year]

- 2.1 The financial [year] shall be the calendar year.
- [2.2 As a transitional measure, the first financial year shall cover the period from 12 June 1954 to 31 December 1954.]

Regulation II - The Financial Period

- 2.1 The financial period shall be two calendar years, coinciding with the financial period of FAO.

Regulation III - The Budget

- 3.1 Budget Estimates [expressed in United States dollars] shall be prepared by the Director-General of FAO [and submitted to the Executive Committee. They shall consist of:]

Regulation III - The Budget

- 3.1 The Budget Estimates shall be prepared by the Director-General of FAO.
- 3.2 The Estimates shall cover income and expenditures for the financial period to which they relate, and shall be presented in United States dollars.
- 3.3 The Budget Estimates shall be presented on a chapter basis and divided

Present Text cont'd

Proposed Amendments cont'd

into sub-chapters where necessary. The Budget Estimates shall include the programme of work for the financial period, such information, annexes or explanatory statements as may be requested on behalf of the Executive Committee or the Commission and such further annexes or statements as the Director-General may deem appropriate.

(a) An annual Administrative Budget relating to the annual contributions of Members of the Commission payable under Article s XIII (1) and XIII (2) and expenditures arising from Articles IV, V and XII (2) of the Constitution.

(b) As appropriate Special Budgets relating to funds made available from (i) the Special Account described in Article XIII (7) for expenditures on activities listed under Articles IV and V or (ii) Supplementary Contributions paid under Article XIII (4) for expenditures listed under Article V.

3.2 The annual Administrative Budget shall consist of three chapters:

Chapter I Administrative expenditure, under Articles IV and XII (2);

Chapter II Expenditure under activities listed under Article V. Estimates under this chapter may, if necessary, be presented in a single total only but detailed estimates for each particular project will be prepared and approved as "supplementary details" of the Administrative Budget.

Chapter III Contingencies.

3.3 The annual Administrative Budget s, together with any supplementary details then available shall be presented by the Director-General to the Executive Committee which shall submit them with its comments, to the Commission.

3.4 The Budget shall comprise:

(a) The Administrative Budget relating to the regular contributions of Members of the Commission payable under Article XIII of the Constitution and expenditures arising from Articles IV, V and XII (2);

(b) The Special Budgets relating to funds made available during the financial period from (i) the Special Account described in Article XIII (7) for expenditures on activities listed under Articles IV and V, or (ii) Supplementary Contributions paid under Article XIII (4) for expenditures listed under Article V.

3.5 The Administrative Budget for the financial period shall consist of three chapters:

Chapter I Administrative Expenditures under Articles IV and XII(2);

Chapter II Expenditure under activities listed under Article V. Estimates under this chapter may, if necessary, be presented in a single total only but detailed estimates for each particular project will be prepared and approved as "supplementary details" of the Administrative Budget.

Chapter III Contingencies.

3.6 The Administrative Budget shall be presented by the Director-General to the Executive Committee which shall submit it with comments to the Commission.



Present Text cont'd

[Additional supplementary details shall be submitted to the Commission for approval as and when the necessity arises.]

- 3.4 Special Budgets [(3.1 b)] shall be submitted at appropriate times to the Commission or the Executive Committee as the case may be.
- 3.5 The [budget] of the Commission shall be submitted to the Council of the Organization.

Proposed Amendments cont'd

- 3.7 Special Budgets (3.4 b) shall be submitted by the Director-General at appropriate times to the Commission or the Executive Committee as the case may be.
- 3.8 The budgets of the Commission shall be submitted to the Council of the Organization.

Regulation IV - Appropriations

4.1 After the budgets have been adopted, the appropriations therein will be the authority for the Director-General to incur obligations and make payments for the purposes for which the appropriations were voted and up to the amounts so voted.

(Unchanged)

4.2 In cases of emergency, the Director-General is authorized to accept Supplementary Contributions from a Member or Members of the Commission or grants from other sources and incur expenditure against them for emergency action for which the said Contributions or grants were specifically provided. Such Contributions or grants and expenditure relating thereto will be reported in detail to the next session of the Executive Committee or Commission.

(Unchanged)

4.3 Such portion of appropriations as is required to meet the outstanding legal obligations as at [31 December of that year] shall remain available for 12 months [following the end of that year.]

4.3 Such portion of appropriations as is required to meet outstanding legal obligations as at the last day of the financial period shall remain available for 12 months.

4.4 At the end of the 12-month period provided in Regulation 4.3 above, the then remaining balance of any appropriations retained shall be [surrendered]. Any unliquidated prior year obligation shall at that time be cancelled or where an obligation remains a valid charge, transferred against current appropriations.

4.4 At the end of the 12-month period provided in Regulation 4.3 above, the then remaining balance of any appropriations retained shall be transferred to the Special Account in accordance with the provisions of Article XIII (7) of the Constitution. Any unliquidated prior year obligation shall at that time be cancelled or where an obligation remains a valid charge, transferred against current appropriations.

Present Text cont'd

Proposed Amendments cont'd

4.5 Transfers between chapters may be effected by the Director-General on the recommendation of the Secretary of the Executive Committee. Details of the transfers so effected will be reported to the Executive Committee.

(Unchanged)

Regulation V - Provision of Funds

5.1 The appropriations of the Administrative Budget shall be financed by contributions from Member Governments determined and payable in accordance with Article XIII paragraphs 1, 2 and 3 of the Constitution.

(Unchanged)

5.1.2 Pending receipt of annual contributions, the Director-General is authorised to finance approved expenditure from the Special Account. Such drawings from the Special Account shall be refunded upon receipt of contributions.

5.2 For determining the annual contributions of each Member, the assessment for such Member for the financial period shall be divided into two equal instalments, one of which shall be payable in the first calendar year and the other in the second calendar year of the financial period.

5.3 At the beginning of each calendar year the Director-General shall inform Member Governments of their obligations in respect of annual contributions to the budget.



5.4 Contributions shall be due and payable in full within 30 days of the receipt of the communication of the Director-General referred to in Regulation 5.3 above, or as of the first day of the calendar year to which they relate, whichever is later. As of 1 January of the following calendar year, the unpaid balance of such contributions shall be considered to be one year in arrears.

Present Text cont'd

5.2 The annual contributions to the Administrative Budget shall be assessed in United States dollars. The currency in which contributions shall be paid is determined annually by the Commission in accordance with Article XIII (5) of the Constitution.

5.3 Any nation admitted to membership of the Commission shall pay a contribution to the budget for the financial year in which the membership becomes effective, such contribution beginning with the quarter in which acceptance of the Constitution has been effected. As a transitional measure, nations accepting the Constitution in 1954 will not be assessed in an amount exceeding 50 per cent of the assessment as laid down in the Scale of Contributions, Appendix I to the Constitution.

Regulation VI - Funds

6.1 All contributions, supplementary contributions and other receipts shall be placed in a Trust Fund administered by the Director-General of FAO.

6.2 With respect to the Trust Fund referred to in Regulation 6.1, the Organization shall maintain accounts:

6.2.1 A General Account to which shall be credited receipts of all contributions paid under Article XIII (1) and (2) of the Constitution, drawings from the Special Account under Financial Regulation 5.1.2 and Miscellaneous Income other than Supplementary Contributions under Article XIII (4) and from which shall be met all expenditure chargeable against the sums allocated to the annual Administrative Budget and repayments to the Special Account.

Proposed Amendments cont'd

5.5 The annual contributions to the Administrative Budget shall be assessed in United States dollars and calculated on the basis of national income of each country as expressed in the scale of contributions to FAO and the number of livestock to be protected. The currency in which contributions shall be paid is determined by the Commission in accordance with Article XIII (5) of the Constitution.

5.6 Any State acquiring membership shall pay a contribution to the budget in accordance with the provisions of Article XIII (2) for the financial period in which the membership becomes effective, such contribution beginning with the quarter in which membership is acquired.

(Unchanged)

(Unchanged)

Present Text cont'd

6.2.2 A Special Account to which shall be credited any excess of income over obligations incurred under the Administrative Budget at the end of each financial year, and from which shall be met expenditures for purposes outlined in Articles IV and V. Furthermore, the advances provided for under Financial Regulation 5.1.2 will be made from and repaid to this Account. Any deficit shown at the end of the financial year on the General Account may be made good from the Special Account.

6.2.3 Such additional accounts as may be necessary to which shall be credited the Supplementary Contributions and the expenditures relating thereto as envisaged in Article XIII (4).

Regulation VII -

7.1 These Regulations shall be effective from 12 June 1954.

7.2 These Regulations may be amended by the Commission in the same manner as provided for amendments to the Rules of Procedure of the Commission.

Proposed Amendments cont'd

6.2.2 A Special Account to which shall be credited any excess of income over obligations incurred under the Administrative Budget at the end of each financial period, and from which shall be met expenditures for purposes outlined in Articles IV and V. Furthermore, the advances provided for under Financial Regulation 5.1.2 will be made from and repaid to this Account. Any deficit shown at the end of each financial period on the General Account may be made good from the Special Account.

(Unchanged)

7.1 These Regulations may be amended by the Commission in the same manner as provided for amendments to the Rules of Procedure of the Commission.

INCREASE OF CONTRIBUTIONS

1. When the Commission was established in June 1954, by the approval of its Constitution, a scale of contributions was adopted as Annex I to the Constitution. The scale of contributions, which was to remain in force for five years, covered 25 European countries, potential Members of the Commission, and was to provide an annual income of US\$ 50.000. This amount was to permit:

- (a) the setting up of an administrative budget to cover salaries, common staff costs, travel, meetings of the Commission and the Executive Committee, publications and contractual services, and
- (b) the formation, through annual savings, of a fund (Special Account of the Commission) to be used for the performance of special functions indicated in Article V of the Constitution of the Commission (emergency situations, cordons sanitaires, production and/or storage of virus on behalf of the Commission, etc.).

2. As several countries mentioned in the Scale of contributions have to date not become Members of the Commission, an annual income of US\$ 50.000 has never been reached, and salaries as well as general expenses have constantly increased. This led the Executive Committee to propose, in 1966, an increase of annual contributions by 20 percent. The proposal was accepted by the Commission and approved by the Governments. It came into effect in 1968.

3. Owing to consistent efforts to keep expenditures from the Administrative Budget as low as possible, some savings were effected in the past in TF 42, the Trust Fund to which all contributions of Commission Member countries are credited. These savings were transferred to the Special Account referred to in para. 1(b). The Commission has therefore been enabled to maintain a small reserve for emergencies. This has largely been possible because of the fact that travel and other expenses in connection with the control of SAT 1 and A<sub>22</sub> virus types in southeastern Europe have been covered from special funds made available for these emergency programmes.

4. However, the increase of living costs and salary increments, as well as the devaluation of the U.S. dollar in 1971 and the general inflationary trend, has recently resulted in a further deterioration of the Commission's financial position. Staff salaries, alone, have almost reached the ceiling of the total income, leaving no funds for other general and special functions of the Commission, as defined under Articles IV and V of the Constitution. To give an indication of this rapid increase of expenses, it may be mentioned

that, as an average, salaries of General Service staff (Secretaries, etc.) have risen by 37,5 percent from February 1970 to April 1972.

5. As a result, the contributions of the Members are almost totally absorbed by Chapter I of the Administrative Budget (administrative expenditure) and only a token amount is left for Chapter II, which covers emergency expenditures. The Special Account, which is the reserve fund of the Commission, can therefore no longer be replenished from uncommitted balances of the General Account.

6. The Executive Committee considered the matter at its meeting at Nicosia (Cyprus) in February 1972 and requested the Secretariat to study the question of a possible increase in contributions. After having examined the relevant aspects in the light of a Secretariat study, the Committee decided, at its last meeting held in London in October 1972, to propose to the Commission that the annual contributions of Member nations of the Commission be increased by 30 percent. The Committee felt that this increase would ease the financial position of the Commission pending the accession of other European countries to membership in the Commission.

7. Pursuant to Article XIII of the Commission's Constitution, the Commission could adopt the proposed increase in contributions by a two-thirds majority of its membership.

APPENDIX XIV

ACCOUNTS FOR THE YEAR ENDED 31 DECEMBER 1972  
(Provisional)

The European Commission for the Control of Foot-and-Mouth Disease is a body established under Article XIV of the Organization's Constitution for the purpose of promoting and co-ordinating national and international action for the control of foot-and-mouth disease in Europe and its final eradication. Its funds are handled as Trust Funds under Financial Regulation 6.7.

FUNDS

The Organization does not maintain separate bank accounts for Trust Funds, having found it more convenient to use the Regular Programme accounts for the transactions involved. The balance of funds held in the Regular Programme accounts on behalf of the European Commission for the Control of Foot-and-Mouth Disease as at 31 December 1972 amounted to \$54,253 and is shown on Statement II (D) of Volume I of the Organization's Published Accounts for 1972.

INCOME AND EXPENDITURE

Contributions to the Commission's General Account amounting to \$43,259 were received from Member Governments of the Commission in 1972. Contributions for 1972 amounted to \$41,000; contributions received in arrears for 1971 amounted to \$2,025 and contributions received in advance for 1973 amounted to \$134. The General Account was credited with interest earned during the year totalling \$309. Administrative costs for the year amounted to \$41,832 leaving a balance on the General Account at 31 December 1972 of \$1,736 which was transferred to the Special Account.

SPECIAL ACCOUNT

Interest for the year amounting to \$1,670 was credited to the Special Account.

SERVICES PROVIDED BY THE ORGANIZATION

During 1972 the Organization made available without charge the services of some senior officials and the use of accommodation and facilities, to a total estimated value of \$31,916.

A.H. Boerma  
Director-General

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

Accounts for the Year ended 31 December 1972

STATEMENT I

GENERAL ACCOUNT

<u>Administration</u>			
Personal Services	\$ 37,335.83		
Consultant's Fee	540.00		
Travel	1,636.71	Member Governments' Contributions received in 1972 (as per Schedule I):	
Meeting of the Commission	1,761.47	For 1971	2,025.00
Miscellaneous	558.43	For 1972	41,100.00
		For 1973	134.02
		Interest received	43,259.02
Transfer to Special Account	41,832.44		309.21
	1,735.79		
	<u>\$43,568.23</u>		<u>\$43,568.23</u>

STATEMENT II

SPECIAL ACCOUNT

<u>Travel and per diem costs of members of Technical Committee</u>		
Balance at 31 December 1972	\$ 710.03	
	54,253.14	Balance at 1 January 1972
		Transfer from General Account
		Interest received
		Savings on Previous Years' Unliquidated Obligations
		723.60
	<u>\$54,963.17</u>	<u>\$54,963.17</u>



STATEMENT III

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

Accounts for the Year ended 31 December 1972

BALANCE SHEET AT 31 DECEMBER 1972

1 11 1

L i a b i l i t i e s

Special Account

\$54,253.14

A s s e t s

Current Account with the Organization

\$54,253.14

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

Statement of Contributions at 31 December 1972

	Amounts due in respect of 1971	Amounts due in respect of 1972	Total amounts due 1972	Receipts 1972	Amounts Outstanding 31.12.1972	1973 Contributions received in advance
	\$	\$	\$	\$	\$	\$
Austria	-	1,800.00	1,800.00	1,800.00	-	-
Belgium	-	3,000.00	3,000.00	-	-	-
Bulgaria	225.00	900.00	1,125.00	1,125.00	3,000.00	-
Cyprus	-	300.00	300.00	300.00	-	-
Denmark	-	3,000.00	3,000.00	3,000.00	-	-
Finland	-	1,800.00	1,800.00	1,800.00	-	-
Greece	-	900.00	900.00	900.00	-	-
Hungary	1,800.00	1,800.00	3,600.00	3,600.00	-	-
Iceland	-	300.00	300.00	300.00	-	-
Ireland	-	900.00	900.00	900.00	-	-
Italy	-	6,000.00	6,000.00	6,000.00	-	-
Luxembourg	-	300.00	300.00	300.00	-	134.02
Malta	-	300.00	300.00	300.00	-	-
Netherlands	-	3,000.00	3,000.00	3,000.00	-	-
Norway	-	900.00	900.00	900.00	-	-
Portugal	-	900.00	900.00	900.00	-	-
Sweden	-	3,000.00	3,000.00	3,000.00	-	-
Switzerland	-	3,000.00	3,000.00	3,000.00	-	-
Turkey	-	1,800.00	1,800.00	1,800.00	-	-
United Kingdom	-	8,400.00	8,400.00	8,400.00	-	-
Yugoslavia	-	1,800.00	1,800.00	1,800.00	-	-
	<u>2,025.00</u>	<u>44,100.00</u>	<u>46,125.00</u>	<u>43,125.00</u>	<u>3,000.00</u>	<u>134.02</u>

BUDGETS FOR 1973-1974

(Note by the Director-General of FAO)

1974 Administrative Budget

1. In accordance with the Constitution of the Commission and with its Financial Regulation III, I present herewith the proposed Annual Administrative Budget for 1974.
2. The budget estimates have been drawn up in the form established in the Financial Regulation.
3. In the absence of "supplementary details", I present the estimates for Chapter II in a single total in accordance with Financial Regulation 3.2. No expenditures have so far been made under this Chapter and in the absence of more accurate information I recommend that an amount of \$18,330 be provided here for 1974.
4. The proposed Annual Administrative Budget for 1974 totals \$ 65,130, i.e. contribution from Member Governments which may be received by the Commission.
5. Under Codes .00 and .10 "Personal Services" of Chapter I, the budget estimates for 1974 allow as in 1973, for one P-5 Secretary to the Commission and one G-6 Administrative Assistant. The increase in salaries against 1973, is due to mandatory increments. These increases are covered by provisions made under Chapter II.

1974 Special Budget

6. In the Special Budget for the Special Account, 1974, I recommend that an amount of \$ 3,000 be provided to cover any necessary travel and per diem of the members of the Standing Technical Committee. In addition I recommend that \$ 2,000 be provided for a study tour of two research workers of developing laboratories in Commission Member countries.

Revision to 1973 Administrative Budget

7. The total of possible contributions from Member Governments totals \$ 53,100, representing \$ 50,100 in respect of 1973 and \$ 3,000 outstanding contributions from 1972.

8. Attached are: Table A, the revised Annual Administrative Budget for 1973, together with my proposed budget estimates for 1974; Table B, a summary showing by item the expenditures in 1972 as presented for audit, the 1973 revised budget and the 1974 proposed budget; and Table C, a note showing the Special Budget for the Special Account.

Assistance given by FAO

9. Besides the above expenditures, there are services provided by the Organization which have not been included. Items not charged to the Commission include part-time services of senior officials of the Organization, the services of the Budget and Finance Units, accommodation, equipment, supplies of stationary, document processing and publication, etc. as well as postal and cable charges.

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

TABLE A

Annual Administrative Budget for 1973 (revised)

TRUST FUND No. 9042

<u>Source of Fund:</u>	Member Governments Contribution	Application of Resources in 1973:	
<u>Purpose of Fund:</u>	To support the activities of the Commission whose object is to promote national and international action with respect to control measures against FMD in Europe	Ch. I Administrative Expenditure under Article IV and XII.2 of the Constitution (1 x P-5 Animal Health Officer - 12 months post No. 6162-660) (1 x G-6 Administrative Assistant - 12 months - post No. 6162-546)	\$32 600 \$ 9 100 \$ 1 500 \$ 1 000 \$ 500
Contribution in respect of 1972	\$ 3 000	Code 9042.00.00 Salaries .10 Common Staff Costs .20 Travel on Official Business .30 Contractual Services .40 General Operating Expenses	\$44 700
Contribution in respect of 1973	\$50 100	Sub-Total Chapter I	\$ 8 400
		Ch. II Emergency Expenditures under Article V of the Constitution	Nil
		Sub-Total Chapter II	Nil
		Ch. III Contingencies	Nil
		Sub-Total Chapter III	Nil
GRAND TOTAL	\$53 100	GRAND TOTAL	\$53 100

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

TABLE A

Annual Administrative Budget for 1974

TRUST FUND No. 9042

<u>Source of Fund:</u>	Member Governments Contribution	<u>Application of Resources in 1974:</u>	
<u>Purpose of Fund:</u>	To support the activities of the Commission whose object is to promote national and international action with respect to control measures against FMD in Europe	Ch. I Administrative Expenditures under Article IV and XII.2 of the Constitution (1 x P-5 Animal Health Officer - 12 months post No. 6162-660) (1 x G-6 Administrative Assistant - 12 months - post No. 6162-546)	
Contributions in respect of 1974	\$65 130	Code 9042.00.00 Salaries .10 Common Staff Costs .20 Travel on Official Business .30 Contractual Services .40 General Operating Expenses	\$34 500 \$ 9 300 \$ 1 500 \$ 1 000 \$ 5 000
		Sub-Total Chapter I	\$46 800
		Ch. II Emergency Expenditure under Article V of the Constitution	\$18 330
		Sub-Total Chapter II	\$18 330
		Ch. III Contingencies	Nil
		Sub-Total Chapter III	Nil
<u>GRAND TOTAL</u>	<u>\$65 130</u>	<u>GRAND TOTAL</u>	<u>\$65 130</u>

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT AND MOUTH DISEASE

TF 42

TABLE B

European Commission for the Control of Foot-and-Mouth Disease  
Summary of the budgets for 1972, 1973 and 1974

	1972 Expenditures (provisional) \$	1973 Budget (as revised) \$	1974 Budget (as proposed) \$
<u>Chapter I</u>			
1. Personal Services	37 876	39 900	41 800
2. Travel	1 637	1 500	1 500
3. Meetings of the Commission	1 761	1 800	2 000
4. Contractual Services	-	1 000	1 000
5. General Operating Expenses	559	500	500
Sub-Total Ch. I	\$ 41 833	\$ 44 700	\$ 46 800
<u>Chapter II</u>	Nil	8 400	18 330
<u>Chapter III</u>	Nil	Nil	Nil

TABLE C

Special Budget for Special Account

Travel and per diem of members of the Standing Technical Committee	710	3 000	3 000
Study tour of 2 research workers of Commission Member Countries		2 000	2 000
<b>GRAND TOTAL</b>	<u>\$42 543</u>	<u>\$58 100</u> a/	<u>\$70 130</u> a/ b/

Note: a/ Includes the contribution of the new member country, the Federal Republic of Germany.

b/ Includes the 30% increase of member country contributions effective 1 January 1974.

REPORT OF THE EXECUTIVE COMMITTEE

I. GENERAL ACTIVITIES

The general activities of the European Commission and its Secretariat did not differ substantially from those of the previous year. However, as a result of the deterioration of the disease position in several countries in 1972, especially in eastern and south-eastern Europe, a much greater part of the Secretariat's time than usual was spent in maintaining contacts with veterinary authorities and with foot-and-mouth disease laboratories in order to monitor, often at daily intervals the changes in the disease situation and thus to maintain a continuous surveillance both for the countries affected as well as for the countries concerned in the transit and receipt of transported animals. Regular exchange of epizootiological information was provided for all countries affected by the disease and for those interested in the importation of live animals and meat, as well as for the European Economic Community.

Problems connected with virus identification and subtyping were frequently dealt with, especially in connection with the reappearance of the disease caused by subtype A<sub>22</sub> in several provinces of Greece and with the C virus epizootic in the Danube region. Attention was paid to primary foci of infection, especially those occurring in regions which had been free of disease for several years. During the past year invaluable cooperation was given by the World Reference Laboratory for Foot-and-Mouth Disease, the Animal Virus Research Institute, Pirbright, United Kingdom, the main features of this cooperation being:

- (a) the prompt examination and classification of the virus strains submitted by Greece (April 1972), Hungary and Romania (November 1972) and also Bulgaria (January 1973); this allowed the early institution of control and prophylactic measures, on an emergency basis both in the affected European countries and in those directly or indirectly exposed to infection;
- (b) the preparation of a reserve stock of A<sub>22</sub> vaccine for use in case of emergency. Part of this vaccine was obtained at cost price for the conduct of a vaccination campaign in Greece, pending the response to fundraising campaign launched by FAO for the maintenance of buffer zones;
- (c) the maintenance of seed virus stocks of exotic types and subtypes;
- (d) the organization of a meeting of the Research Group of the European Commission;



(e) the special training of laboratory workers in subtype classification.

Close cooperation in virus identification and subtyping was maintained also with other institutes, both national and private, in particular with the Institut Français de la Fièvre Aphteuse (IFFA), the Director of which supplied important information on the field strains isolated in Yugoslavia (C), Spain (A) and Greece (A Greece 1972).

With the approval of the Executive Committee a new activity consisting of the circulation between sessions of information on important issues or events was initiated in June with the distribution of a report on the action taken in connection with the A<sub>22</sub> epizootic in southeastern Europe. In winter 1972/73, reports were circulated on the evolution and control of the C virus epizootic in the Danube region as well as on the emergency meeting held in Rome on swine vesicular disease (9 January 1973). This activity includes the dissemination of the results obtained at Pirbright and also in other European Institutes of studies on type and subtype determination as well as on immunological relationships and epizootiological surveys carried out in the field.

The disease situation of countries from which the infection may be introduced into Europe, especially by meat, was kept under observation and attention was concentrated particularly on the efforts of vaccination programmes. Great interest was taken in activities related to the maintenance or reestablishment of freedom of disease in Patagonia as well as in programmes directed towards the creation of controlled areas or disease free zones in countries having an export potential for Europe. The possibility of an increased flow in future years of live animals from South America into Europe both for immediate slaughter or fattening purposes was kept in mind. The evolution of the subtype situation in South America and the continuation of trials for the determination of immunological relationships of South American and European virus strains were followed with great interest.

The participation of the Commission's Secretariat in the activities of the Animal Production and Health Division of FAO has been further increased, especially in connection with studies, consultations and projects designed to expand laboratory facilities or strengthen field services in the control of foot-and-mouth disease in Turkey, the Near East and in several other countries of Africa and Asia. In particular, technical advice was provided for UNDP supported projects for which FAO serves as the executing agency. These include TUR/71/549 Phase II in Turkey whose objective is to develop a pilot plant at the Ankara Institute with a capacity of 10 million doses of vaccine per annum produced by the cell suspension method. Another important project is EGY/72/567 in which an FMD vaccine production plant is being developed at the Serum and Vaccine Institute, Abassia, Cairo. Reports from experts working in these and other laboratories supported by UNDP have been received and appropriate comments prepared. The Secretary has also been engaged in the briefing of special review missions which have been mounted to evaluate inter alia field activities and laboratory work on foot-and-mouth disease in developing countries.

Time has also been spent in contributing to activities of the Division directed towards the development of disease control programmes which are expected to lead sooner or later to the establishment of disease free zones in Africa and Asia. In this respect the action taken in Kenya for the implementation of the FAO/OIE recommendations on the health requirements applicable to meat obtained from feedlots and intended for export into Europe has been closely followed. The Secretary has also participated actively in the examination of projects or proposals for programmes of the systematic control of foot-and-mouth disease in Asia including the delimitation, establishment or reestablishment of disease free zones. It is expected that vaccine production will receive a considerable impetus in the Near East and in the Far East in the near future.

In addition to routine activities, the Secretariat took all necessary steps to implement the recommendations of the 19th Session that in future the sessions of the Commission should be held only every two years. This required the elaboration of a series of changes in the Constitution, Rules of Procedures and Financial Regulations

of the Commission. To this end, the cooperation of the FAO Legal Counsel was of great assistance and all relevant documents, after having been submitted to the Executive Committee for comments and approval, were distributed to Member countries well in advance of the Session. Furthermore, the increased cost of living in Rome and the consequences of dollar devaluation necessitated a careful study of the financial position of the Commission. A budget review was undertaken and a proposal for an increase of contributions was placed before the Executive Committee.

## II. PARTICULAR ACTIVITIES AND VISITS TO COUNTRIES

### 1. Activities and travel related to the A<sub>22</sub> campaigns

These activities which absorbed a large part of the available time, especially during the period mid-April to mid-June, have been described (Appendix X).

Preparations for the campaigns and their conduct were carried out in close cooperation with the Chief, Animal Health Service, whose advice and support, especially in connection with the approach to governments and international organizations, has been of great assistance to the Secretariat and the Commission. The cooperation obtained from government authorities in planning and implementing control programmes in Greece, Bulgaria and Turkey and the assistance received, especially on the occasion of field surveys should be mentioned.

### 2. Activities connected with FMD epizootics in eastern Europe

The reappearance of C virus in eastern Europe and its rapid spread in the border areas of four countries between October and November 1972 necessitated the carrying out of a number of activities. The identification of the virus strain and the assessment of its potential danger for other countries was the first objective. In order to obtain first-hand information on the control and prophylactic measures adopted in the various countries, the Secretary, after consultation with the Chairman, visited Belgrade, Budapest and Bucharest during the period 14-22 November 1972. His observations and a report on the discussions held with the central veterinary authorities and laboratory specialists in the three countries were immediately sent to the interested government authorities and to OIE. It was gratifying to note the spirit of cooperation and friendly assistance shown at all levels during the survey.

The procurement of vaccine, the strategy of vaccination campaigns, the problems of animal movements and meat supply in the area under quarantine and the control of international transports were the main items of discussion. The weakness of disease control and preventive systems so far based only on the application of sanitary measures, as well as the lack of systematic vaccination, except to a certain extent in Hungary, was generally admitted. Plans for the modernization of the existing installations for vaccine production were also discussed and it was encouraging to observe the progress made in establishing a new production unit at the Zemun Institute, near Belgrade, and new isolation units for the testing of vaccines and research at Bucharest. The advantages of setting up units for the production of virus by modern methods of tissue culture, thus eliminating both the Waldmann and the Frenkel method with its concomitant problem of obtaining sufficient supplies of tongue epithelium was pointed out.

At a later period, in December 1972, when the procurement of vaccine became a very serious problem in central and eastern Europe, the Secretariat of the Commission was engaged in the search for vaccine supplies from various sources in western Europe. Commercial institutes in France, the Federal Republic of Germany and Spain were able to deliver after relatively short notice, large quantities of vaccine, thus showing the great production potential reached on the Continent. Also national laboratories, though to a lesser extent, were able to satisfy urgent requests.

A quick response was also obtained by the Secretariat when requesting strain identification. The World Reference Laboratory published on 21 December 1972 the "European" characteristics of the strains submitted by Hungary and Romania, and this information was soon afterwards confirmed by IFFA and the Brussels Institute.

### 3. Mission to Spain and Portugal

The Chairman and the Secretary visited Spain and Portugal during the week 28 January to 5 February 1973.

#### Spain

The mission discussed general disease control policy in Spain with Ing. F. Abril Martorell, Director-General of Agricultural Production. The FMD position, its prophylaxis and problems of importation were dealt with during a meeting with Dr. L. Mardones Sevilla, Sub-Director General of Animal Health, and Dr. Comparé Fernandez, Chief, Section for Animal Disease Control and Prophylaxis. On questions relating to vaccine production the mission met representatives of the commercial laboratory "Sobrino", which had been visited by the Secretary in June, 1971, and those of "Beca" and "Bayer".

Accompanied by Drs. Mardones, Comparé and Manso, the latter being responsible for the state control of FMD vaccines, the mission travelled to Porrino on the Atlantic coast to see the new installations for the production of FMD vaccine at the Cooper-Zeltia Institute.

FMD position and control. The improved disease position in general and especially the success recently scored in eliminating the A type outbreak in northern Spain which had been introduced with live cattle imported from South America, was noted. On the prophylactic schemes of the country the mission was informed that emphasis is being placed on two vaccination campaigns carried out every year in cattle and small ruminants, and the vaccination once a year of nearly two million pigs. After the appearance of A virus in Spain, it was decided to carry out trivalent A, O and C vaccination of cattle starting in 1973.

Vaccine production in Spain. The mission was impressed by the remarkable achievements of this country in increasing its vaccine production capacity. The Porrino laboratory for FMD has now three lines of production and, with the addition of a fourth line, will shortly be able to produce 1 million trivalent cattle doses per week. The method of production is based on BHK cells in suspension with all fermentors being equipped with an autonomous pH control. AEI is used as inactivant and the antigen is concentrated.

Vaccines specifically intended for pigs are produced by the Sobrino Laboratories at Olot where oil vaccine according to the formula of Roger Bellon is prepared, and by Bayer, near Barcelona, where dextran vaccine is produced. Bayer will soon build a new laboratory for dextran vaccine production. The Beca Laboratories, on the other hand, will produce Frenkel vaccine in association with IFFA, and a new institute is being built for this purpose. Plans for the new Beca and Bayer institutes were shown to the mission and a fruitful discussion took place on potency requirements and official testing methods for FMD vaccine.

Participation of Spain in the European Commission. The Chairman was able to discuss the possibility of Spain becoming a Member of the European Commission. The advantages of such a decision both for Spain and for the European Commission were illustrated in the light of the expanding international and intercontinental trade of animals and meat. The impression was gained that Spain is giving full consideration to becoming a Member of the Commission in the near future.

Before leaving Spain, the position of African swine fever was discussed and the offices of the central organization of the campaign against ASF were visited.

## Portugal

The mission was received in Portugal by Dr. Trigo-Pereira, Director-General of Animal Production and Health, Dr. da Rosa Azevedo, Inspector-General for Animal Health, Dr. Carmona Rodriguez, Chief of the Animal Health Division and Dr. Manso Ribeiro, Director of the Central Veterinary Institute.

The favourable position of Portugal in respect to FMD was noted. It was learned with great interest that Portugal proposes to develop regular programmes of vaccination against FMD and that, as a first stage of the prophylactic campaigns, border area vaccination will be carried out systematically from the beginning of 1973. The problem of importation of meat and other animal products into Portugal from overseas were also examined. Note was taken that all imports from Africa were rigidly controlled.

Dr. Trigo-Pereira also reported on the position of African swine fever in his country. The determination of Portugal to undertake a major effort for the eradication of African swine fever by combining health schemes with a new project for pig breeding was noted with great interest.

The mission was offered an opportunity to visit the state veterinary institute and to observe the excellent work carried out in the various laboratories by Dr. Manso Ribeiro's staff.

### 4. Technical assistance to FMD laboratories

The decision taken at the 19th Session that assistance should be offered to two laboratory workers from Member countries in 1973 for special training in selected European laboratories was implemented. A staff member of the laboratories of Athens and one from Sofia were given per diem allowances to cover a stay of approximately 6 weeks at Pirbright and Brescia, respectively. During the past year, the Institutes of Brescia, Padova and Ankara kindly agreed to accept, among other trainees, staff members of the Cairo Institute for FMD, who visited the institutes under FAO fellowship awards.

Technical assistance has also been given by the Lindholm Institute to an FMD laboratory which is being developed in India and by the Brussels Institute to laboratories in Poland and in other European countries.

## III. MEETINGS

### 1. Ad hoc consultation on swine vesicular disease

Late in December 1972, the Chairman of the European Commission discussed with the Chief, Animal Health Service, the situation arising from the appearance in the United Kingdom and in three other European countries of an infectious disease of swine which was clinically difficult to distinguish from FMD. In consideration of the importance of the new problems posed by the disease from the point of view of differential diagnosis, disease reporting, control and prevention, it was agreed that an ad hoc consultation among veterinary officers and laboratory specialists of the countries affected should be held as soon as possible.

Accordingly, a meeting was convened at FAO Headquarters under the auspices of the European Commission on 9 January 1973. The report of the meeting (Appendix VI) was immediately distributed in English, and later in French, to all interested European governments, institutes and international agencies.

The position of swine vesicular disease in Europe is being continuously monitored.

2. Meeting of the Executive Committee, London, U.K., 23-25 October 1972

A meeting of the Executive Committee of the European Commission for the Control of Foot-and-Mouth Disease was held in London from 23-25 October 1972.

The members who participated were:

Mr. A.G. Beynon, U.K. (Chairman)  
Dr. Chr. Werdelin, Denmark (Vice-Chairman)  
Dr. A. Nabholz, Switzerland (Vice-Chairman)  
Dr. R.P. Gaier, Austria  
Dr. L. Bellani, Italy  
Dr. J.M. van den Born, Netherlands, was unable to be present  
Dr. J.G. van Bekkum, Netherlands, represented the Research Group  
Mr. J.P. Dobbert, Senior Legal Officer, Office of the Legal Counsel, FAO

Dr. G.M. Boldrini, Dr. P.R. Ellis and Miss D. Guarino served as the Commission's Secretariat for the Session.

Mr. Peter Mills, M.P., Parliamentary Secretary of the Ministry of Agriculture, Fisheries and Food, opened the meeting and in welcoming the members of the Committee on behalf of the Government stressed the importance of the Commission's work.

1. Adoption of Agenda

The Agenda as presented was approved.

2. Approval of the Minutes of the Meeting of the Executive Committee held in Rome on 11 April 1972

It was noted that reference to further efforts needed to increase membership of the Commission had been omitted. It was agreed that urgent approaches should be made to the European countries, especially France, which are not yet members of the Commission, through all suitable channels. It was noted with satisfaction that the Federal Republic of Germany is likely to become a member in the near future and that the Chairman and the Secretary will discuss the question of Spain's membership during their forthcoming visit.

3. The Foot-and-Mouth Disease Situation (Summary)

The Secretary presented tables and a review of recent developments.

Europe

Further marked improvement had been noted in almost all the European countries. Outbreaks in the Federal Republic of Germany had been few and mainly associated with the application of vaccination and the nature of these problems was to be discussed by the Research Group (see report of the Research Group). France had continued to be free after two isolated outbreaks in April. In Italy only a few outbreaks had occurred. There had been one associated with the importation of animals from Romania, which led to a number of secondary outbreaks, and another in the Brescia area. All these outbreaks had been eliminated by a slaughter policy.

A new outbreak (virus O) was reported from Romania in August but the country had recently been officially declared free again. However, it was noted that three outbreaks of type "C" virus had been identified in Hungary in the frontier area of Romania just prior to the Session. Very impressive progress was reported from Spain. Not only had the number of outbreaks been reduced, but also the numbers of cases per outbreak. This was attributed to the extension of the vaccination campaign which is now almost nation-wide. Portugal had been free of Foot-and-Mouth Disease for more than one year.

In the course of this review the need for further evidence on the role of carrier animals as a means of introducing the disease was mentioned and this topic was referred to the Research Group. Attention was also drawn to the need for Central Veterinary Authorities to retain authority over reporting and control of infectious diseases, despite the trend to decentralization of veterinary activity.

#### Other regions

Information on the position in the U.S.S.R. was drawn from the OIE Reports but no information was available on developments since May 1972.

No major change appeared to have taken place in the Near East and North Africa. However, an outbreak caused by A<sub>22</sub> virus had been recorded in the quarantine station at Alexandria, Egypt. There appeared to have been a recrudescence of the disease in Eastern Africa. A recrudescence of Foot-and-Mouth Disease had also been noted in southern South America.

#### Submission of specimens to the W.R.L., Pirbright

In discussing the problems that had arisen the Committee re-emphasized the need for Member Governments to adopt very strict controls whenever there was a threat or suspicion of an exotic virus type and that they should submit strains from such outbreaks to the World Reference Laboratory without delay. This was considered particularly important where type A virus was involved. In this connection the Committee took note of the excellent work being done by the W.R.L. in examining a wide variety of strains.

A letter which had been received from the Pan American Foot-and-Mouth Disease Centre was also discussed. It contained comments on the recommendations of the Commission concerning the submission of samples to the World Reference Laboratory. A complaint concerning actions being taken as a result of the recommendations was also noted. The Secretary and the Chairman were authorized to reply on the points raised.

#### 4. The Control of A<sub>22</sub> Infection in South-Eastern Europe

The Secretary summarized the Working Paper for the XXth Session, which reports recent developments with respect to Foot-and-Mouth Disease in south-eastern Europe (Appendix X).

The Committee expressed grave concern at the spread and persistence of A<sub>22</sub> in the area. It urged all infected and exposed countries to exercise strict measures to prevent and control the disease, and to speed up both the notification of new outbreaks to OIE/FAO and neighbouring countries and the submission of samples to the World Reference Laboratory for sub-type investigation. The Committee appreciated the control efforts made by Greece and Turkey to date and was grateful for the swift assistance from the U.K., Switzerland and Sweden which made possible the early initiation of the vaccination programmes recommended by the missions. Aid is anticipated from other countries to continue these activities. Members of the Commission who are also members of the EEC will be requested to support early action on aid from the Community in response to the appeal from the Director-General.

#### 5. Import Policies

The Commission's attitude to imports of animals and animal products was again reviewed. It was felt that the Commission could not undertake the investigation and approval of specific plans of non-member countries aimed at the exportation of meat. Advice could be given along the lines proposed by the FAO/OIE Working Group but the final decision would have to rest with the individual importing countries.

6. Proposed Amendments to the Constitution

The Committee discussed and approved a series of changes in the Constitution, and consequent changes in the rules of procedure and financial regulations, that would be necessary if the Commission's proposal to hold its regular meetings every two years, instead of annually, were adopted (Appendix XII).

7. The Financial Position of the Commission and a Proposal to increase the Budget

The revised budget for 1972 was approved but concern was expressed over the dwindling resources available to the Commission. It was agreed that the member countries should be asked to increase their contributions by 30 percent in order to cover the effects of inflation and to provide sufficient funds for the special activities specified in Article 5 of the Constitution (Appendix XIII).

8. Visit to the Animal Virus Research Institute, Pirbright

The Committee visited the Institute at Pirbright and were able to tour the research facilities and to see work in progress.

The closing session was held at the Institute with the purpose of discussing the role of the Research Group of the European Commission with the members who had assembled there for their own meeting. It was agreed that the Group would discuss the matter further and present proposals to the next meeting of the Committee.

9. Future Activities

The general working programme will continue along the lines approved by the Commission. In view of the serious situation in south-eastern Europe, it was felt that the Secretary should postpone the acceptance of a further invitation to visit South America in order to be able to concentrate on the present emergency situation.

It was agreed that Professor Bellani would prepare a report on how the work of the Commission should be extended to cover all the activities envisaged in the Constitution, for discussion at a forthcoming meeting of the Executive Committee.

10. The Next Meeting of the Executive Committee

It was agreed that the next meeting should take place in Rome on 9 April 1973.

11. Agenda for the XXth Session

It was agreed that the provisional Agenda for the XXth Session should include all the main topics discussed at the Committee's Session.

At the closing of the Session members expressed the Committee's appreciation for the excellent arrangements that had been made for the meeting and for the generous hospitality they had received both in London and at Pirbright.

3. Meeting of the Research Group, The Animal Virus Research Institute,  
Pirbright, United Kingdom, 25-27 October 1972

A meeting of the Research Group of the European Commission for the Control of Foot-and-Mouth Disease was held at the Animal Virus Research Institute, Pirbright, United Kingdom, from 25 to 27 October 1972.

A preliminary joint session was held with the Executive Committee on 25 October 1972 to discuss the future rôle of the Group. After an exchange of views the Chairman of the Executive Committee requested that the Research Group prepare proposals for consideration at the next Session.

The Group's meeting continued with the following participation:-

Dr. J.G. van Bekkum (Netherlands), Chairman  
Dr. J.B. Brooksby (United Kingdom), Chairman of discussions  
Dr. L. Nardelli (Italy), Member  
Dr. G. Kubin (Austria), Member  
Dr. M. Jensen (Denmark), representing Dr. E. Michelsen, Member  
Dr. M. Mussgay (Federal Republic of Germany), Observer  
Dr. C. Campbell (U.S.A.), Observer.

The following members of the staff of the Animal Virus Research Institute, Pirbright, participated in certain of the discussions and demonstrations:

Dr. R.F. Sellers, Deputy Director  
Mr. R. Burrows  
Dr. G.N. Mowat  
Mr. A.J. Forman,  
Miss A.E.M. Arrowsmith  
Mr. I.T.R. Barnett  
Mr. L.S. Buckley  
Mr. W. Bruce, Mr. P.J. Radlett  
Mr. A.J.M. Garland.

Dr. G.M. Boldrini, Dr. P.R. Ellis and Miss D.D. Guarino served as the Secretariat of the meeting.

The main items of the agenda were the following:

1. The future role of the Research Group;
2. Functioning of the World Reference Laboratory;
3. Subtype information;
4. Post-vaccination infection;
5. Problems of vaccination against SAT types;
6. Carriers as a source of infection;
7. Various security requirements for FMD laboratories.



Most of the sessions were held in the units of the Institute which are particularly concerned with the respective agenda item. The facilities of the W.R.L. were visited and demonstrations were given on the main techniques in use for virus isolation, identification and classification as well as on the production and storage of exotic seed FMD viruses. Work on serum assay by the Epidemiology Department was also studied. The Institute's Virus Security Officer described and demonstrated the equipment and measures currently in use and the Group was given an opportunity to visit a new large animal unit which is being built to give maximum security.

The outcome of the Group's discussions may be summarized as follows:

1. The Future Role of the Research Group

Following the meeting with the Executive Committee, the Group considered its future role and concluded that three kinds of activity were needed.

- (a) Annual meetings, limited to members of the Research Group and occasional invited guests, to deal with matters referred to it by the Executive Committee and to review for the Commission the important developments which are constantly taking place in research. These meetings should as a rule take place at members' laboratories.
- X (b) The Commission should arrange larger scientific meetings which are also open to laboratory workers from all member countries and invited guests approximately every three years and at times which do not clash with the sessions of the O.I.E. Foot-and-Mouth Disease Commission. These should, on each occasion, deal with certain clearly defined topics by means of invited papers in order to summarize the latest position and indicate the direction of new research. They should be held where suitable conference facilities are available and allow participation by staff of the laboratory or Institute which is acting as host. The cost of attendance should be borne by individual participants.
- (c) The Commission should also increase training activities which should take two forms:
  - (i) Training of individuals for several weeks or months under the various fellowship arrangements which now exist, and
  - (ii) Specialized courses of one to two weeks' duration at members' laboratories on selected new techniques, for up to 15 participants. These need not be regularly scheduled but could be held every three to five years.

The cost of the first activity would continue to devolve upon the Commission but a considerable part of that associated with (b) could be borne by the host Government and participants. This would also apply to (c)(ii). Full consultation and collaboration would, of course, be maintained with O.I.E. The meetings envisaged under (a) above should, however, be regarded as a private activity of the Commission.

## 2. Functioning of the World Reference Laboratory

This has evolved along the general lines prescribed at the time the Epidemiology Department of the Animal Virus Research Institute at Pirbright accepted the role. A summary of some procedures now in use is attached as Appendix 1. The laboratory:

- (a) Provides routine typing service for countries which do not have their own laboratory service.
- (b) Carries out the taxonomic classification of strains which appear markedly different from those previously examined, especially when they appear to be of epidemiological significance, allocates an identifying number and maintains stocks of the strains and sera for distribution to interested laboratories.
- (c) Maintains stocks of cell culture adapted seed virus for important types and subtypes to facilitate immediate vaccine production, should an emergency arise. The amount and nature of these stocks is, from time to time, published by the Commission.

The Group felt that the Commission should encourage the continuation of all these activities and that wider distribution of laboratory typing results should be sponsored. The W.R.L. should continue to distribute reference sheets on individual subtypes to the countries of origin, FAO and O.I.E., but also the Secretariat of the Commission should prepare a bi-monthly Bulletin summarizing important information for distribution to the Directors of Veterinary Services and official laboratories of member countries.

## 3. Subtype Information

The present position with respect to A<sub>22</sub> virus was reviewed in a discussion of W.R.L. Information Sheet No. 17. It was concluded that the Gre 1/72 strain from Greece had been properly classed as an A<sub>22</sub> strain. At least 4 Turkish strains from widely dispersed origins, the Greek strain and probably those from Lebanon and Egypt, are closely related. They are markedly different from A<sub>22</sub> strain previously isolated.

Dr. Jensen presented the results of a comparison of various vaccine production strains of type A virus (Appendix 2). His laboratory had concluded that the strain previously used in Denmark was no longer the most appropriate and the Dutch A strain has been substituted.

It was also reported that the O strain from Romania appeared to be closer, antigenetically, to O Lombardy than to the more recently isolated O<sub>1</sub> Switzerland strain.

## 4. Post-Vaccination Problems in Germany

Dr. Mussgay presented a paper summarizing the problem which had arisen in the Federal Republic of Germany during the nation-wide vaccination programme. Four outbreaks had followed the application of two batches of Frenkel type vaccine and 10 others after the use of four batches of cell culture/PEG vaccine. Only a small proportion of each herd, and mainly young animals, were affected but all within about 21 days of vaccination. It could not be conclusively proved that the outbreaks were caused by vaccines but there was no evidence of field virus causing problems in the area at the time and in two batches infectious virus could be detected by elution and concentration techniques. Other Members drew attention to similar problems that had occurred in Israel and Denmark.

These contributions led to a discussion of the question of innocuity testing. It was felt that there might be a risk of virus persistence with formalin as the inactivant. It was pointed out that the pH of the product may be important in formalin inactivation. The Group suggested that it would be useful to monitor the rate of inactivation of vaccine batches, when possible, and that cell culture techniques should be used to supplement animal tests. With respect to cattle, it was pointed out that the intradermolingual route was in many cases much more sensitive than the subcutaneous route. The inoculation of large doses of vaccine subcutaneously at the same time as the intradermolingual test may reduce the sensitivity of detection of small quantities of virus by the latter route.

5. Problems of Vaccination against SAT Types

Discussion on this topic centered on difficulties encountered in producing immunity against the SAT type viruses and, in particular, against SAT 2. In a number of instances, little or no antibody response could be detected by serum assay following vaccination. However, the animals concerned were often capable of resisting natural infection in the field. It was generally agreed that all the SAT types presented difficulties in vaccine production but that this problem could probably be overcome by strain selection and that a fair measure of protection could be assured by giving booster doses.

Part of the problem may be due to the poor condition of the cattle in the areas where SAT vaccination had to be carried out.

6. Carriers as a Source of Infection

As requested by the Executive Committee, the Group discussed the problem that had arisen in Italy in connection with the importation of cattle.

As they had not had first-hand experience of the problem nor information on certain points, it was not possible for the Group to give a definite opinion. However, the Group felt that the phenomenon experienced was more likely to be due to the presence of inapparent infection following normal exposure than to the true carrier state. Current evidence suggests that, even if vaccinated animals do become true carriers following exposure to natural infection, they are unlikely to act as a source from which field outbreaks arise.

7. Virus Security Requirements for FMD Laboratories

The Group was given an opportunity of seeing and discussing the present security system at the Animal Virus Research Institute which had been evolved over the past 48 years and had been improved as experience was gained, sometimes as a result of accidental infection.

The whole area is surrounded by a perimeter fence to exclude people, and land within approximately one kilometre is kept free of livestock. Because of periodic expansion programmes it has not been possible to interconnect all the units. Most laboratories and animal units therefore have individual security systems.

Entry to the Institute's facilities is controlled by a guard. Staff agrees to avoid all contact with susceptible stock while away from the Institute and follow a very strict routine in all their work. Access to the laboratories and animal facilities is through changing rooms where special clothing is put on and, on leaving, a strict showering procedure must be followed. Complex filtration systems deal with all air passing through the units. Effluent is disinfected and all materials leaving the laboratories are disinfected, sterilized or incinerated. Similar precautions are taken within or between units inside the isolation area to avoid transfer of infection.

The Group was particularly interested in the experimental work that has been done on virus security problems and Mr. Bruce, the security officer, very kindly agreed to prepare a review of the systems and controls which had proved satisfactory at the Institute. This summary is attached as Appendix 3 of this report.

The disease security regulations in operation at the Institute are too lengthy for inclusion here but the Institute is prepared to answer any enquiry on particular points raised by those responsible for the disease security of other Institutes.

8. Next Meeting

Subject to the approval of the Commission and the Netherlands Government, the next meeting will be held at Lelystad, toward the end of September 1973.

Two topics to be included are:

- (a) A further discussion of Security Measures
- (b) Recent development in potency testing of vaccines.

Dr. van Bekkum on behalf of the Group expressed to the Director, the administrators and the staff of the Animal Virus Research Institute, their deep appreciation for the extremely interesting programme which had been arranged and for the generous hospitality provided.

Appendix 1

ANIMAL VIRUS RESEARCH INSTITUTE

Notes on Examination of Field Specimens of  
Foot-and-Mouth Disease Virus

1. Attention is drawn to the regulations for transmission of samples - see notes from World Reference Laboratory published by O.I.E. Material arriving is opened in a laminar flow cabinet and notes made of the sample submitted, the pH of medium, etc.
2. A suspension of the material is prepared in 0.04 M  $\text{PO}_4$  buffer, pH 7.6. The remainder of the specimen will be stored as indicated later under Storage of Samples.
3. Complement Fixation Test

The suspension is used as antigen in a microplate test against dilutions of standard guinea-pig antiserum with a fixed dose of complement. A positive result, that is, fixation of complement with one of the stock sera, confirms foot-and-mouth disease.

If the result is negative, it does not rule out the possibility of the existence of FMD since, particularly with specimens from overseas, a number of epithelial samples from infected animals will fail to fix.

If the test is negative, we proceed to:

4. Passage in Tissue Culture

Five bovine thyroid cell cultures are inoculated. If these cultures show cell degeneration, this may be due to virus infection. Proof of virus infection is obtained by using the culture material as antigen in a complement fixation test. A positive result may be obtained in 24-48 hours from inoculation of the cultures.

If no cell degeneration is found, a blind passage is done from the apparently healthy culture and if this is also negative at 48 hours the result of this test is given as negative.

5. Passage in Unweaned Mice

A litter of mice (8-10) is inoculated with the field specimen. If mice die at from one to seven days, a suspension of their carcasses is used in complement fixation tests.

If any of these are positive, they indicate the presence of virus.

If negative, the dead mouse carcass is passaged through two further successive passages. If complement-fixing antigen is not demonstrated, a negative result is given.

6. Passage in Cattle

In extreme cases, tests may be carried out by inoculation of cattle but this has only been undertaken on four or five occasions in the last fifteen years.

Additional Notes

1. For successful complement fixation there must be:

- (i) A large quantity of virus in the epithelium at the time of collection.
- (ii) An adequate size of specimen of epithelium - at least one gramme.
- (iii) Good conditions during the period of transit between the field and the laboratory.

The first of these conditions is the most important.

2. The culture tests have a limitation in regard to contamination. Heavily contaminated material may damage cell sheets independently of virus growth. If a very small amount of virus is present in the original material, it may be sensitive to adverse conditions (for example, a fall in the pH of the medium or rising temperature during transit). The bovine thyroid cell is more sensitive by a factor of ten-fold than the pig kidney cell.

3. The mouse test is less sensitive than either of the tissue culture methods but is generally less sensitive to contamination.

In both the passage techniques - mouse and tissue culture - the material must be checked by complement fixation to indicate specificity of reaction.

RULES IN RELATION TO VIRUS SAMPLES HELD BY THE WORLD REFERENCE LABORATORY

Storage of Original Samples

1. When a sample of virus has been received for typing in the W.R.L., a portion of the sample will be placed in 50/50 glycerine phosphate buffer with phenol red indicator in a new bijou bottle and stored at -20°C.
2. When a typing has been obtained, a colour coded label bearing the W.R.L. number of the sample and the Freezefile code number will be fixed to the bottle cap and the sample will be stored in the Freezefile units of the -20°C cold room.
3. Original positive samples will be stored for 10 years. Other samples will be stored for two years.

#### Preparation and Storage of W.R.L. Seed Virus

1. A suspension of the original sample will be treated with ether and passaged under secure conditions in BTY cell monolayers. This BTY material will be stored as seed virus with 5% bovine albumen fraction 5 and 50% glycerine in new bijou bottles at  $-20^{\circ}\text{C}$ .
2. The integrity of this seed virus will be tested by complement fixation and neutralization tests. If only one type of virus is present in the sample, 6 bottles will be colour coded and numbered and placed in the Freezefile units in the  $-20^{\circ}\text{C}$  cold room. Two samples will be stored in a  $-20^{\circ}\text{C}$  cabinet in another part of the Institute.
3. When the seed virus has been prepared, details of the history and characteristics of the virus strain will be recorded in the master file and a record of virus stocks and issues will be maintained.

#### Preparation and Storage of Cattle Strains

1. A cattle strain will be initiated by the inoculation of donor animals with seed virus issued by the W.R.L.
2. Epithelium from the donor animal will be returned to the W.R.L. for storage:
  - (a) as epithelium in 50/50 glycerine phosphate buffer (see original samples)
  - (b) as glycerinated filtrate of epithelium which has been titrated in cattle and other systems.
3. The filtrate will be stored in new bijou bottles at  $-20^{\circ}\text{C}$  as standard challenge or donor virus (50 ml).
4. The integrity of this stored material will be established by complement fixation and neutralization tests and a record of stored virus stocks and issues will be maintained in the W.R.L.
5. Whenever possible, 30-day convalescent serum will be collected from donor and titration cattle for use in the Serum Assay Unit.
6. Samples of epithelium from cattle reacting to challenge with stored cattle virus will be sent to the W.R.L. for complement fixation test.
7. Epithelium from existing cattle strains will also be given to the W.R.L. for passage in BTY cells or for storage.

#### Preparation and Storage of Guinea-Pig Strains

1. Seed virus will be cloned by 3 plaque isolations in BTY cells before passage in guinea-pigs.
2. Guinea-pig virus will be stored as glycerinated vesicular fluid at  $-20^{\circ}\text{C}$ .
3. Stocks of seed virus will be recorded in the master file.

December, 1972

Appendix 2

SUMMARY

Results of a Comparison between Vaccines Prepared with  
five Different European Type A Strains of FMD Virus

Summary of a Preliminary Report from the  
State Veterinary Institute for Virus Research,  
Lindholm, Denmark

Vaccines were prepared from five type A strains of virus currently in use at institutes in Denmark, Holland, Switzerland and Italy. The viruses were propagated in Frenkel type cultures of bovine tongue epithelium and clarified, chloroform treated antigens were made into vaccines with alhydrogel and formalin.

Efficacy tests were conducted in groups of 150 guinea-pigs for each of the vaccines. All five vaccines gave satisfactory protection against challenge with their homologous strains of virus. However, the vaccines prepared with the Danish and Belgian strains only gave acceptable protection against three and two of the heterologous strains respectively, whereas the Holland and Swiss strain vaccines proved effective against all four heterologous strains.

This work is being carried out by Dr. Theissen.

Appendix 3

A Summary of the  
Disease Security Regulations and Procedures in Operation at  
The Animal Virus Research Institute, Pirbright, England

1. General Regulations affecting all staff and visitors.

It is a condition of employment that staff may not live on or visit premises where any animal susceptible to Foot-and-Mouth Disease is kept.

Visitors to restricted areas of the Institute must give a similar undertaking that they will not come in contact with susceptible animals for one week after their visit. The names of all visitors and their sponsors are recorded at the Gatehouse.

2. All work involving viruses is conducted within restricted areas. Of these the Main Restricted Area houses all laboratories and Small Animal Experimental Units. In addition, there are a number of Isolation Units which house large animals for virus trials.

Inability to bath and change precludes entry to a restricted area. Persons entering are required to remove all clothing and personal possessions, leaving these in a locker in the outer changing room. They then pass through to the inner changing room where they dress in Institute clothing. Visitors are supervised through this procedure and are escorted throughout their stay in the restricted area.

A code of security procedures is laid down for the handling of viruses in the laboratories. The main requirement is the wearing of a plastic gown while handling virus. The hands and forearms, the gown and the bench are swabbed down with 0.2% Citric acid and a non-ionic detergent on completion of the handling operation.

Procedures are defined for the containment and neutralization of any accidental spillage of virus and the notification of such incidents.

3. Entry into the Animal Compound of an Isolation Unit or into a Small Animal Experimental Unit requires the wearing of rubber kit comprising boots, trousers, coat and sou'wester. Foot baths containing 4% sodium carbonate and soap solution are used when entering and leaving animal rooms. The person is also sprayed down with the same solution so that all of the exposed surface of the rubber kit is wet and the hands and forearms of the wearer. The spray down is repeated immediately before leaving the unit. On discarding the rubber kit the hands and face are thoroughly washed with soap and water.

4. When leaving a Restricted Area the Institute clothing and footwear are removed in the inside changing room, the person proceeds into the shower unit where the whole body, including the hair, is washed thoroughly with soap and water. After drying, a person leaves the towel in the drying area and passes to the outer changing room to dress in his own clothing.

5. There is strict control on all materials leaving the Restricted Area. No postal correspondence may originate from the Restricted Areas.

All materials must go through a decontamination process as they leave the area. In order of preference these are:

Steam sterilization

Immersion or thorough spraying with 4% sodium carbonate solution or 0.2% citric acid solution

Formaldehyde fumigation - formaldehyde concentration of 10 mg/litre of air for 12 minutes.

The latter process is used principally for small batches of notes and other documents being removed for typing or photocopying in the Administrative Building. Electrical and photographic equipment is similarly treated.

Biological materials being moved from one Restricted Area to another, e.g. from laboratory to Large Animal Isolation Unit, are moved in sealed bottles inside two metal containers to guard against any risk of spillage whilst in transit. The outer containers never pass into the Restricted Areas.

Immediately after use, all laboratory pipettes and small tubes are discarded into containers of 0.2% citric acid solution. Later this is drained off and the glassware is deposited into metal containers which are autoclaved out of the laboratory building into the Main Service Unit for washing, wrapping and re-autoclaving.

All broken glassware and other contaminated materials are autoclaved out of the laboratory in separate containers. Combustible materials are then burnt in an incinerator within the Main Restricted Area. Broken glassware is passed out of the Main Restricted Area in bins through a steam sterilizer for burial within the Institute grounds.



6. All sewage from Restricted Areas is subjected to treatment to kill any virus present. The system evolved has been the establishment of sewage units where, by means of a tipping bucket system, sewage entering the holding tanks automatically doses the tank with sufficient 5% caustic soda (NaOH) solution to give a final concentration of 0.2%. This level is checked by duplicated chemical analyses, the sewage is agitated and held for 24 hours and then released to the local sewage works, who again hold it and neutralize the alkali with acid before processing as normal sewage.

While the high pH obtained in the caustic soda treatment is effective against Foot-and-Mouth Disease virus, it would not be effective against a number of other viruses on which work is being undertaken now. Accordingly, a treatment for sewage potentially contaminated by these viruses was necessary. This has been obtained by heat treatment of sewage from those units involved in work on viruses other than Foot-and-Mouth Disease. This is effected by heating the sewage in tanks to 124°C and holding at that temperature for one hour. In the case of sewage from the laboratories, which is low in suspended solids, heating is effected indirectly by immersed steam pipes. Where the sewage has a high solids content, as in the Large Animal Isolation Units, then heating is by direct injection to maintain suspension of the solids by agitation.

7. In 1960 there was evidence that dissemination of Foot-and-Mouth Disease to cattle on a neighbouring farm had occurred by the airborne route. Measures were taken, therefore, to safeguard against this by placing all buildings where virus was handled under a negative pressure air supply and extract system with high efficiency filters on the extract system. Two types of housing for the extract filters have been used. One is the ladder frame type and the other Vokes Unipak. Of these, the latter, which is a cannister type housing, is considered the safest and most efficient. A filter testing system is used involving the presentation of a Dioctylphthalate smoke on the upstream side of the filters and the collection and detection of any smoke passing through the filter using sampling probes linked to a forward light scattering photometer. (Sinclair Phoenix Model JM 2000-0.) Penetrations as low as .001% can be detected.

8. Interest in secure handling methods within the laboratory has been steadily developing; one of the most acceptable systems has been the vertical laminar flow work station. Thirteen of these have now been installed. Failure of twelve of these in some respect when tested with the Dioctylphthalate smoke/photometer equipment does not detract from their desirability provided that they are tested after installation and any deficiencies in function are rectified.

9. Further security investigation undertaken in this field, are firstly direct airborne sampling in an endeavour to detect Foot-and-Mouth Disease Virus as an aerosol. This, however, is most difficult and would require constant monitoring. The second method evolved is more practical. This uses the coli Bacteriophage f2, as a simulator of FMDV. This phage is a RNA phage of spherical shape, but slightly smaller than FMDV. It is easily grown in broth cultures of the host strain of *E. coli* and is readily counted by the standard phage plaque counting technique. Aerosols of this phage can be used to simulate FMDV and good recoveries have been made even in the open air at distances up to 45 metres using Litton & May samplers.

Pirbright, 1972

W. Bruce  
Disease Security Officer

IV. FUTURE ACTIVITIES

Europe

The reestablishment of a favourable FMD position in Europe will be the main objective of the Commission's work. Special attention will be directed to those areas where the disease has recently reappeared, with a view to promoting concerted action for strengthening diagnostic and prophylactic systems. Contacts between laboratories will be envisaged to ensure adequate exchange of information and, where necessary, to provide advice and assistance in the modernization, conversion or expansion of existing vaccine production facilities. The epizootiology of foot-and-mouth disease in Europe will be further studied and efforts will be encouraged to identify and eliminate the conditions which favour the persistence of virus or of disease latency on this continent. Close collaboration will be maintained with the World Reference Laboratory. The Secretary will continue to collect all available information and report on the timing and extent of the prophylactic schemes applied in Europe, in particular on the kinds of vaccines used and methods of innocuity and potency testing applied in the various countries.


The possibility will be kept in mind that other infectious vesicular diseases may occur in Europe or may be introduced into the continent and assistance will be given whenever specialized differential diagnosis is required. The position of vesicular swine disease will be kept under continuous review.

Campaigns in southeastern Europe

Action against exotic and non-exotic viruses in southeastern Europe will be carried on with all available means. The organization of prophylactic campaigns should aim at the establishment of a solid buffer zone in Thrace. Animal movement and the trade of meat in the region should be kept under observation, and efforts should be encouraged for the creation and maintenance of disease-free zones in Turkish Thrace and elsewhere.

Disease prevention overseas and elsewhere

Prevention of the introduction of foot-and-mouth disease into Europe will continue to receive full attention. In this connection the disease position, control and prophylaxis in countries and regions from which the disease is more likely to be introduced into the continent through trade or other means will be kept constantly under review. In particular, efforts aimed at the demarcation of specially controlled areas and disease-free zones in South America, Africa and Asia will be supported by the Commission within the framework of the FAO consultations and operations on this subject. This will include the participation of the Secretary in visits and surveys in other regions of the world whenever feasible.

	FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS	AGA:EUJMD/73/3  March 1973
	ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE	
	ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION	

EUROPEAN COMMISSION FOR THE CONTROL OF FOOT-AND-MOUTH DISEASE

Twentieth Session

Rome, Italy, 10-13 April 1973

FOOT-AND-MOUTH DISEASE POSITION AND CAMPAIGNS IN SOUTHEASTERN EUROPE IN 1972

1. Reappearance of A<sub>22</sub> virus in southeastern Europe

Shortly after the conclusion of the XIXth Session of the European Commission for the Control of Foot-and-Mouth Disease an emergency situation was reported in Greece because of the sudden appearance and rapid spread of A<sub>22</sub> virus in various provinces in the country.

The first outbreak occurred at Sophicon, near the Evros river, on 8 April 1972 and was followed a few days later by 8 outbreaks near Xanthi, the western province of Greek Thrace. By 20 April, the disease started spreading in Macedonia (in the province of Drama, Serres and Thessaloniki) and also in Attika (near Athens) and Argolis (in the Pelopponesus); 21 municipalities were affected by the disease between April and the beginning of May.

On 8 June the disease reappeared in Evros, near the Turkish border. During the following three months sporadic outbreaks occurred in Evros and Attika, where the disease assumed an enzootic character, and in Karditza (Thessaly). In all, 27 municipalities were involved, with less than 3 000 animals including sheep, goats and pigs contracting the disease out of a total of some 10 000 animals exposed (Table 1).

On 30 September the country was declared free of the disease.

After nearly 4 years of disease freedom, cases of A<sub>22</sub> virus infection were detected in Turkish Thrace during March 1972. Since the animal population of this region (buffer zone) had been submitted to regular vaccination during the previous years, disease was actually confined to young animals in the infected villages. Between March and September 1972 A<sub>22</sub> virus persisted in the area and outbreaks occurred in 41 villages. Later in the year sporadic cases of O virus infection were reported (November 1972) near the Greek borders while A<sub>22</sub> virus (Table 2) could not be detected anymore.

Specimens of infected material collected from the first outbreak in Greek Thrace were submitted to the World Reference Laboratory for foot-and-mouth disease (WRL), Pirbright, for examination and virus A<sub>22</sub> was identified: further submission of specimens took place from Greece and also Turkey and the results continued to indicate A<sub>22</sub>. Further investigations on the strains involved were carried out later at Pirbright, Teheran and France (see later).

The Greek outbreaks were closely related to each other; people and animal movements during the Easter holidays favoured a massive spread of the disease in northeastern Greece

i.e. in Thrace and eastern Macedonia and investigations and the implementation of control measures were delayed.

The first outbreaks in Attika and Argolis were caused by slaughter animals moved from their municipality of origin in the North, while incubating the disease.

The disease was rather severe among the fully susceptible Greek livestock, the mortality rate among calves being high, especially in the northern province of Drama.

In Turkish Thrace only a relatively small number of animals, less than 5 percent, showed symptoms of disease, evidently because of the resistance to infection conferred by previous vaccination and, in particular, by the revaccination campaign initiated in March 1972 in the Edirne province.

It is worth while to note that the occurrence of A<sub>22</sub> virus in Evros and its further spread in Greece was facilitated by the fact that almost four years had elapsed since the last regular vaccination programme had been carried out in Greek Thrace with A<sub>22</sub> vaccine, the animal population having therefore become fully susceptible again to this virus.

The outbreaks in Turkey and Greece seem to have been the consequence of a sudden change in the epizootiological pattern which took place in Anatolia during March, with the A<sub>22</sub> virus infection simultaneously being recorded in various regions of the peninsula. At almost the same time a flare-up of the A<sub>22</sub> infection occurred in some southern republics of the U.S.S.R. Thus during Spring 1972, all countries in southeastern Europe, including Romania, found themselves more or less directly exposed to the exotic virus.

## 2. First action taken by Greece and FAO and emergency operation

On 17 April, the European Commission was informed about FMD outbreaks and that the causal virus was suspected to be exotic; the veterinary services of Bulgaria and Yugoslavia were immediately advised by the Secretary to strengthen control measures at their frontiers and to prepare for an emergency situation pending the identification of the virus by Pirbright. Turkey was also advised to investigate the situation in Thrace and to speed up the vaccination programme against A<sub>22</sub> which had already been started in the Edirne province during March 1972. This province had been covered with vaccination against O virus and also rinderpest at the beginning of 1972.

When the virus A<sub>22</sub> was identified by the World Reference Laboratory, Pirbright, strict measures were applied in the province concerned: all animal movements from the effected premises were prohibited and importation of meat from Turkish Thrace into Greece was suspended.

The Greek veterinary authorities had meetings with government officers of Bulgaria, Yugoslavia and Albania, and measures were agreed upon to prevent the introduction of virus from Greek territory. There was close cooperation among all parties concerned. A meeting between Greek and Turkish veterinary authorities was also proposed, which took place later on in autumn.

Stamping-out was applied only on four occasions when primary outbreaks were dealt with in Evros, Xanthi, Serres and Argolis. 39 animals were destroyed.

Ring vaccination was immediately applied using supplies of vaccine remaining from the last vaccinations against A Greece 1969; in the meantime, the new virus strain was adapted to tissue culture in the Athens institute with satisfactory results and the preparation of homologous vaccine was speedily undertaken.

To meet the emergency situation resulting from seven provinces already infected, and because of the serious risk of spread of the disease to other areas both in Greece and Bulgaria, Yugoslavia and Albania, homologous vaccine was requested by Greece, Yugoslavia and Bulgaria in great urgency from FAO.

The Secretary of the European Commission reached Athens from Ankara on the day following the identification of the virus and informed the Chairman of the Commission and the Chief of the Animal Health Service at FAO Headquarters about the situation.

After consultation with the Director of OIE, the decision was taken to mobilize the remaining funds of the SAT1/A22 campaigns for the urgent delivery of 100 000 doses of A22 vaccine to Greece. At the same time, vaccine was requested from Turkey in exchange for Greek vaccine. Turkey agreed to supply 15 000 doses of A22 vaccine at a token price, but was not in a position to make further deliveries because of heavy national requirements for vaccine resulting from the spread of FMD in Anatolia and later in Turkish Thrace.

Fortunately, A22 vaccine was available at Teheran, produced by the French laboratories at the Razi Institute. Thanks to the prompt collaboration of all concerned, the supply of the French vaccine was effected in less than 10 days from the day of order and the same was true for the Turkish vaccine.

Ring vaccination was carried out around outbreaks in the provinces of Xanthi, Drama, Serres, Thessaloniki, Attika and Argolis. The Evros province, where stamping out had been applied, was left unprotected because of lack of sufficient quantities of vaccine.

Vaccination in this province was started in June, when emergency ring vaccination had been completed in the other northern provinces and homologous vaccine became available in the State Laboratory.

This operation was conducted under the pressure of new outbreaks which, in the meantime, had occurred in a swampy border area situated in the municipality of Ferrai in the delta of the Evros river. Some groups of animals had to be revaccinated.

All vaccine used, either produced at Teheran or Athens or Ankara, proved to be of great value. On various occasions vaccination was able to stop the occurrence of new cases of disease on the 6th or 7th day from its application.

3. Surveys of the Secretary and action taken for the re-establishment of buffer zones in southeastern Europe

3.1 Survey in southeastern Europe.

In May 1972, the Secretary visited for the second time the veterinary directorate in Athens and then proceeded to Bulgaria and Turkish Thrace. The main purpose of the travel was to assess the disease situation in Greece where ring vaccination was in full operation, to participate in a bilateral emergency meeting between Bulgarian and Turkish veterinary authorities at Edirne and to make a survey in Turkish Thrace, where cases of disease had been reported in the meantime.

In Greece it was appreciated that, while the situation was still serious, especially because of the rather wide spread of infection foci, no further progress of the disease had been observed after the first week of May except for the Thessalonica area. This was mainly due to the impressive involvement in the control measures of both the central and local authorities, veterinary and police authorities and the army as well.

In Bulgaria, very strict measures had been adopted along the frontier of the country with Greece and Turkey. This included the establishment of a belt free of livestock to a depth of 3 to 5 kilometres along the borders. Vaccination was carried out in the most exposed frontier districts with inactivated A22 vaccine obtained from the U.S.S.R. Homologous vaccine had previously been requested from FAO also by Yugoslavia but without success, as FAO had to concentrate the residual campaign funds on the operation in Greece.

During the survey in Turkish Thrace, where the Secretary was accompanied by Dr. Girard and Dr. Bayramoglu, respectively the Project Manager and Section Chief of the Foot-and-

Mouth Disease Institute at Ankara, provincial and district veterinary offices, slaughterhouses and livestock markets, embarkation and frontier crossing points were visited.

One of the sites of an active outbreak in Thrace was visited at Karpuzlu near Ipsala and the Evros river. It was found that no more than 3 to 5 percent of the cattle population (several hundreds) of the village were showing disease symptoms, obviously because of the effect of previous vaccinations carried out in the area. It was reported that the same observation was made in other affected groups in Thrace.

It was noted during the survey that animal movements in Turkish Thrace and on all roads in Anatolia leading to the embarkation points on the Bosphorous where animals are transferred for slaughter into Thrace, were effectively controlled. It was shown that the Istanbul livestock market is actually a terminal for all animals arriving from Anatolia and the local authorities were doing their best to ensure enforcement of movement control both at the embarkation points and the market. However, possibilities of infringement appeared to exist, which may result in illegal movement of animals across the Marmara Sea with destinations other than Istanbul, thus stressing the necessity to have the animal population in Thrace solidly protected against FMD.

It was therefore concluded that buffer zones should not be limited to Turkish Thrace but should include also the frontier areas of Greece and Bulgaria, as has been the practice until 1968, with the assistance of FAO.

### 3.2 OIE mission to Greece and FAO appeal for continuation of the campaigns

The situation in southeastern Europe has been closely followed also by OIE, which sent a mission consisting of Dr. J.B. Brooksby and Professor F. Lucam to Greece at the end of May to collect first-hand information and discuss measures of disease control. The conclusions of the mission, and the report of the Secretary of the Commission on the action taken in Greece by FAO since mid-April, were presented at the XLth Annual General Session of OIE held in Paris from 15-20 May 1972. On this occasion, the Executive Committee of the European Commission held a meeting at which it was proposed that FAO should assist further in strengthening measures for the control of FMD caused by exotic viruses in southeastern Europe. The proposed action included the re-establishment of buffer zones in Greek and Bulgarian territories.

The OIE Assembly approved the outlines of the programme and the Director-General of FAO took immediate action by sending an appeal for funds to all European countries not yet involved in the A<sub>22</sub> infection. Governments were requested to make a contribution of U.S.1 cent per head of their cattle population, which would permit to finance the above-mentioned operation for a period of 3 to 5 years, during which time Turkey is expected to extend prophylactic schemes in Anatolia. Vaccine production facilities will be expanded in the meantime.

### 3.3 Further action in collaboration with OIE

The problem of persistence of exotic FMD in Greece and the action to be undertaken with international assistance to meet the situation in southeastern Europe were discussed at a special meeting convened by the Director of OIE at Paris on 30 June 1972, in which the bureaux of the OIE and FAO Commissions on FMD, a representative of EEC and a delegation from France participated.

In particular, the importance of reinforcing the immunity conferred by the first vaccination campaign against A<sub>22</sub> in northern Greece and of adopting stamping out measures whenever possible were stressed. It was suggested that, in order to explore such possibilities, a mission representing FAO/OIE should be sent to Athens. Support was given to the efforts developed in the meantime by FAO in order to secure financial means needed for the continuation of campaigns against A<sub>22</sub> in Greece and Bulgaria.

### 3.4 FAO/OIE Mission to Greece and Turkey

During the second half of September a mission of representatives from OIE (Dr. Brooksby and Professor Lucam) and FAO (Secretary of the European Commission) visited the Greek Veterinary Services in Athens. Professor Lucam and the Secretary of the Commission proceeded to Turkey in order to have discussions with the veterinary authorities of Ankara and Istanbul and to visit the Turkish Foot-and-Mouth Disease Institute.

Greece The situation was again evaluated in Greece in the light of the events occurred during the last three months. It was disquieting to note that, while the disease had been successfully controlled in all the frontier regions (Evros, Drama, Serres, Xanthi and Thessaloniki), foci of infection continued to occur in the province of Attika, thus giving the impression of an evolution towards endemicity.

The efforts developed by the Greek veterinary authorities to meet the emergency situation and block the spread of the disease over a vast territory, were highly appreciated. A programme of strengthened veterinary measures was agreed upon, which included a prolonged quarantine of the animals which had contracted the disease, a long period of movement restrictions for all animals suspected to have become virus carriers and the application of stamping out whenever such measure had chances of success and was compatible with the financial resources allocated to disease eradication.

A vaccination programme was also agreed upon, to be effected with international assistance before the end of 1972, taking into account that: (a) the vaccines used during the summer campaigns were to a large extent heterologous with respect to the A Greece 1972 strain; (b) the animals were vaccinated for the first time against A<sub>22</sub>; (c) there existed many potential carriers spread over various provinces of the country.

Said programme considered:

- (i) the extension of vaccination to the whole province of Evros for the purpose of re-establishing and extending the buffer zone in Thrace;
- (ii) the vaccination of the whole province of Attika, where disease appeared to have become endemic;
- (iii) the repetition of all ring vaccination operations to reinforce immunity against possible contamination from virus carriers in the other provinces.

Considering that the Greek vaccine production capacity was of about 20 000 doses per week, it was calculated that the needs for vaccine to be supplied with international aid, should amount to 500 000 doses.

The mission was of the opinion that also in Bulgaria and Yugoslavia the revaccination programme should possibly take place before the winter.

The Director of the Animal Virus Research Institute, Pirbright, promised that he would explore the possibility of furnishing vaccine at cost price.

Turkey The mission discussed the general situation of foot-and-mouth disease in the country and, in particular, the measures then adopted to control the disease in Anatolia, in the Bosphorous area and in Thrace. It was noted that the A<sub>22</sub> epizootic, after a period of recrudescence, which had caused the reinfection of Thrace, had entered a phase of regression and that the vaccine produced in the Institute had given excellent results, also against the more recently isolated A<sub>22</sub> strains.

The visit to the FMD Institute showed remarkable progress achieved, particularly in the technique of tissue culture in suspension, with the support of FAO and UNDP. The vaccine production capacity had reached 200 000 doses per week and the results of potency testing were satisfactory.

It was agreed that bivalent vaccination will be carried out as of 1973 as a rule all over Turkey and that laboratory experiments will be made in order to evaluate quantitatively the protective value of the production strain A Mahmatli 1965 (= A Iraq 1964) in respect to the A<sub>22</sub> strains, which had been isolated more recently in western Turkey.

Turkey accepted to carry out revaccination in autumn 1972 of all cattle under one year of age in Thrace and to start the general vaccination campaign in Thrace and Marmara areas in March 1973.

The report of the mission to Greece and Turkey is attached hereto as Appendix 1.

### 3.5 Response to the FAO appeal and winter campaign in Greece

A favourable response to the FAO appeal for the continuation of the campaigns against A<sub>22</sub> in southeastern Europe (see 3.2) was received from seven countries between August 1972 and February 1973. Deposits were effected by U.K. in August 1972 (U.S.\$ 64 500) Norway in November 1972 (U.S.\$ 9 180), Austria in January 1973 (U.S.\$ 25 038) and Switzerland in February 1973 (U.S.\$ 9 400). The contributions of the U.K., Norway, Sweden and Switzerland correspond to 50 percent of the amount pledged and the remainder will be deposited in three instalments during the period 1973 and 1975. Hungary and Finland have promised to deposit their contribution in the near future and also the European Economic Community has taken a favourable attitude towards contributing to the campaigns.

Thanks to the funds collected so far it has become possible to carry out, with the cooperation of the Greek authorities, an important part of the programme suggested by the FAO/OIE mission, i.e. the revaccination in Greece of all areas which had been submitted to the first vaccination against A<sub>22</sub> during the period May - September 1972.

To this effect 186 000 doses of vaccine were obtained at cost price (cattle dose = U.S.\$ 0.10 CIF) from the World Reference Laboratory. It was sent to Athens, for application together with the Greek vaccine in the provinces of Evros, Xanthi, Drama, Serrai, Attika, Thessaloniki, Argolis and Karditsa. The operation was conducted between December 1972 and January 1973.

### 3.6 Investigations on virus strains and vaccination problems

It is essential for the European Commission to maintain up-to-date information on any change in the field strain position which may effect measures of disease control and prophylaxis in southeastern Europe as well as Anatolia.

For this reason, four specimens each were submitted from Greece and Turkey to the World Reference Laboratory, Pirbright, for subtype examination and comparison with the strains already classified since the start of the A<sub>22</sub> epizootic in 1964. As in the past, the collaboration of the World Reference Laboratory has been invaluable both for the countries concerned and the European Commission.

Additional A virus specimens received by the World Reference Laboratory from the Arab Republic of Egypt and eastern Africa were classified and compared with the virus isolated in Greece in Spring 1972.

The results of these studies, given in the World Reference Laboratory Information Sheets No. 13, 14, 15, 16 and 17 (attached as Appendix 2), indicate that:

- (a) no difference exists between the strains isolated in Greece in April and May 1972. A Greece 1972 was shown to be related to the A<sub>22</sub> subtype strain isolated in Iraq in 1964;



- (b) the virus specimens obtained from widely dispersed series of outbreaks in eastern and western Anatolia appeared to belong to the same virus strain. This finding seems to support the view of the Ankara Institute that A Mahmatli vaccine has so far conferred a good protection irrespective of the area where it was applied in Turkey;
- (c) similarity was shown between A Egypt 1972 and the strain (A Iraq 1964) which gave origin to the A<sub>22</sub> epizootic. (A Egypt was associated with the import of cattle from eastern Africa.);
- (d) similarity was also shown between an east African strain and A Greece 1972.

Serological and immunological research has been carried out in France and Iran in order to evaluate the relationships between A Greece 1972, a U.S.S.R. 550 (used in Iran as production strain for A<sub>22</sub> vaccine) and A<sub>5</sub> (Europe). IFFA and Razi Institute research workers confirmed the Pirbright findings on serological relationship between A Greece 1972 and various A<sub>22</sub> strains and also observed that the A<sub>22</sub> vaccine prepared at Teheran with A U.S.S.R.550 showed less protection against A Greece 1972 than against the production strain when used at a quarter of a dose.

Therefore, the Franco-Iranian, Russian and British vaccines, used in southeastern Europe against the Thrace field strain, were heterologous, though still within the subtype. The Turkish Government was invited to investigate whether the degree of protection conferred by the A Mahmatli vaccine against A Greece 1972 in the field can be confirmed in the laboratory.

At the Virology Institute, Lyon, it was found on the other hand that no protection at all was conferred by the conventional A<sub>5</sub> vaccine inoculated into cattle for the first time, if the challenge strain is A Greece 1972. Thus the exotic character of A<sub>22</sub> subtype and of A Greece 1972, in particular, was confirmed also experimentally.

### 3.7 Maintenance of buffer zones

The past experience taught that buffer zones should be maintained in southeastern Europe as long as A<sub>22</sub> or any other virus exotic to Europe exists in the region.

Vaccination should cover, as in the past, the whole of Turkish Thrace and the frontier areas of both Greek and Bulgarian Thrace to a depth of 30 to 50 kilometres. Spring vaccination should be followed up, at least in the frontier areas of the three countries by an autumn vaccination: all ruminants should be included in the scheme.

The presence of virus O in Turkey, makes it advisable that vaccination be bivalent (A<sub>22</sub>,O), in order to eliminate the diagnostic and prophylactic difficulties which had to be met in 1972 when O virus infection spread into the buffer zones of both Greece and Turkey.

The chances of maintaining a disease free zone in Thrace, largely depends on the possibility for Turkey to keep the disease under control in Anatolia.

This objective has been pursued by the Turkish Government for many years and the establishment of the Foot-and-Mouth Disease Institute at Ankara has been a major achievement.

With the assistance of FAO the Institute has developed modern techniques of vaccine production, including tissue culture in suspension. The present production capacity is 200 000 monovalent doses of vaccine per week. This will allow for more extended vaccination programmes to be carried out in Anatolia in the years to come. As of 1973, vaccination will be bivalent as a rule everywhere in Turkey (O/A<sub>22</sub>).

The Turkish Government stated that it is their intention to further expand vaccine production in order to enable them to cover the entire country with bivalent vaccination

once a year at least.

Phase II of the UNDP Project TUR/549, Assistance to the FMD Institute at Ankara, has the objective of producing 10 million monovalent doses by the cell suspension method; this production unit is to serve as a pilot plant and the experience gathered will be used for the installation to be accommodated in a new building to be constructed by the Turkish Government next to the existing laboratories.

APPENDIX 1

FAO/OIE MISSION TO GREECE AND TURKEY TO REVIEW THE FMD SITUATION (A Greece 1972)  
AND MEASURES TO BE TAKEN

20-30 September 1972

At an emergency meeting of Executive Members of the Permanent Commission of OIE on Foot-and-Mouth Disease and the European Commission of FAO on the Control of Foot-and-Mouth Disease as well as an Adviser of EEC, convened by the Director of OIE and held in Paris on 30 June 1972, lines of action were suggested to deal with the FMD situation in Greece and Turkey.

This situation had arisen from the outbreaks due to the new sub-strain of A<sub>22</sub> which had been isolated in those countries.

It had been proposed, amongst other matters, that the Trust Fund for FMD Emergency Aid in this region should be replenished and destined to supply vaccine to the infected or threatened countries. The necessity of severe sanitary police measures to integrate the vaccination campaigns was emphasized.

To establish such a programme on a sound basis it was proposed to send a review mission to Greece and Turkey to study with the veterinary authorities of these countries the epizootiology and the means to control the disease.

MISSION TO GREECE  
(20-26 September 1972)

Dr. Brooksby, Professor Lucam and Dr. Boldrini visited Greece from 20-24 September and consulted with Dr. Vojatzis, the Director of Veterinary Services, Dr. Cardassis, Director of the Foot-and-Mouth Disease Institute at Athens and Dr. Sotiropoulos.

Evolution of the disease

The progress of the infection by A<sub>22</sub> in Greece in 1972 is shown on the attached Table 1. The dates indicate the first and last case observed in each province.

The initial phases of infection up to the end of May were dealt with in the reports by Dr. Boldrini, Dr. Brooksby and Professor Lucam. These earlier outbreaks originated from movement of meat and possibly even animals across the Turkish frontier and distribution in several northern departments.

Outbreaks (Attica A and Argolis) in the South were linked to dealers' movements and to an illegal movement of animals from Serres to Argolis.

Towards the end of May, however, there was a new outbreak in Evros which may also be connected with animal movement across the frontier.

The vaccination of the border area had not been completed at this time and 718 animals of 2 715 in nine foci became diseased.

Cattle dealers visiting the area are believed to have been responsible for transmitting infection to start a second outbreak in Attica (Attica B) beginning on 24 June and lasting till 10 August. An alternative possibility to explain Attica B is persistence of infection on the premises involved, possibly in carrier animals or in sheep with an in-apparent infection.

The outbreaks in Attica in turn gave rise to two in Karditsa by an illegal movement of animals in spite of the fact that the standstill order for the Attica area was still in force. There was a limited local spread at Karditsa. Tighter security on the control of animal movement is planned by the Greek authorities as a result of the Attica-Karditsa transfer. In all these new cases, ring vaccination round the foci of infection was carried out using homologous vaccine prepared in Greece.

It is disquieting to find outbreaks of A<sub>22</sub> still occurring in Greece almost five months from the initial invasion by the strain, even if it is considered that there have been two separate introductions of disease. The control of spread of infection is difficult when dealers appear to have effected a similar transfer of infection (Northern Greece to Attica) on two separate occasions. This and the illegal movement of animals, reinforces the need for efforts by the Greek Government to improve police sanitary measures.

The other possibility suggested by the recurrent outbreaks is persistence of infection at the original foci, for example in Attica. This is equally disturbing for the future of control programmes and a limited carrier survey in the neighbourhood of earlier foci of infection would give valuable information for forecasting the success of control procedures.

#### Future Control Programme

At the time of the first extension of A<sub>22</sub> in 1965-66 fairly severe measures were taken by some countries to attempt to eradicate infection. Nevertheless, the disease has become endemic in almost all the territory which it invaded. In view of the fact that Greece has had little freedom from infection for five months, it seems that, unless radical measures are taken, the situation might deteriorate and the country face the prospect of an endemic presence of A<sub>22</sub>. To take action, measures against the infection would therefore seem prudent and aid to Greece (and her neighbours) is highly desirable.

The measures to be taken should include:

1. Vaccination to restrict possible spread from areas in which carriers are present and to set up barriers against new importation of virus.
2. Police sanitary measures to prevent movement of cattle dealers, animals and animal products both into and within the country.

These two techniques are complementary and each alone would be unlikely to succeed. Action before a further wave of infection is much to be desired.

### Vaccination

Three possible schemes have been examined:

1. Vaccination of all animals in Evros, creating an extended buffer zone against Turkey, and in Attica which appears to be involved immediately the disease appears in the North.

A total of 308 000 cattle doses of vaccine would be required (sheep receiving half a cattle dose).

The aim is to prevent new importation of the disease. (N.B. The outbreaks in April by-passed Evros).

2. Vaccination of all animals in all departments where the disease occurred plus those of Rhodipi and Kavallas.

A total of almost 1.6 million cattle doses of vaccine would be required.

The aim is to create a very solid buffer zone in the North of the country and to blanket the infection in any carriers remaining from the outbreaks in the North and the three other areas involved.

Such an operation would be much too expensive at present.

3. Vaccination of all animals in Evros and Attica and re-vaccination of all those vaccinated in the 30 km zone around previous outbreaks.

This would require approximately 500 000 cattle doses. The aim is to cover Proposal (1) above and reinforce the buffer zone in Evros, and to deal with the undoubted risk of dissemination of disease should Attica become infected. The revaccination of animals would deal more economically with the carrier problem than Proposal (2).

This third proposal should be adopted and every effort made to complete the vaccination before the beginning of December 1972, as an insurance against a recrudescence of infection in the Spring of 1973.

### Vaccine Supply

The Institut de la Fièvre Aphteuse, Athens, has a stock of 70 000 doses of vaccine against Gre 1/72 and production can be 20 000 doses per week. It is expected that this production will be doubled in 1973. The present stock would enable a start to be made in Evros, the most urgent problem.

The Animal Virus Research Institute has a stock of 300 000 doses of A<sub>22</sub> Iraq vaccine, not strictly homologous with the Greek strain but giving a good immunity to it on revaccination, which could be used in the next stage of the campaign, and further production of 300 000 doses is planned. For this it is hoped that a Gre 1/72 will be available.

Further enquiries are suggested from I.F.F.A., whose production of A<sub>22</sub> USSR might be employed with advantage.

### Sanitary Measures

The police sanitary measures applied in Greece at present on the appearance of foot-and-mouth disease are essentially as follows:

When an outbreak is discovered, vigorous isolation is imposed on the entire group of infected or potentially infected animals. Animals are not allowed to leave their stables during the isolation period even to feed. Fodder and water is brought from outside the area of the outbreak.

By law, the duration of the isolation period is 21 days from the recovery of the last case. However, when virus considered to be exotic is involved, the isolation period is increased to 8 weeks or more.

All movement and carriage of animals is forbidden, first within the perimeter of the outbreak area, which includes all stables exposed to infection in the village, and second in the protective zone which extends considerably from the initial outbreak and can comprise the whole territory of the department (province).

The authorities of the neighbouring departments take all necessary steps to prevent the introduction into their territory of all animals, animal products and agents which might help in the transmission of the virus.

Animals from stables where infection has been present are not allowed to leave the department after the isolation period except for slaughter.

The veterinary services are helped in the application of these measures, and those applied to the use of milk in infected areas, the carrying-out of disinfection, the restriction of artificial insemination, etc. by the police force.

Stamping out, with the destruction of carcasses by burial at the infected place, is provided for by law. However, taking into account the agricultural practice in rural areas, based on communal grazing, and the limited availability of funds, it is impossible to apply stamping out in all cases.

Nevertheless, a considerable effort has been made, since from 1964 7 million drachma have been spent in compensation for slaughter under stamping-out procedures.

The Greek Veterinary Services have made great efforts to control the disease and have achieved an indisputable success.

Nevertheless, the grave problem posed by the extension of the virus A Gre 1972 in the region which affects Greece and her neighbours emphasizes that sanitary measures should be intensified in accordance with the following proposals:

Four situations are envisaged:

1. An outbreak involving a small number of animals (for example, 12 at most) which have not had contact with other susceptible animals (e.g. at communal pasture). Complete stamping out will be carried out.
2. The number of animals in an outbreak is greater than 12 or there have been contacts with a group at common pasture. In this case all animals will be inspected and those infected or potentially infected will be marked by ear clipping or in other ways. All animals for fattening must be sent for slaughter within a maximum of 6 months.
3. When the outbreak is in milking cows, every effort will be made to hold them in the same farm for 2 years under veterinary supervision unless they are sent for slaughter.

4. When an outbreak appears in an area where all the animals have been repeatedly vaccinated, it is suggested that stamping out should be applied, but only to infected animals and not to those showing no clinical signs.

The Veterinary authorities of the Ministry of National Economy have taken part in these discussions and have agreed to the police sanitary measures outlined above.

MISSION TO TURKEY  
(26-30 September 1972)

Following a similar mission to Greece, Professor F. Lucam and Dr. G.M. Boldrini visited Ankara and Istanbul from 26 to 30 September 1972.

In Ankara they had conversations with Dr. O. Ozdural, the Under-Secretary of State to the Ministry of Agriculture, Dr. M. Durusoy, the Director-General of Veterinary Services, Drs. M. Nazlıoğlu and N. Tekin, assistant directors of Veterinary Services, Dr. G. Karagözoğlu, Director of the Foot-and-Mouth Disease Institute, Dr. H. Girard, FAO Expert and scientific staff of the Institute. In Istanbul they met Dr. Hasan Ertan, Director of the provincial Veterinary Services.

Evolution of the disease in 1972

Table 2 shows that, as in the past, the incidence of the disease, expressed as the number of villages infected, reached its peak in Anatolia during the summer months; both the O and A types were continuously encountered but virus A was identified twice as often as virus O.

In Thrace only virus A has been identified, the latest focus of infection dating from August 1972.

The virus involved

Since 1965 a number of type A strains isolated in Turkey have been sent to the World Reference Laboratory, Pirbright, for identification.

The results are as follows:

- strains A Mahmatli 1965, A Civril 1970, A Izmir 1971, A Van 1971 and A Ankara 1972 are catalogued as A<sub>22</sub>. A Mahmatli corresponds to A Iraq 1964; A Civril is still known as A Turkey 1970;
- strain A Polatli 1968 is catalogued as A<sub>28</sub>.

The information concerning the serological studies performed at Pirbright on some of these strains has been circulated by OIE.

Prophylaxis of A virus infection

Prophylaxis is carried out by means of a monovalent vaccine prepared with the A Mahmatli 1965 strain. Vaccinations are effected:

- in Thrace: on all ruminants once a year. The latest vaccination was carried out between April and June 1972 and covered 1 885 537 animals, including over 500 000 cattle and buffaloes. Furthermore, it is pointed out that these same animals had previously been vaccinated with a monovalent vaccine;
- in Anatolia: every year on State farms and ring vaccination around foci. Ring vaccination had been carried out on 1 173 235 animals and State farm vaccination on 225 005 animals.

To further extend the protection of livestock in Thrace, the veterinary authorities are considering vaccination or revaccination between now and December 1972 of all cattle aged between four months and a year. In addition, mass vaccination in Thrace will be carried out with a bivalent O/A vaccine as of Spring 1973.

The same vaccine will be used on a large scale in Anatolia.

However, one problem remains open, despite the highly favourable results of vaccination: does the vaccine produced with A Mahmatli 1965 strain still cover the A strains which were more recently isolated in Thrace? To answer this question, the veterinary authorities plan to carry out an experiment at the Foot-and-Mouth Disease Institute with a view to evaluating the potency of A Mahmatli vaccine against the newly isolated A strain and, if appropriate, to round off this study by a cross-immunity test.

#### Sanitary police measures

The mission studied this point particularly with regard to Thrace.

In Istanbul, the Director of the Veterinary Services provided the following information: the Istanbul livestock market receives animals each year either from Anatolia (about 400 000 cattle and 1 100 000 sheep) or from Thrace (about 5 000 cattle and 250 000 sheep). All these animals without exception have to be slaughtered in the two Istanbul slaughterhouses.

Hence, Istanbul can be regarded as an effective barrier against the spread of foot-and-mouth disease due to the transport of animals from Anatolia to the European continent. However, one should recall that the disease can be transported by means other than livestock and should not rule out the possibility of illicit trade in which animals can bypass the regulations, in particular those regarding compulsory slaughter in Istanbul.

Therefore, in order to strengthen the effectiveness of existing measures, bivalent O/A vaccination should be compulsorily applied to all animals with Istanbul as their destination.

#### The Foot-and-Mouth Disease Institute

The mission found that this Institute was well designed and equipped and possessed highly trained personnel. However, its production capacity, which was increased recently to about 10 million monovalent doses per year, is still insufficient to meet the needs of prophylaxis in general which the veterinary authorities are aiming at. This would require 60 to 70 million monovalent doses per year.

To attain this target, it is necessary, while maintaining both the Frenkel technique and tissue culture method in roller bottles, to develop substantially the technique of virus production on BHK cells in suspension.



To this end, a UNDP technical assistance programme had been established, the first phase of which is completed. A second phase planned to last three years is being implemented. This is aimed at raising the existing production of virus by the cell suspension method to a level which will permit the production of 10 million doses of vaccine and serve as a pilot plant for the institute which will be constructed to produce the 60 to 70 million doses of vaccine needed every year.

=====

A D D E N D U M

Extension of prophylactic measures to other countries free of FMD in southeastern Europe

Although the objective of the missions was only Greece and Turkey, it was deemed advisable to draw attention to the possibility of spread of A Gre 1972 virus to the territories of neighbouring countries.

In order to face this possibility, the maintenance of the buffer zones, established in the summer of 1972 in Bulgaria and Yugoslavia, is highly recommended and the relevant operation should be implemented already before December 1972.

TABLE I  
 EPIZOOTIC OF FMD DUE TO THE SUBTYPE A<sub>22</sub> IN GREECE DURING 1972

No.	Infected Departments	Period	Infected communes	Outbreaks *				Animals affected				Animals in outbreaks				Animals free of FMD				Stamping out			
				cattle	sheep	goats	total	cattle	sheep	goats		cattle	sheep	goats		cattle	sheep	goats		cattle	sheep		
1	EVROS (A)	8/4	1	-	-	1	6	-	-	-	11	-	-	-	5	-	-	-	11	-	-	-	-
	EVROS (B)	5/6-6/7	1	-	-	9	703	15	15	2700	-	-	-	15	1997	-	-	-	-	-	-	-	-
2	XANTHI	14/4-29/4	8	7	6	77	177	140	12	430	1150	-	-	12	253	1010	-	-	-	-	-	-	-
3	DRAMA	19/4-9/5	2	-	-	89	172	-	-	265	-	-	-	-	93	-	-	-	-	-	-	-	-
4	SERRAI	24/4-1/5	4	-	-	10	35	-	-	91	-	-	-	-	56	-	-	-	4	-	-	-	5
5	ATTIKA (A)	20/4-1/5	1	-	-	2	148	7	-	162	12	-	-	-	14	-	-	-	-	-	-	-	-
	ATTIKA (B)	24/6-10/8	3	-	-	19	257	108	40	900	102	102	300	643	-	-	260	-	-	-	-	-	-
6	SALONIKA	4/5-28/5	4	-	9	36	119	-	306	424	-	-	1500	305	1194	-	-	-	-	-	-	-	-
7	ARGOLIS	5/5	1	-	-	1	7	-	-	10	-	-	-	3	-	-	-	10	-	-	-	-	-
8	KARDITSA	15/8-5/9	2	-	-	2	628	-	2	1305	-	-	2	677	-	-	-	-	-	-	-	-	-
	TOTAL		27	7	15	246	2252	255	375	6298	1264	1829	4046	1010	1454	25	5						

\* One outbreak means one farm.

Table II

Distribution of O and A<sub>22</sub> outbreaks (\*) in Turkey between January and October 1972 (\*\*)

Regions	Outbreaks of foot-and-mouth disease												Total
	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	
Thrace (buffer zone)	-	-	A 2	A 14	A 8	A 8	A 1	A 3	A 3				39
Anatolia	O <sub>1</sub> ,A 10	O <sub>1</sub> ,A 13	O <sub>1</sub> ,A 18	O <sub>1</sub> ,A 48	O <sub>1</sub> ,A 108	O <sub>1</sub> ,A 174	O <sub>1</sub> ,A 214	O <sub>1</sub> ,A 180	O <sub>1</sub> ,A 146	O <sub>1</sub> ,A 85			996
Total	10	13	20	62	116	182	215	183	149	85			1035

\* One outbreak means a village.

\*\* The official statistics for 1972 are in Table 1 of Working Document AGA-EUFMD/73/2

THE ANIMAL VIRUS RESEARCH INSTITUTE

W.R.I. INFORMATION SHEET NO.13

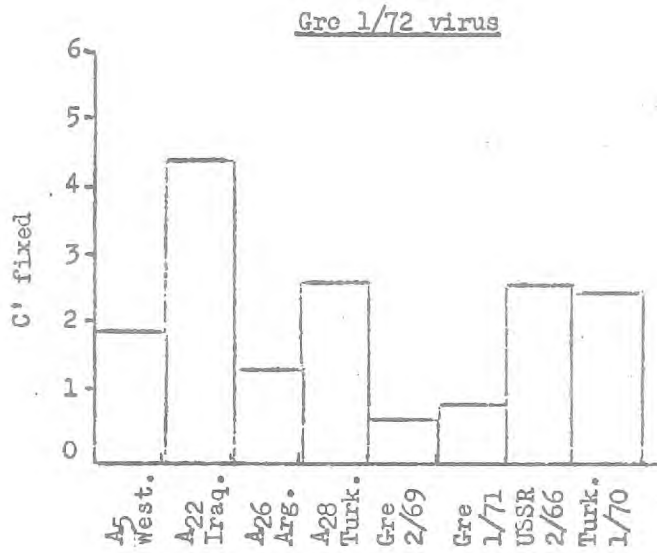
DATA ON FMD TYPE A STRAINS FROM GREECE

The relationships of FMD type A strains received in recent years from Greece have been compared by complement fixation tests with several other type A strains including those of the A<sub>22</sub> subtype isolated from outbreaks which occurred in the Middle East in previous years.

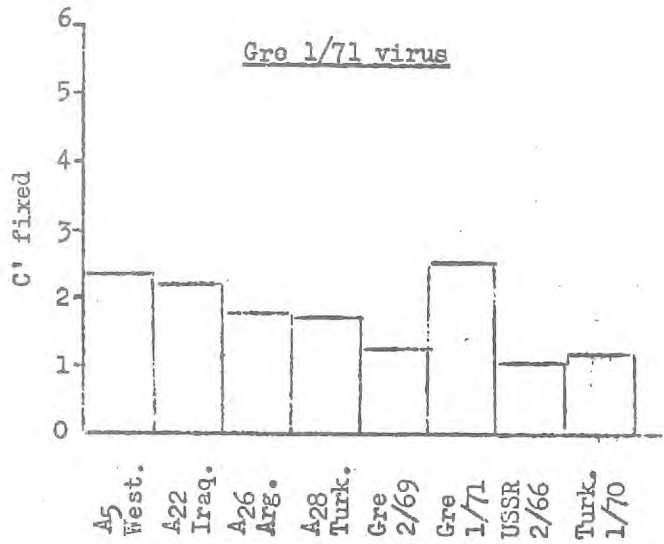
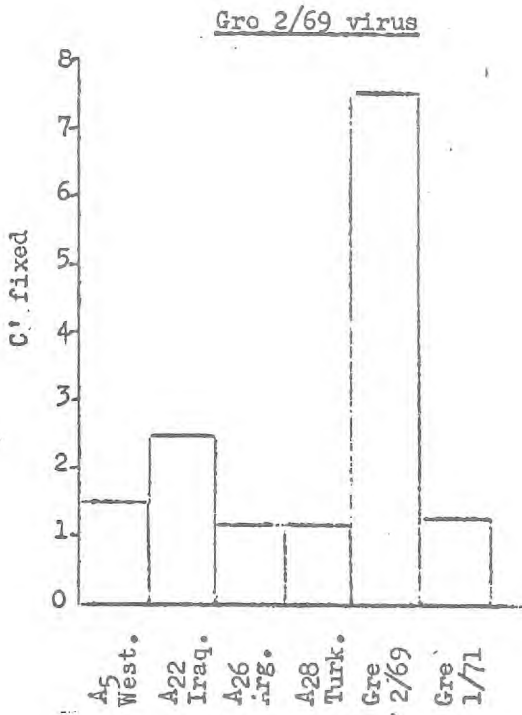
The strains employed in these investigations were:-

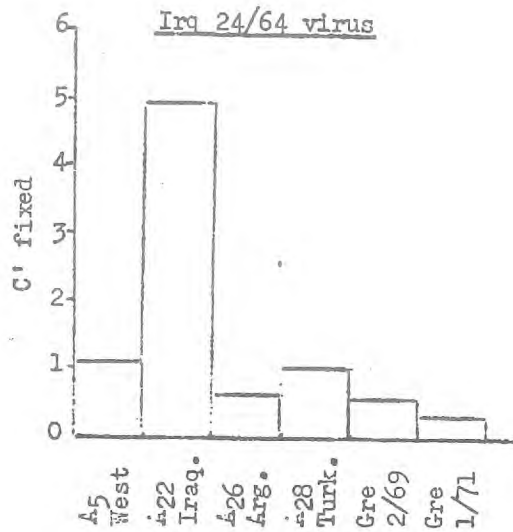
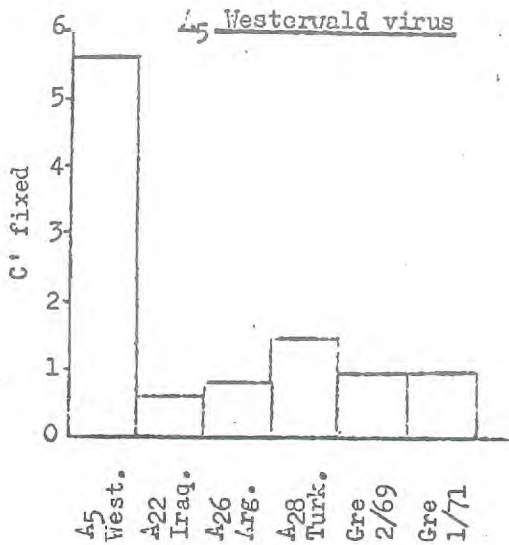
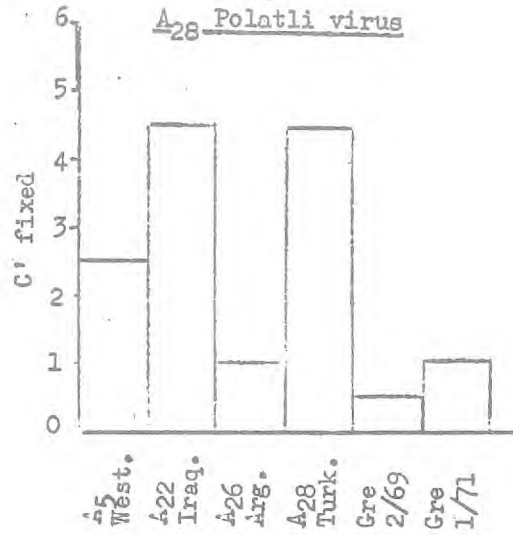
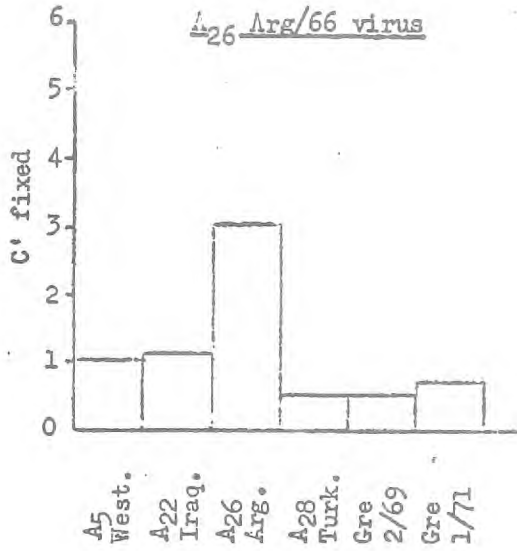
- Gre 1/72. Received on the 18th April, 1972 from Dr. Cardassis, and isolated from material obtained from cattle in the department of Xanthi, northern Greece. The outbreaks involved cattle, sheep and pigs.
- Gre 1/71. Received 17.3.71 from Dr. Cardassis as 4th passage virus on calf kidney tissue cultures. The original material was obtained from pigs affected with FMD in the Heraklion (Alikarnassos) region of Crete during February, 1971.
- Gre 2/69. Received 11.12.69 from Dr. Cardassis as original material taken from cattle affected with FMD in Serres (Macedonia), northern Greece. The outbreaks involved pigs and cattle. A previous examination of this isolate was the subject of the WRI Information Sheet No. 12 (5.4.72).
- Irq 24/64. Received from Dr. Berzanji, 12.11.64, Iraq, as original material from a cow affected with FMD in Mosul, Iraq. This was assigned the subtype no. A<sub>22</sub>.
- A<sub>26</sub> Arg./66. Received from Dr. Palacios of the Pan American FMD Centre, Nov. 1967.
- A<sub>28</sub> Polatli. Received from Dr. Karagozoglu 23.1.69 and isolated from cattle affected with FMD in the Polatli in the district of Ankara, Turkey. The cattle had been vaccinated with A<sub>22</sub> vaccine but had developed the disease between 2 and 4 months after vaccination. Cross-immunity tests in cattle and guinea-pigs indicated a slight difference between A<sub>22</sub> and the Polatli strain. On examination by the WRI by complement fixation, it was noted that when A<sub>22</sub> virus was tested with A Polatli serum the degree of differentiation (R = 78%) was in the subtype range, although cross-neutralisation tests between A Polatli and Irq 24/64 (A<sub>22</sub>) gave a value of R=40%. The Polatli strain was given the subtype No. A<sub>28</sub>.
- Tur 1/70. Received from Dr. Boz on 27.8.70 as first passage material in cattle. The original material was obtained from cattle affected with FMD in Civril, Denizli district, Turkey. One-way complement-fixation tests have indicated that this strain was very similar to the Irq 24/64 A<sub>22</sub> subtype strain.
- USSR 2/66. Received 2.2.66 and reasonably closely related to the A<sub>22</sub> subtype strains, Irq 24/64 and Iran 1/65.
- A<sub>5</sub> Westorwald. Used as the reference subtype strain of A<sub>5</sub> European A subtype.

In the absence of an homologous antiserum to Gre 1/72 for complement fixation tests, one-way tests with sera of the above viruses were as follows:-



Cross-complement fixation tests with the other strains gave results as follows:-





- Comments:
1. On the basis of one-way tests, the Gre 1/72 strain appears to have a close relationship to the Δ<sub>22</sub> (Irq 24/64) subtype strain, and a less marked one with Δ Polatli, Δ<sub>28</sub>, with an equal reactivity with the USSR 2/66 (Δ<sub>22</sub>) strain. There is a relationship with the Tur 1/70 strain.
  2. The Gre 1/71 strain appears to differ from the Gre 1/72 and from the Gre 2/69 strains.
  3. The Gre 2/69 strain is also different but the assignment of a new subtype number to it must await tests with further Δ strains.

3rd May, 1972.

J. H. DARBYSHIRE

THE ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET NO.14

FURTHER DATA ON .F.M.D. TYPE 'A' STRAINS FROM GREECE

Since the preparation of W.R.L. Information Sheet No.13., two further type 'A' strains have been received from Greece. These are as follows:-

GRE 3/72

Received from Dr. Cardassis on 26.5.72. Tissue culture material treated with 1% chloroform for 24 hr. at 4°C. Derived from a sample received 14th May in Athens from Serres, N. Greece, from a cow vaccinated 10 days previously with A<sub>22</sub> vaccine.

GRE 4/72

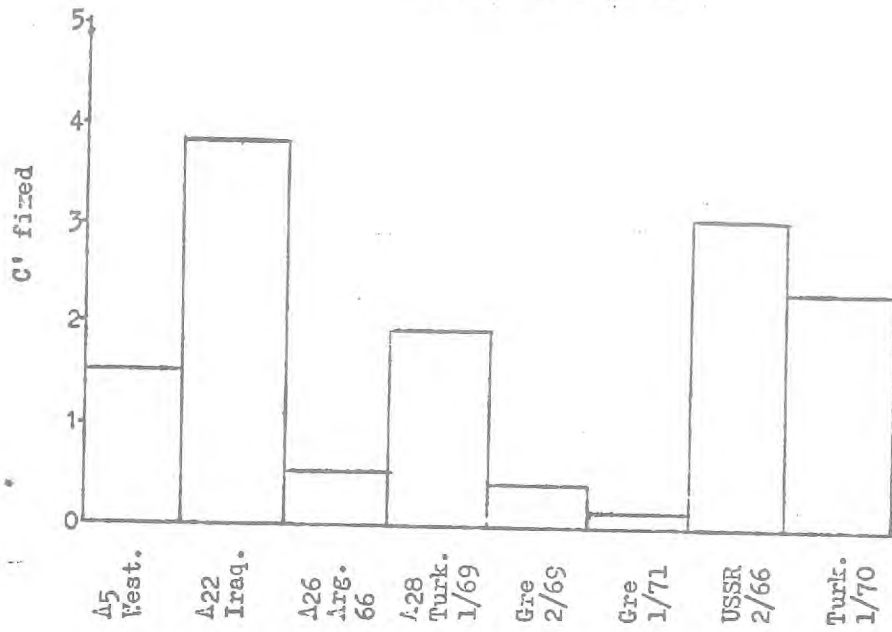
Received on 26.5.72. also from Dr. Cardassis. Tissue culture treated as for GRE 3/72 above. Original received in Athens 5.5.72. from one non-vaccinated cow in Thessaliniki. Seven cattle affected, one animal in each group of 5-6 animals vaccinated 6 days previously with A<sub>22</sub> vaccine.

One-way tests with sera of these two viruses were carried out, using the same sera as were employed in the test of GRE 1/72 virus reported on page 2 of W.R.L. Information Sheet No.13. It will be seen that these strains have reacted in almost exactly the same pattern as the GRE 1/72 and therefore there is now further evidence for the identification of the new outbreak as being associated with a strain related to the A<sub>22</sub> subtype.

14th June. 1972

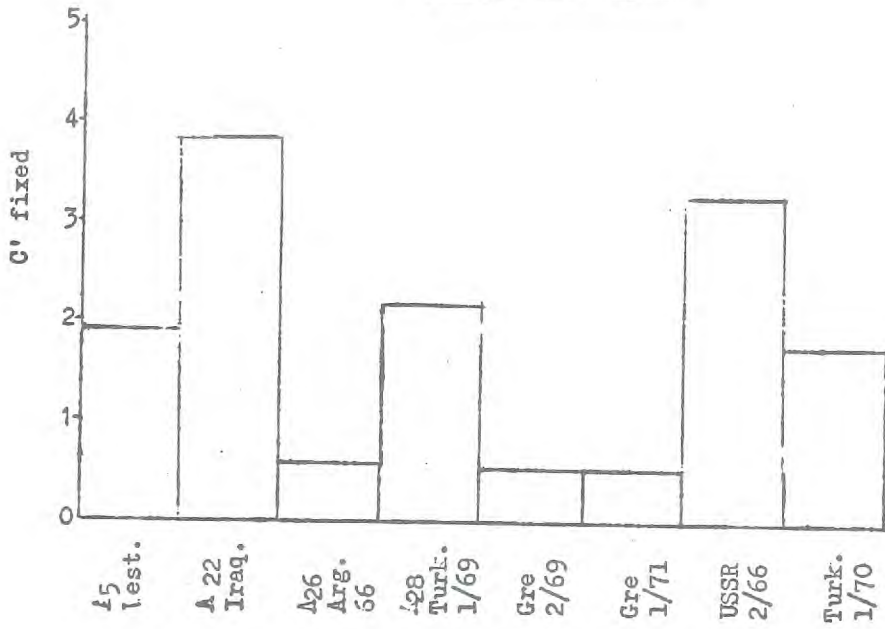
A.E.M. ARROWSMITH

Greece 3/72 Virus



Sera

Greece 4/72 Virus



Sera



THE ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET NO. 15

DATA ON FMD STRAINS FROM TURKEY

Since the reports on Gre 1/72, 3/72 and 4/72 (W.R.L. Information Sheets 13 and 14), four viruses have been received from Dr. Boz in Turkey. These are as follows:-

TURK 6/72

Received on 25.5.72. Sample of epithelium from an outbreak in Macun village in the district of Polatli, province of Ankara. Sheep, goats, cattle and buffalo were affected.

TURK 7/72

Received in W.R.L. on 19.6.72 as a sample of bovine tongue epithelium from an outbreak in the village of Hisarbeyli, district of Coloka in the province of Istanbul. Stock in affected village - cattle, sheep and buffalo. Sample collected from one day lesion.

TURK 9/72

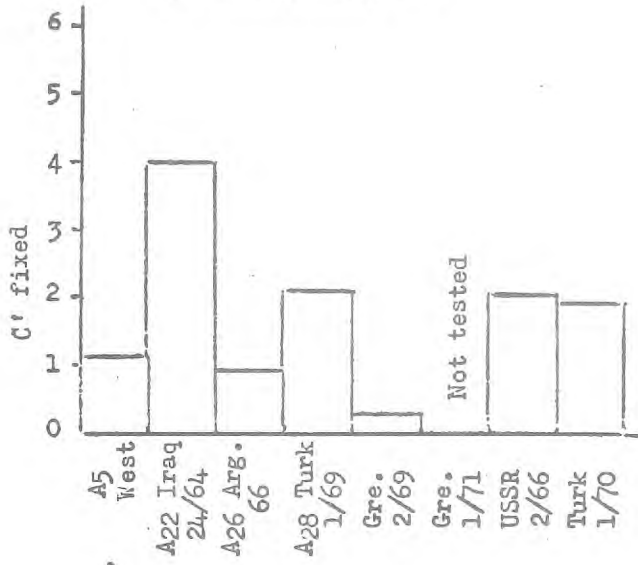
Received 19.6.72, a sample of epithelium from an outbreak in the village of Kocyalagi in the district of Erzincan, province of Erzincan.

TURK 10/72

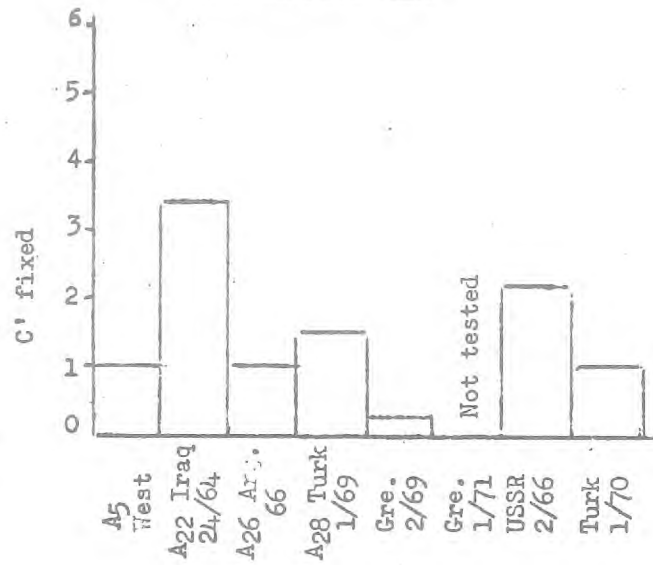
A sample of bovine epithelium also received on 19.6.72 from the village of Gakmak in the Kars district, province of Kars.

In the absence of homologous antisera to the above mentioned viruses, one-way complement-fixation tests with reference antisera as for Information Sheets Nos. 13 and 14 were as follows:-

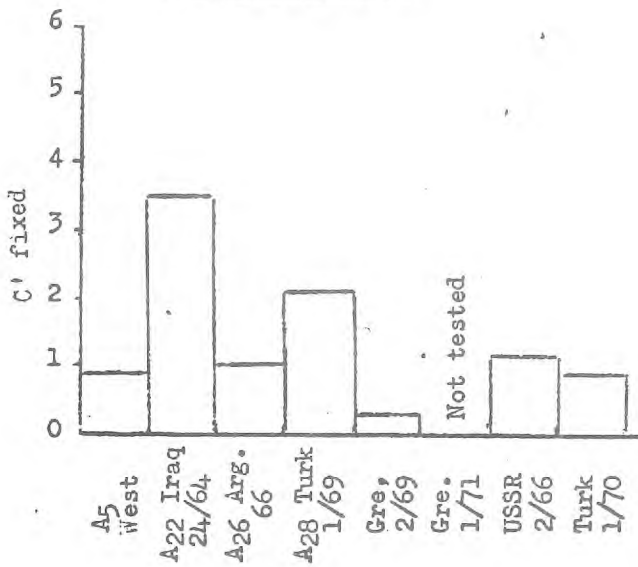
Turkey 6/72 Virus



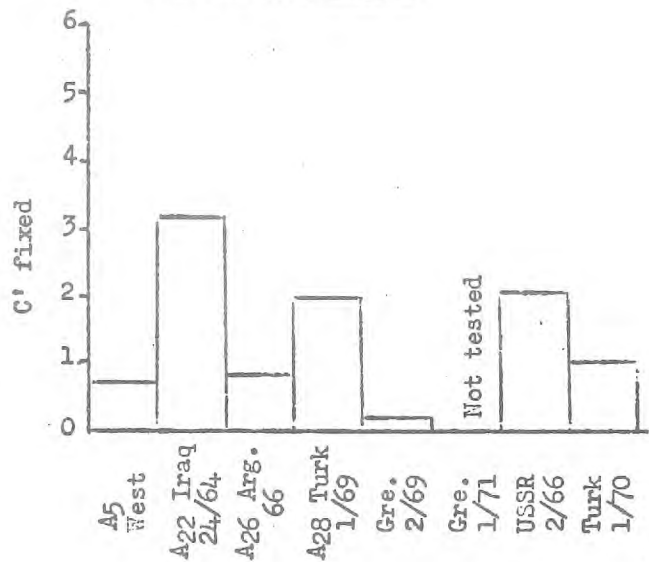
Turkey 7/72 Virus



Turkey 9/72 Virus



Turkey 10/72 Virus



These profiles strongly suggest that one strain of virus is involved in this widely dispersed series of outbreaks from Eastern Turkey to Northern Greece.

29th June, 1972

A.E.M. ARROWSMITH

W.R.L. INFORMATION SHEET NO. 16

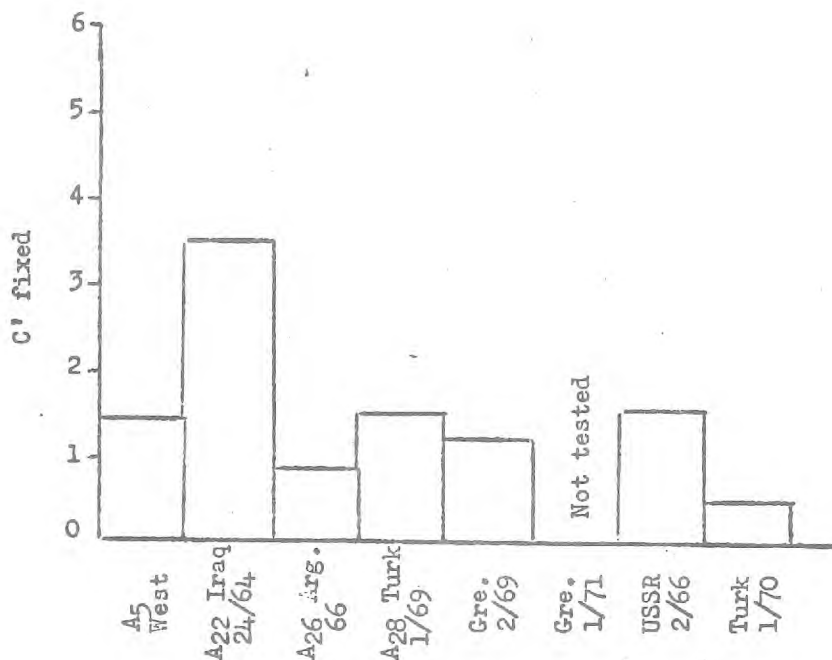
DATA ON FTD STRAIN FROM EGYPT

An 'A' strain has been received from Egypt, and has been compared with reference viruses on one-way complement-fixation tests using the same sera as those employed in previous tests with Gre. 1/72 reported in W.R.L. Information Sheet No. 13.

EGYPT 1/72

Received from Dr. Böhm on 7.6.72. Sample of epithelium from one local Baladi bovine, one of 51 animals affected at a quarantine station in Alexandria. Buffalo and imported cattle from Somalia in the same herd were not affected at that time.

Egypt 1/72  
virus



This profile suggests that the strain is one of the A22 group, but minor differences from those in Information Sheet No. 15 must be resolved before its relation to the current A22 outbreak in Turkey and Greece is established.

29th June, 1972

A.E.M. ARROWSMITH

ANIMAL VIRUS RESEARCH INSTITUTE

W.R.L. INFORMATION SHEET NO. 17

Further Data on a Foot-and-Mouth Disease Type A Strain from Greece

Since the publication of preliminary data on a number of strains from Greece, Turkey, Lebanon and Egypt (Information Sheets Nos. 13-16), a hyperimmune guinea pig serum has been prepared against the Gre 1/72 strain and employed in complement fixation tests to clarify the relationship between this strain and others from the area.

The viruses included in the present study were listed in Information Sheet No.13, with the exception of

Ken 140/69 received from Nairobi 23.7.69. Sample from an outbreak at Nakuru Ranch, Kenya.

The following tables summarise the results obtained. Some of the results on the interrelationship of strains listed have been given in earlier tables and are marked here as NR (not repeated).

Virus Serum	A5V	A22 Iraq	A26 Arg	GRE 2/69	USSR 2/66	GRE 1/72	Ken 140/69
A5V	1.0	NR	NR	NR	NR	0.07	NR
A22 Iraq	NR	1.0	NR	0.20	0.91	0.53	0.49
A26 Arg.	NR	NR	1.0	NR	NR	0.19	0.21
Gre 2/69	NR	0.09	NR	1.0	0.12	0.08	NR
USSR 2/66	NR	0.60	NR	0.16	1.0	0.33	NR
Gre 1/72	0.18	0.17	0.18	0.20	0.18	1.0	0.88
Ken 140/69	NR	0.35	0.17	NR	NR	0.54	1.0

Table 1. "r" values

Table 2. "R" values

A5W	100						
A22 Iraq	NR	100					
A26 Arg	NR	NR	100				
GRE 2/69	NR	14	NR	100			
USSR 2/66	NR	74	NR	14	100		
GRE 1/72	11	30	19	13	24	100	
KEN 140/69	NR	42	19	NR	NR	69	100
	A5W	A22 Iraq	A26 Arg	GRE 2/69	USSR 2/66	GRE 1/72	KEN 140/69

An effort has been made to relate the strain Gre 1/72 to the Tur 1/70 strain but the serum available against Tur 1/70 is of lower titre than usually employed and the result below is therefore open to revision at a later date.

R value Gre 1/72 v. Tur 1/70 R = 65%

r values

	Gre 1/72	Tur 1/70
Gre 1/72	1.0	0.56
Tur 1/70	0.75	1.0

COMMENTS

1. The R values shown confirm that Gre 1/72 is widely different from A<sub>5</sub> Westerwald, A<sub>26</sub> Argentina and Gre 2/69.
2. The R values for Gre 1/72 with A<sub>22</sub> Iraq and A<sub>22</sub> USSR are also low but it is noteworthy that the r values, using the sera against these strains, are not so low (0.53, 0.33) - which still suggests that Gre 1/72 is properly classed as a strain related to A<sub>22</sub>.
3. Gre 1/72 is probably (final result still awaited) not unlike Tur 1/70 (R = 65%), while Tur 1/70 is related to A<sub>22</sub> Iraq (R = 79%), but Gre 1/72 has given an R value of only 30% with A<sub>22</sub> Iraq. (This anomaly must be investigated).
4. Gre 1/72 is related (R = 69%) to Ken 140/69, which in turn is related to the other East African strains from Kenya and Tanzania. As indicated in Information Sheet No.2, the link between East African strains and A<sub>22</sub> is closer than the link between either of these and A<sub>5</sub> Westerwald.
5. The elucidation of the interrelationship of the A strains which have occurred in the countries of the Near and Middle East and Africa depends on further cross tests when homologous sera are available.

7th August, 1972

A.E.M. ARROWSMITH