The initial choice of antibiotic combinations for treatment depends largely on the local pattern of drug resistances and knowledge of pairs of drugs which delay development of resistance. Noradrenaline was the most effective hypertensive agent used for maintenance of systolic blood-pressure at a satisfactory level, but in less severely affected subjects hydrocortisone and phenylephrine hydrochloride proved useful substitutes.

In some instances depression of renal function was due to acute renal tubular necrosis. Toxaemia appeared to be mainly responsible and appropriate treatment was necessary. In other instances anoxia and to a less extent hypotension and hypertensive agents used in treatment were at least contributory in causing oliguria.

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Mental Health in International Perspective is the report of an international study group held in June, 1961, at the Roffey Park Institute, Horsham. Its primary function was to make a broad survey of the progress being made in the many aspects of the mental health field throughout the world. An attempt was made to cover the spectrum of interests from research and care of the mentally sick at the one end to international relationships at the other. A more detailed report is to be published in the summer of 1962. The study was financed by the U.S. Public Health Service (National Institute for Mental Health). The report is not for sale, but single copies are available free from the World Federation for Mental Health, 19 Manchester Street, London W.1.

TREATMENT OF STAPHYLOCOCCAL INFECTIONS WITH METHICILLIN

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Since the introduction of methicillin several authors have published papers reporting results of treatment with this drug. Douthwaite and Trafford (1960) quoted 13 cases, in all of which infection was eliminated. Stewart *et al.* (1960) quoted 17 cases, in all of which the staphylococcus was eliminated from the infected sites, although not necessarily from carrier sites. Douthwaite *et al.* (1961) reported 46 cases that responded to methicillin, but in six of these the staphylococcus recurred. Lowbury *et al.* (1961) treated 54 patients with burns colonized by *Staph. pyogenes*, but the organism persisted in 20.

In this hospital methicillin has been in use since January, 1960, and 34 cases had been treated with the drug up to the end of May, 1961. Although in many of these cases the response to methicillin was excellent, in some, mostly those with serious underlying disease, the response has not been so good.

In most cases methicillin was given alone so that its clinical effectiveness could be judged. This is an exception to the practice of this hospital of always giving two antibiotics in combination (Barber *et al.*, 1960). In a few instances, usually in patients with severe illness, other antibiotics were given concurrently; however, the interval between starting these and methicillin was sufficient in almost all cases to give some indication of the response to the latter. The dose, except in children, was 6 g. daily for the first 48 hours and 4 g. a day thereafter by intramuscular injection. Courses varied from a total of 24 to 136 g.

Clinical Material.—The conditions for which methicillin was used are set out in Tables I and II. The following brief comments and histories illustrate some of the different cases treated.

Respiratory Infections

Of the 12 patients who had respiratory infections, seven had staphylococcal pneumonia, two a presumed staphylococcal pneumonia, two had exacerbations of bronchitis with *Staph. pyogenes* in the sputum, and one patient had a lung abscess. Most of these patients had severe underlying disease, as can be seen from Table I, which also shows the phage type and the clinical response to methicillin. All strains of staphylococci isolated were resistant to at least penicillin and one other antibiotic, and in most cases to three or four antibiotics.

Successes

Six patients with pneumonia and one with bronchitis did well, all having failed to respond to previous antibiotics.

Case 1. Staphylococcal Pneumonia.—A woman aged 65 had a local excision and deep x-ray therapy for carcinoma

TABLE I.—*Respiratory Infections*

Case No.	Age and Sex	Infection	Underlying Disease	Phage Type of Infecting Strain	Response to Methicillin
1	65 F	Pneumonia	Carcinoma of breast	83	Good
2	62 F	"	"	83	"
3	9 F	"	Asthma and oliguric renal failure	53/83/75/77	"
4	26 M	"	Multiple injuries and acute tubular necrosis	Not obtained	"
5	20 M	"	"	75/77+	Improved
6	66 F	"	"	Not obtained	Died
7	90 F	Acute bronchitis	Aortic valvular disease with heart failure	27/52/52A/80/81+	"
8	53 M	Bronchitis	Hypertension	6+	Good
9	51 F	Pneumonia	Carcinoma of oesophagus	83	"
10	61 M	Lung abscess	Carcinoma of lung	75/77	Died
11	60 M	Pneumonia	"	75/77+	"
12	54 M	"	"	75/77+ and 83	"

of the breast in 1957. In March, 1961, local recurrence was treated by a radioactive yttrium implant into the pituitary. A few days after implantation the temperature rose to 105° F. (40.6° C.), with dyspnoea, cough, and signs of consolidation at the right base. Both urine and sputum yielded *Staph. pyogenes* resistant to penicillin, streptomycin, tetracycline, and erythromycin. Initially, treatment had been started with streptomycin and sulphadimidine, changed when there was no improvement to penicillin and tetracycline, but on receiving the report from the laboratory methicillin was substituted for penicillin. The temperature fell to normal within 24 hours and the clinical condition and radiological appearances improved rapidly, the patient being discharged a fortnight later.

Case 3. *Staphylococcal Pneumonia*.—A girl aged 9 was transferred to Hammersmith Hospital with collapse and consolidation of the right upper lobe and oliguric renal failure. There was a history of asthma with repeated chest infections. Prior to admission she had received tetracycline, penicillin, streptomycin, and chloramphenicol. *Staph. pyogenes* isolated from the sputum proved resistant to penicillin, streptomycin, and tetracycline, and partially resistant to erythromycin. Methicillin was given for one week and the uraemia was treated conservatively. The pneumonia improved and the blood urea gradually fell.

Failures

Five of the patients with respiratory infections either failed to respond to treatment or became reinfected after initial response. One of these (Case 6) was moribund on admission and died less than four hours after methicillin was started. Another patient (Case 7) was a woman of 90 with severe syphilitic aortic valvular disease, gross heart failure, and acute bronchitis. *Staph. pyogenes* isolated from her sputum was resistant to penicillin and tetracycline, which drugs she had up till then been receiving. Chloramphenicol was substituted with little improvement, and methicillin was then started. There was slight improvement at first, but she became pyrexial and died nine days later. Death was attributed to a combination of heart failure and bronchitis.

The three other patients who died were all suffering from carcinoma of the lung, which was the main cause of death. The infection in two of these cases showed some response to treatment. One patient (Case 10) with a lung abscess distal to a carcinoma of the bronchus was not improved by methicillin, and at necropsy his death was attributed to a combination of infection and carcinomatosis. The other two cases are given in more detail below.

Case 11. *Bronchopneumonia; Carcinoma of Lung*.—A man aged 60 had a left upper lobectomy performed for a squamous-cell carcinoma of the bronchus. After operation he developed purulent sputum which yielded *Staph. pyogenes* resistant to penicillin, streptomycin, and tetracycline, and partially resistant to methicillin, framycetin, and kanamycin, phage type 75/77+. The treatment was changed from tetracycline and sulphadimidine to methicillin on March 3; by the 14th staphylococci were no longer present and methicillin was stopped on the 19th. Radiotherapy was started on March 20 but had to be stopped because of his poor general condition. From this time his condition steadily deteriorated. A tracheostomy was performed, and by April 17 the staphylococcus had reappeared in his tracheostomy wound and secretions. He died in May, and necropsy showed widespread carcinomatosis and bronchopneumonia; the same strain of staphylococcus as that originally present in his sputum was isolated from the lung.

Case 12. *Pneumonia; Carcinoma of Lung*.—A man aged 54 was admitted to hospital with a right-middle-lobe pneumonia; *Staph. pyogenes* of phage type 83, resistant to penicillin, streptomycin, and tetracycline and partially resistant to erythromycin, was isolated. There was no response to chloramphenicol and novobiocin, and a mass in the right middle lobe became apparent on x-ray examination. Methicillin was then given and pneumonectomy performed, and for three weeks post-operatively his sputum contained no staphylococci. Unfortunately his carcinoma recurred and a bronchopleural fistula developed. His sputum and pleural fluid then became reinfected with a staphylococcus resistant to penicillin, streptomycin, and tetracycline and partially resistant to methicillin, neomycin,

TABLE II.—*Other Infections*

Case No.	Age and Sex	Infection	Associated Disease	Phage Type of Infecting Strain	Response to Methicillin
<i>Generalized Infections</i>					
13	16 M	Septicaemia	Acute tubular necrosis	Isolated elsewhere	Good
14	66 M	"	Carcinoma of stomach and acute tubular necrosis	<i>Staph. albus</i>	"
15	44 F	Subacute bacterial endocarditis	Mitral valve disease	" "	"
<i>Deep-seated Infections</i>					
16	17 F	Osteomyelitis	Fracture of femur	Not typable	"
17	20 M	Infected haematoma	Multiple fractures, acute tubular necrosis	80	"
18	28 F	Subphrenic abscess	Oliguric renal failure. <i>Str. faecalis</i> septicaemia	54	Improved twice, Third relapse, no response
19	66 M	Buttock abscess	Amputation of leg for ischaemic gangrene	80 and 83	Good
20	19 M	Parotitis and cellulitis	Multiple fractures, oliguric renal failure	Not typable	"
21	59 F	Infected Wegener's granulomata	Oliguric renal failure	" "	Died, no response
<i>Urinary Infections</i>					
22	52 M	Pyelonephritis	Enlarged prostate	52A/79/53/77+	Good
23	47 M	Pyonephrosis	Acute tubular necrosis. Renal stones	77	"
24	19 M	Pyelonephritis	Renal failure. Cong. urethral valve	79/47/53/77+	"
<i>Superficial Infections</i>					
25	3 F	Infected burns	"	79/75/77/83	"
26	56 M	Infected wound	Femoral artery occlusion	83	Died after initial response
27	47 M	"	Stomal ulcer	79/47/53/75/77	Good
28	72 F	Infected wound and gangrene	Femoral artery occlusion	42 E	Died, no response

framycetin, and kanamycin. This was phage type 75/77+ and was almost certainly a reinfection with the strain of Case 11, mentioned above, who had been in the same ward. His condition steadily deteriorated and he died three months after operation.

Generalized Infections

One case was a severe septicaemia due to *Staph. pyogenes* with embolic and oliguric complications; the second was a septicaemia due to *Staph. albus*; and the third was a subacute bacterial endocarditis due to *Staph. albus*. All infections were controlled by treatment with methicillin (Table II).

Case 15. Subacute Bacterial Endocarditis.—A woman aged 44 was on her way home to Egypt after a mitral annuloplasty performed in America when she developed rigors, fever, and Osler's nodes. On admission she was in cardiac failure with atrial fibrillation and mitral systolic and diastolic murmurs, and temperature of 103° F. (39.4° C.), W.B.C. 20,000, E.S.R. 29 mm. Pain and tenderness in the left upper quadrant of the abdomen which developed during the next day proved to be due to a splenic infarct. Penicillin and streptomycin were given and the heart failure was treated, but after an initial slight improvement rigors recurred and she suffered a saddle embolus. Chloramphenicol was added to the treatment, but her condition deteriorated and an aortic diastolic murmur appeared. At this stage *Staph. albus*, resistant to penicillin but sensitive to all other antibiotics tested, was isolated from blood cultures taken on three separate occasions. Methicillin was then started. Within a week she was much improved and her temperature had settled. Methicillin was continued for three weeks. No further embolic episodes occurred and repeated blood cultures were negative. Five weeks later the patient was discharged to continue her journey home.

Deep-seated Infections

From two of these patients (Cases 19 and 20) who did well it was still possible to isolate *Staph. pyogenes* when convalescent.

Case 16. Osteomyelitis.—A girl aged 17 was seen at the end of January, 1961, with a discharging sinus at the site of a fracture of the femoral shaft after the insertion of a Küntscher nail. This sinus had been present for eight months and had not responded to previous antibiotic treatment. X-ray examination suggested the presence of a sequestrum. *Staph. pyogenes* grown from a swab of the sinus was resistant to penicillin, streptomycin, tetracycline, and erythromycin. Methicillin was given from February 27 to March 11. Control of infection allowed the nail to be removed on March 5. By March 15 the sinus was healed and *Staph. pyogenes* could no longer be isolated.

Case 18. Subphrenic Abscess.—A woman aged 28 developed septicaemia due to *Str. faecalis* and oliguric renal failure after childbirth and was transferred to Hammersmith Hospital, where she had two haemodialyses. The renal failure steadily improved, but she then developed a subphrenic abscess; pus from this grew *Str. faecalis*. Some improvement followed drainage and a course of vancomycin, but pus obtained from a further subphrenic collection surgically drained grew *Staph. pyogenes* of phage type 54, resistant to penicillin, streptomycin, tetracycline, chloramphenicol, erythromycin, novobiocin, and framycetin. Methicillin was then given for two weeks. After a week's treatment the temperature settled and cultures became negative, but two days after the course had finished fever returned. Treatment with methicillin was then restarted and the temperature again settled. Injections were continued for a further four weeks, but in the last week of this second course the pyrexia again recurred, and subsequently it was again possible to isolate the infecting staphylococcus. A later course of vancomycin also had no effect on the pyrexia,

which in the ensuing two weeks settled without further antibiotics. Since then the patient has been well.

Case 19. Buttock Abscess.—A man aged 66 developed an abscess in the buttock on the same side on which an amputation of his leg had been performed for gangrene. *Staph. pyogenes* was isolated resistant to penicillin, streptomycin, and tetracycline, phage type 80. This strain was also present in the sputum. After three weeks of methicillin the buttock abscess had settled completely and he was fit enough to have a vein homograft to improve the blood supply to his ischaemic right leg. Despite his good response, post-operatively sputum still grew *Staph. pyogenes* phage type 80; his wound also grew a *Staph. pyogenes* with the same antibiotic sensitivities but of phage type 83. This latter appeared to be an exogenous reinfection.

Case 21. Infected Wegener's Granulomata.—A woman aged 59 received methicillin for four days before death; the *Staph. pyogenes* was still present at necropsy.

Urinary Infections

Case 23. Pyonephrosis.—A man aged 47 was transferred to Hammersmith Hospital because of anuria. He also had renal stones, pyonephrosis, an enlarged prostate, and a respiratory infection. Pyelostomy of the right kidney revealed a large amount of pus, and after drainage of this his renal condition greatly improved. Both sputum and urine yielded *Staph. pyogenes* resistant to penicillin, streptomycin, and tetracycline, which did not phage type, and a second strain resistant to penicillin and streptomycin, type 77. Treatment had begun with chloramphenicol and tetracycline, but as he did not improve methicillin was substituted for tetracycline. Methicillin was given for a week and the *Staph. pyogenes* was eliminated. Renal biopsy showed a recent tubular necrosis. The patient was discharged and readmitted three months later for prostatectomy, after which another strain of *Staph. pyogenes* was isolated from his urine, resistant to penicillin, streptomycin, and tetracycline, but the phage type was 80.

Case 24. Pyelonephritis.—A youth of 19, with a congenital urethral valve, chronic pyelonephritis, and renal failure, had a urinary infection due to *Staph. pyogenes* resistant to penicillin, streptomycin, tetracycline, chloramphenicol, and erythromycin. This was eliminated by a course of methicillin, and it was possible subsequently to proceed with a renal homograft. No further infection occurred.

Superficial Infections

Case 25. Infected Burns.—A girl aged 3 suffered 20% deep partial-thickness burns of the left forearm, hand, left side of the chest, left thigh, and buttock. These were treated by exposure and penicillin and sulphadimidine. The burns crusted satisfactorily but became infected a week later. *Staph. pyogenes* resistant to penicillin, streptomycin, tetracycline, chloramphenicol, and erythromycin was isolated. *Ps. pyocyanea* was also present. There was a fever of 103° F. (39.4° C.). Prior to receipt of the bacteriological report, treatment had been started with chloramphenicol and erythromycin. Methicillin was then given. Three days later all swabs were negative for staphylococci, although the *Ps. pyocyanea* was still present. In view of the presence of *Ps. pyocyanea* wound treatment included the use of a polymyxin-bacitracin-neomycin spray. The temperature settled and the wounds healed so well that no graft was needed as had at first been expected. When she was seen some weeks later recovery was complete with no limitation of movements of the elbow or hip.

Case 26. Wound Infection.—A man aged 56 had an iliac-femoral bypass graft performed for femoral artery occlusion. The wound became infected and he developed a persistent discharging sinus from which *Staph. pyogenes* of phage type 83 resistant to penicillin, streptomycin, and tetracycline and partially resistant to erythromycin was isolated. Treatment

had been started with penicillin, streptomycin, and chloramphenicol; subsequently novobiocin was substituted for the penicillin and streptomycin. As he failed to respond, methicillin was started, and was continued for the next six weeks. In this time the infection appeared to clear up, and the sinus was excised and covered with a skin graft. The patient was discharged with the sinus apparently healed. One month later, however, he was readmitted after a secondary haemorrhage, and exploration of the wound showed persisting infection from which *Staph. pyogenes* of the same phage type was isolated. Six days later he died from a pulmonary embolus.

Case 28. Wound Infection.—A woman aged 72 developed incipient gangrene in the left leg after amputation of her right leg and was readmitted for a femoral-popliteal graft. The wound became infected with *Staph. pyogenes* resistant to penicillin, streptomycin, and tetracycline and partially resistant to erythromycin. Methicillin was given for two weeks, and during this time mild fever of around 100° F. (37.8° C.) persisted and the wound remained unhealed; skin-grafting failed, and a sinus persisted from which cultures continued to yield *Staph. pyogenes*. The patient subsequently developed heart failure and died. At necropsy an abscess in the thigh was found from which the staphylococcus was isolated.

Prophylactic Use

In addition to Case 24 two other patients who have had renal homografts and were carriers of *Staph. pyogenes* have been given methicillin prophylactically. This has also been given to two patients who had hind-quarter amputations. No infections have developed in any of these patients.

The remaining two cases were a probable osteomyelitis with oliguric renal failure and a patient thought to have a septicaemia following an infected abortion; both did well, but in neither case was any organism isolated, so they are not further considered here.

Summary of Clinical Results

Clinically the majority of patients receiving methicillin improved. Of the 12 cases in which the clinical course was unfavourable, in four this was in no way related to infection. Of the remaining eight, one was a woman of 90 with heart failure and bronchitis, one was moribund on starting treatment, three had respiratory infections associated with bronchial neoplasms, and two had chronic wound infections in ischaemic limbs. The remaining case of subphrenic abscess initially responded but relapsed.

These clinical failures were associated with persistence of *Staph. pyogenes* after treatment; in addition, in two cases in which the clinical course was satisfactory the infecting staphylococcus was still present when the patient was convalescent.

Bacteriological Results

In 24 out of the 30 cases in which methicillin was used for clinical infection *Staph. pyogenes* was isolated from the infective process. In one case of pneumonia no sputum was obtainable but a resistant *Staph. pyogenes* was isolated from the nose; in two cases the infection was caused by *Staph. albus*; and in the three other cases—namely, an osteomyelitis, suspected septicaemia, and a post-influenzal pneumonia—the infection was suspected to be due to *Staph. pyogenes* but was not proved.

In 14 of the 26 proved cases of staphylococcal infection, including the two *albus* infections, bacteriological examination of specimens after treatment with methi-

cillin yielded no further staphylococcus. In three further cases the clinical condition was so improved that no further specimens were available to send to the bacteriological laboratory. In three cases the staphylococcus was never eliminated by methicillin, although one patient received methicillin only for a few days before death—that is, the case of Wegener's granulomata. One of the other cases which apparently failed to respond was the woman of 90 with syphilitic aortitis, gross heart failure, and bronchitis. The third of these cases was that of an old woman with an infected arterial graft, and the blood supply to the part was undoubtedly deficient.

In addition, there is an important group of six patients in whom the staphylococcus was at first eliminated by treatment with methicillin but reappeared after treatment was stopped. By using phage-typing these patients can be broken down into two groups, the larger comprising four in whom the reappearing staphylococcus was of the same phage type as the original strain, and it can therefore be presumed that the infecting organism had never been eradicated; in one case this was phage type 75/77+ and partially resistant to methicillin. The other two patients were probable cases of cross-infection, as the second staphylococcus isolated was of a different phage type from that of the first strain.

In eight cases specimens from patients which originally yielded *Staph. pyogenes* subsequently yielded *Ps. pyocyanea*. We have no figures of the frequency with which this organism can be expected to appear after other antibiotics, but it may be of the same order. Lowbury *et al.* (1961) found a similar high incidence of *Ps. pyocyanea* after treating burns with methicillin but this organism appeared in approximately the same proportion after treatment with tetracycline and erythromycin. The *Ps. pyocyanea* usually appeared in a convalescent phase, when the discharge from the site of infection was becoming less purulent.

Three patients had infection or reinfection with a staphylococcus showing partial resistance to methicillin but these organisms were resistant *de novo*. In all three patients the strain isolated was phage type 75/77+. No resistance developed as a result of treatment.

Toxicity

No toxic effects were noted. Two patients complained that the injections were very painful. Several others who had previously received injections of procaine penicillin thought that there was little difference in discomfort between these and injections of methicillin.

Nine of our patients had oliguric renal failure, all of these being transferred from other hospitals for this reason. Seven of them did well, and of the two deaths one was due to haemorrhage and the other occurred in the case of Wegener's granulomata. Methicillin so far seems to be a safe antibiotic to treat infections in this type of case. It was also given to a case of post-influenzal staphylococcal pneumonia with some success, and in this patient the W.B.C. was only 3,200/c.mm. with a polymorphonuclear count of 1,300, but no further depression of the white cell count occurred.

Discussion

Since the staphylococcus resistant to penicillin first began to be a prominent and undesirable feature of hospital infections several antibiotics have been developed which it was hoped, and prematurely claimed,

would answer the problem. The ideal antibiotic for this should be clinically effective and bactericidal; resistance to it by the staphylococcus should develop slowly or not at all, and it should have no toxic side-effects. In the past the occurrence of strains of staphylococcus resistant to streptomycin, the tetracyclines, chloramphenicol, erythromycin, and novobiocin has prevented any of these antibiotics from solving the problem. Vancomycin and ristocetin are bactericidal, and no staphylococci showing gross resistance to these drugs have so far been reported; their use, however, has been limited by serious toxic effects, notably on the eighth nerve.

So far methicillin seems to be a considerable advance. It is a bactericidal drug of low toxicity, and, whatever may be the result of its extensive use in hospital communities, it is clear that staphylococci do not rapidly acquire resistance to it. In some of the cases reported here, however, the staphylococcus was not eradicated; in a few cases ischaemia or carcinoma militated against this, but in two patients the organisms persisted despite an apparently favourable opportunity for the drug to act.

Three patients were infected with a phage type 75/77+ which showed a minor degree of resistance to methicillin. The resistance preceded methicillin treatment, so that it appears that the strain was "naturally" resistant. Strains showing a similar degree of natural resistance have been isolated from two other hospitals (Jevons, 1961; Barber, 1961) and it is of considerable interest that both these strains have a similar if not identical phage pattern to that of the strain recorded here.

As stated above no side-effects have been encountered. Two rather thin patients had considerable pain at the sites of injection, but in general this does not seem to be more marked than with procaine penicillin.

As a result of this experience methicillin has become the antibiotic of choice in severe antibiotic-resistant staphylococcal infection in this hospital. The only other antibiotic with comparable activity in such infections is vancomycin, which is both toxic and difficult to administer. Methicillin, however, should not be used for the treatment of penicillin-sensitive staphylococcal infections, since in such cases benzylpenicillin is effective in much smaller doses and is also cheaper and easier to administer. In hospitals where penicillin-resistant infection is common it is reasonable to start treatment of the severe staphylococcal infections with methicillin, pending a report on the antibiotic sensitivity, but should the infecting strain be found to be sensitive to benzylpenicillin treatment should be changed to the latter. Methicillin is not suitable for infections with other organisms.

Summary

Clinical experience with methicillin in a large general hospital during a 16-months period is described. It has been used in the treatment of 34 patients and has proved to be a powerful addition to the range of antibiotics. Because of its bactericidal action and the lack of side-effects methicillin has now become the drug of choice for severe multiple-resistant staphylococcal infections.

Methicillin is not always effective in removing a sensitive organism. Several of the patients continued to harbour the infecting staphylococcus after treatment.

Replacement of the original flora by *Ps. pyocyanea* occurred in a number of cases, but this has been a

feature of treatment with other antibiotics in this hospital.

One strain of *Staph. pyogenes* which has been responsible for several infections was partially resistant to methicillin. The resistance was present before treatment.

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BODY TEMPERATURE IN PACIFIC ISLANDERS AND ITS RELATIONSHIP TO BLOOD-PRESSURE

BY

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We have recently reported measurements of blood-pressure in population samples in Fiji and in the Gilbert Islands (Lovell *et al.*, 1960; Maddocks, 1961). During these surveys the opportunity was taken to study body temperature. The main reason for this was that Pickering (1955), in commenting on the complexity of environmental factors which might explain the relatively low blood-pressures reported in some tropical peoples, had suggested that repeated fevers might prevent the rise in blood-pressure with age which is a feature of Western peoples. Pickering's suggestion was based on the observation that blood-pressure may fall during febrile illness (Volhard, 1931) and that the same effect can be produced by the injection of pyrogenic material (Chasis *et al.*, 1942; Bradley *et al.*, 1945).

It is extremely difficult to separate, in any population, those who have suffered recurrent fevers and those who have not. However, it was thought that, by taking the temperatures of the entire populations of two tropical Pacific islands, it would at least be possible to discover if fevers really were frequent there. The findings in the Islanders led us to study body temperature in Melbourne during and after a spell of very hot weather. This paper reports these two studies, and also an examination of the relationship between body temperature and blood-pressure recorded together at a single examination.

Material and Methods

Temperatures were measured concurrently with blood-pressure in the entire population of the island of Gau, in Fiji, and in almost the entire adult population