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Printing Notes (Adobe Acrobat): For best results “Page Scaling” should be set to “Fit to Printable Area”. “Auto Rotate and Center” should also be checked.

Text Figure 17(a).
Australia superposed, latitude for latitude, on Europe and Africa.

Text Figure 17(b).
Australia superposed, latitude for latitude, on Asia.
CHAPTER XXXII

TRIUMPH IN THE TROPICS

Ensuring the Health of the Settlers, and
the Conquest of “Climate”

Queensland was the first (and for a long time the only) instance of successful colonisation of a tropical and sub-tropical land by a population almost entirely white, following all professions and pursuits, from the most intellectual and responsible to those that were the routine unskilled jobs of the day labourer.

Beginning more or less as an accident of location, the process has been continued by design with the aid of three significant factors: (a) the absence of any teeming native coloured population riddled by endemic diseases; (b) the increasing capacity to control introduced diseases and to develop a high standard of living; and (c) the constantly increasing proportion of the population that is Queensland born.

The people of Queensland are now almost a million and a half. They have been established for five generations in this tropical and sub-tropical land and the trend of world affairs, especially the recent independence won by neighbouring lands, has provided a magnificent opportunity for mutual development and interchange from which Queensland of all States is best situated to benefit.

At the outset, no one appeared to appreciate the nature nor anticipate the result of what at that stage was a fortuitous experiment.

When the First Fleet arrived in Australia in 1788, the new settlement was merely another outpost bridgehead, like those Great Britain was establishing in all the five continents as she moved towards a world-wide colonial empire.

Lying approximately between 10° and 40° of the equator, that is to say, nearer the equator everywhere than any part of Europe is (except its extreme south), Australia was obviously a tropical and subtropical land, and the first arrivals must have anticipated that it would be as dangerous to life and health as the other great new areas of exploitation had been in Asia, Africa, and America.

So far as disease was concerned, they were agreeably surprised: the isolation of Australia had kept the continent free of devastating epidemic diseases. Except for those they brought with them, white men in Australia were faced with few health problems; certainly
nothing comparable with the deadly menaces that decimated their garrisons and settlers yearly in other newly colonised areas. (184)

Nevertheless, Australia was "subtropical," and Queensland was "tropical," and it was held as an article of faith, that it was impossible for white men to live and thrive in such latitudes. (See Text Fig. 17, page 420.)

Traditional Absurdities and High Mortalities

In England from which they had come, even educated people believed: that the world was divided rigidly by lines of latitude into geographical sections, each suited only to a particular race of men who became progressively lighter-skinned as they got further away from the equator; that the white man progressively deteriorated as he approached the equator; that heat, cold, and sun-intensity governed character, intellect and the destiny of nations; that skin colour was a sure guide to intellect and trustworthiness—darkness went with dullness and deceit (!); and, as a generalisation, that whatever fruits grew abundantly in strange lands, were, next to "climate" and "miasma," the causes of its particular diseases—and must be avoided at all costs.

Some of these things were set down—not as matters of argument but as accepted facts—by a scientist with the singularly appropriate name of Willem Bosch in 1844; (185) and other medical authors convinced themselves and the public that the catastrophic loss of life in newly annexed lands was not due to any lack of medical knowledge in themselves, but that their efforts were frustrated by the deadly "climate"; the "intense sunlight"; the "miasma," i.e. the "vapours" from swamps or newly-turned soil ("humus") or "nephtic odours from the bowels of the earth"; or—turning the tables on the unhappy patient—by his own recalcitrant "constitution," that reacted against the medicines provided!

In England itself at the time of first settlement in Australia, disease was very prevalent: typhoid, dysentery, fatal diarrhoea among infants, and other food and water-borne diseases were constantly present: "gaol fever," "ship fever," "camp fever," etc. (all of which were typhus fever) were ever present too: tuberculosis and venereal disease were very common and almost untreated; scurvy, rickets, and other food deficiency diseases were so frequent they were called the "English disease": smallpox, in the years 1761 to 1796 (dates that overlap Cook's discovery and the first eight years of settlement in Sydney) killed from 3,000 to 10,000 people a year in London alone!

There were no reticulated water supplies; privies were considered an obsession of the idle rich; mental defectives either wandered at large (tolerated as "village idiots") if they were "harmless," or were chained in madhouses if they were maniacal; nurses (until Florence Nightingale organised a service from 1859 onwards) were generally the untrained undesirables immortalised by Dickens' "Sairey Gamp": there was no official registration of doctors, and charlatanism was rampant; midwifery was attended with grave danger both to mother and child; and any sort of hospital was rare, costly and inefficient. Anaesthetics and antisepsics, as we know them, were unheard of until 1847 to 1870. Most surprising of all—diseases were not known to have separate causes at all—their differences were considered to be due to different "constitutions" of the patients, or to different degrees of "corruption of the air."

Disease-free but Undefended

Resigned to what they considered the inescapable menace of "climate," but otherwise bold in their ignorance, our first settlers landed on these shores, and within a year (1789) had transferred smallpox to the aboriginals. It ran through them like a bushfire, so that an explorer, many hundreds of miles from Sydney, could find old aboriginals (who had never seen white men) whose skins were pock-marked from this "fire-disease" which had swept through their camps in their infancy. The soldiers—often from India and other disease-ridden areas—brought other diseases, too. Malaria (relapse attacks), typhus, typhoid, and dysentery were the commonest, and this is not surprising if one considers the reports from those places. (186) The sub-tropical areas had no established immunity and were excellent sites for the new germs and parasitic invaders.

Brisbane quickly became infected with the diseases the soldiers carried and, with the exception of malaria which died out after the soldiers left, these remained for many years as a menace to the population. Even malaria threatened for a time to entrench itself.

However, Lieut. Breton in 1833 quotes the opinion of the medical officer as follows: (187)

"I am, however, far from thinking our present place of abode unhealthy, although fever and ague have of late been rather prevalent; but these were not known when first I came here and probably will not always continue to annoy us; it is strange that during the last very hot weather (Jan. 1832) when these complaints were most prevalent, the soldiers suffered more than the convicts." (They were relapse attacks from infection in India.)

(184) From 1826 to 1837, at Chinsurah depot (12 miles from Calcutta), India, of every 1,000 of the troops, there were, on the average, 1,930 admissions to hospital (almost two per man) annually, and 73.7 deaths—increased to over 80 by those who died on the way back or immediately after return to England. As service in India was permanent or, rather, as three years' leave of absence was granted after 10-15 years' service, by the end of the tenth year, less than 200 out of every 1,000 would have survived. This was a normal average: in epidemic years or on "bad" stations, the figures are almost incredible: e.g. in Sierra Leone, W. Africa, every soldier was in hospital three times a year, and nearly half the force died; in 1825 and 1826, during terrible epidemics, three-quarters of the whole force died. (Note the dates in relation to the first settlements in Moreton Bay.)

(185) E.g. "We are absolutely certain about the accuracy of our hypothesis: that to (every section of) mankind is given a particular place by the Lord of Creation which is his Native Land, where all things are so placed as to suit him particularly and thus preserve his race. He cannot trespass the length and breadth of this boundary, without great damage to his health, and danger to his life."
Brisbane's First Hospital

When the Moreton Bay Penal Settlement was set up in February 1825 a hospital was established at once—at first under canvas. By 1827 a building had been erected to house it behind the old “Lands Office,” on what is now part of the site of the Supreme Court, George Street. Dr. Henry Cowper was in charge (1827-1832), with Dr. Murray as his assistant.

When the convicts and their military guards were withdrawn in 1839, the hospital was closed, but after acting at intervals as a migrant hostel or rest-house (as the old Convict Barracks also did before it was reclaimed as shops and offices, then as the Courthouse, and ultimately, as the first House of Parliament), it was re-opened at the urgent plea of the civilian settlers.

Dr. D. Keith Ballow was appointed to the hospital in 1838 and when matters were reorganised by Capt. Wickham in 1842, continued until his death in 1850 (see footnote (96)). Hospitals everywhere, in those days, except a very few conducted by charitable or religious bodies with very slender resources, were only available to paying patients, and this resulted sometimes in inhuman incidents. (188)

(Indeed, later, when non-paying patients were reluctantly admitted, their pauper status was proclaimed to the world by the coarse red blankets, without counterpanes, that were used on their beds.)

The old hospital remained until 1867, and the present caretaker's cottage stands approximately on the site of the medical officer's residence: it is on the north-west corner of the Supreme Court block at the corner of George and Ann Streets.

With the coming of Separation (189) and the boost to civic pride that resulted, a move for a new hospital at Bowen Hills was made, and succeeded in 1866, when a contract for the purpose was let to Andrew Petrie. (It has grown to be one of the largest and best in the Southern Hemisphere.)

Registering Properly Qualified Medical Men

The establishment of the first official medical register (190) under the General Medical Council of Great Britain (1858) was followed by a Gazette notice of medical practitioners here on 4 January 1862. (191)

Medical men played a prominent part in the early days of the Moreton Bay settlement and colonial Queensland.

The first Commissioner of Crown Lands (Dr. S. Simpson) was a medical man; Dr. Dorsey of Ipswich combined magisterial work with medicine, as did several others in their capacity as “educated persons”; and Dr. Hobbs’ work on dugong oil has already been mentioned. The first Legislative Council for Queensland of fifteen members, included three medical men; Dr. Sir Charles Nicholson was its President; and Dr. W. Fullerton had written a “Family Medical Guide” to assist outback settlers (a standby for a generation).

In 1859, the population of the Colony was given as 23,520, and the principal causes of death were said to be ague (malaria); “colonial fever” or “typhomalarial fever”—which included half a dozen different undiagnosed diseases; chronic “rheumatism”—another junk-heap in which were lumped several quite different disabilities resulting from “foolishly leaving one’s windows open to the damp and ‘corrupted air’” (!); and “influenza” due to some “influence” of the atmosphere!

More enlightened physicians had already recognised the frequency of scurvy, and had related it to spongy gums, loose teeth, skin rashes and sore eyes. (192) “Sandy blight” (not confined to true trachoma) was extremely prevalent and, interestingly enough, it kept pace with the expansion of the frontier. In the earliest days it was common in Sydney (Port Jackson) and in Moreton Bay; gradually it was pushed out until it came to rest (as it still does) in the dusty far west and north, hundreds of miles inland. It was hard to blame it on “climate” (though they did!) unless the migrant mysteriously carried his “climate” with him. In fact, as his personal “climate” comprised his habits in respect of food, clothing and hygiene, he literally did!

One of the minor tragedies of frontier life was the case of Andrew Petrie. Dust at work caused frequent styes in his eyes, and he visited a local doctor who, by some appalling oversight, instilled into them a

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Pollution pours in...

As population poured into Queensland with the gold rushes, and, particularly, as the Kanakas and Chinese did so, epidemic diseases entered and other diseases began to establish themselves permanently in the Colony. The situation may be summed up briefly by repeating some paragraphs written in 1926 and 1933. First, as to epidemic diseases:

Smallpox had been introduced several times, though usually distance and length of journey had brought the disease to notice on the voyage and so made quarantine on arrival easy (there were 182 infected ships between 1788 and 1908). Plague once or twice gained a footing from shipboard rats. Typhus was almost a constant infection on the immigrant ships of the early days; malaria spread widely in Queensland during railway construction and mining in many areas, but it was with the arrival of swarms of coloured labourers that the situation became critical.

“Chinese entered the Victorian goldfields and increased there in spite of the protests of the Governor, Sir Charles Hotham, from 2,000 in 1852 to 42,000 in 1859. Their immigration into New South Wales first became serious in 1879 when a stream began which grew until, in 1887, the Chinese numbered 60,000, or 15 per cent. of the population. They were, moreover, arriving in fast-increasing numbers and Australia was threatened with the complete orientalization of its labour. The Chinese question then led to the most serious strain ever placed on the relation of the Australian colonies to the Empire.” (J. W. Gregory: “The Menace of Colour.”)

In Queensland the situation was similar and has already been described. The Chinese and the Kanakas brought their diseases with them, and the country rapidly began to assume the appearance of a typical “tropical country” with white overseers, massed native labour, great numbers of speculators, prospectors, miners, and migratory riffraff, and great economic uncertainty and distress among white labourers, who never knew when they might lose their jobs or have their wages lowered by the engagement of coolies during the slack season. The aboriginals, meanwhile, were decimated by tuberculosis, venereal disease, filariasis, worm diseases, and occasionally leprosy.

“Had one been looking for proof that the settlement of a tropical country was impossible to white men, one need have gone no further to have found a rich store of confirmatory evidence, and most of our present-day critics hark back to those primitive days for their material. The unhappy Kanakas died in great numbers, bequeathing their diseases to their masters; the expectation of life among white males at birth was only 41.3 years, a figure more than 12 per cent. less than that of the average for Australia; and the actual crude death rates for Queensland were enormously in excess of those of other Colonies.

The “dreadful ‘Eighties” not only saw the peak of the establishment of tropical diseases in the virgin field of tropical Australia, but were followed by a series of minor economic crises, culminating in the great debacle of 1893, when the pioneer flood again ebbed from great tracts of land in the tropical north and west, and when the clamour of unemployed white men drove back the coloured invasion that menaced their destiny.”

Everyone who believed the white man could not work in the tropics, including many “die hard” medical conservatives, was gratified exceedingly by this apparent confirmation!

This period was the crucial epoch in the history of Queensland and, indeed, though less obviously, Australia. It brought inter-colonial friction on the subject of coloured labour to a point that threatened permanent and hostile separatism, though, ultimately and paradoxically, it resolved itself into Federation! It produced the labour movement that, in a generation, was to dominate politics; with it, it brought in, by the advocacy of such great men as S. W. Griffith, and almost as an article of faith, the “White Australia” policy, a sine qua non for survival. It provoked that critical cleavage between the “vested interests” of the squatters, the “beef barons” and the “Banks” on the one hand, and the landless workers and artisans on the other, that, in its most dramatic expression, resulted in the great shearers’ strikes of the Nineties in Queensland, and the maritime strikes of the same period. The ripples from these rolled for sixty years in ever-widening circles.

Those dark days, however, were the prelude to a brilliant dawn.
The New World of Medical Knowledge and Practice

Until the ‘Seventies, all the old absurdities had been firmly believed: the evidence of the Royal Commission of Health in 1870 is amazing in its antiquated ignorance. The germ theory of disease—the idea that each disease had a separate cause—was still a matter for mockery. “Climate” and “miasmata,” “corruption of the air,” the “wrath of God,” and “foul odours” were still the villains of the piece.

But now, between 1870 and 1900, a complete revolution swept away all the ancient theories of disease. It was not before time! It was 333 years since an Italian scientist, Fracastorius, had said that infections were due to “seedbeds of contagion” where seeds grew and multiplied and were capable of setting up epidemics—indeed, that they did so whenever conditions were favourable!

In 1872 Lewis in India found tiny parasites in the blood of sufferers from filariasis (commonly believed to be due to the “humid climate and over-indulgence in the fruit of the country”). In 1873 Obermeier discovered the germ that caused relapsing fever; in 1874 Hansen found the germ of leprosy; and in 1877 Joseph Bancroft of Queensland found the adult filarial worm in sick patients (Dr. Rowlands of Ipswich brought it to his notice), while in 1878 Manson, the “Father of Tropical Medicine,” found that a mosquito (and not a “miasma”) carried the germ of filariasis.

In twenty years more, many disease germs were identified—in 1880 suppuration, typhoid fever, and malaria; in 1882 glanders and tuberculosis; in 1883 cholera; in 1887 Malta fever (undulant fever) and cerebrospinal meningitis; in 1894 plague; and in 1897 dysentery; while in that same year Ronald Ross, on Manson’s suggestion and with his encouragement, demonstrated that certain kinds of mosquitoes carried malaria. The tick, the louse, and many other biting things soon joined the mosquito as vectors of disease.

It was done: there was an interval of amazement and then a tremendous revolution in medical thought; men could see (under the microscope) and keep in solution in bottles, the tiny organisms that had caused the diseases they had confidently attributed to “corruption of the air”; “mephitic odours from the bowels of the earth”; “the wrath of God”; “vapours from newly-turned soil” and “climate.”

But prejudice dies hard, especially when prestige is tied to it.

Surgery

If the knowledge of medicine had been meagre until the ‘Seventies and ‘Eighties, the limitations of surgery had been great also. Without anaesthetics or antiseptics as we know them (though Dr. Hobbs gave the first anaesthetics here as early as 1854—a remarkable instance of alertness), surgeons in the early days had made speed the essence of skill, and military surgery had produced some amazing surgeons—bold, dexterous and ruthless.

Liston, a great Scot, could amputate a leg at the hip in one minute after it had been adequately tourniquetted; Wm. Cheselden, English bon vivant, wit, architect, litterateur, and pugilist(!), with one quick stab incision from below, could open the bladder, remove a stone, and plug in a dressing in the same time. (His results for those days were quite remarkable: of 213 cases, 193 survived.) There were some ingenious and skilful surgeons in early Queensland, too.

The physicians and surgeons of the day had no sense of insufficiency—quite the contrary. Like ourselves they believed they had almost reached the zenith of knowledge and competence—a high point that depends, alas! on the amplitude of the arch. Thus in 1873, Sir John Erichsen (Professor of Clinical Surgery at University College Hospital, London) said:

“There cannot always be fresh fields for conquest by the knife: there must be portions of the human frame that will forever remain sacred from its intrusion. . . . That we have nearly, if not quite, reached that final limit, there can be little question” . . .

and he defined the “sacred areas” never to be invaded by the knife as the abdomen, the chest and the brain! (To-day any recent graduate would regard such a statement as amazing, and the surgery of those days (less than ninety years ago) as in its infancy.)

Making Motherhood Safer

In midwifery, appalled by the frightful number of deaths of mother and child from septicaemia (puerperal fever), Semmelweiss (1818-1865) in Vienna insisted that everyone attending a birth should thoroughly sterilize his hands with chlorinated lime water.

In two years, 1847 to 1849, the death rate in his institution, which had been one in every eight mothers, had fallen to 1 in 70, and in a further six years to 0.85 per cent. (1 in every 118). But jealousy, and deliberate malice aroused by this assault on the uncleanliness of orthodox technique, caused him to be dismissed from the scene of his triumphs in 1849, and finally he lost not only fortune and friends but life itself, from an infection of his own hand with the deadly germs from which he had assisted to save so many thousand women.

Brisbane’s Hospital Services Expand

The great discoveries of the end of the nineteenth century were eagerly followed in Queensland: in fact, some of our early medical men contributed to them (see page 430).

In 1864, the first lying in hospital for women (the Lady Bowen) indicated that Brisbane was not behindhand: and anaesthetics were used there, too, though these were anathematised by the Church and the profession until Queen Victoria made them respectable (and, indeed, a matter of social prestige!) by submitting herself to anaesthesia for one of her confinements.* (Half a century or so later her son, King Edward VII, was to popularise appendicectomy.)

Making Motherhood Safer

The Brisbane General Hospital was opened in 1867, at Bowen Hills—now in the heart of the city. It is interesting to recall that

* 1853—her fifth child—Prince Leopold.
there was an outcry at its being established "so far out of town," and strong representations were made to have it built at Spring Hill or on Petrie Terrace where there was an overflow ward for fever cases.\(^{196}\)

Dr. Joseph Bancroft (1836-1894) was appointed resident surgeon at the hospital, and this provides an opportunity to mention some (but far too few) of the remarkable achievements in medical and scientific discovery over a century that have redressed the balance in Queensland's favour.

**Research and Results**

Dr. Joseph Bancroft\(^{197}\) was the founder of a Queensland family of scientists which included his son, Dr. T. L. Bancroft; and his granddaughter, Dr. Josephine Mackerras (née Bancroft), presently of the Queensland Institute of Medical Research (established 1944).

Joseph Bancroft's work on filariasis made him the first Australian doctor to gain world-wide recognition as a scientist.

His discovery in 1877 of the adult female filarial worm, though now almost forgotten and regarded as a mere item of everyday knowledge, was as revolutionary, at the time, as the discovery of anaesthesia or antisepsics had been, and led to a whole series of discoveries elsewhere, regarding the role of insects in transmission of disease, that have not only saved humanity millions of lives, but helped to make the conquest of the tropics possible!

**Duboisia Hopwoodii** (von Mueller) he described as *D. pituri*. The active principle is Nor-nicotine (1-3 per cent.). It is common in west Queensland. Bancroft also described the *Duboisia* species of the coasts of south-east Queensland and northern New South Wales: *D. myoporoides*, a small "corkwood" tree up to 40 feet, provides a mydriatic; is poisonous and contains hyoscine; most southern varieties contain hyoscyamine, especially *D. Leichhardtii* (0.05-3.7 per cent.).

This great value was demonstrated during World War II when, deprived of other sources, much-needed supplies were to be available from those that he had described sixty years previously.

Bancroft's son (Dr. Thomas Lane Bancroft: 2 January 1860 to 12 November 1933) continued and consolidated his father's work in a similarly wide field and added much of his own.

He also assisted (from 1895 onwards) in transferring the *Ceratodus*—now called *Neo-ceratodus forsteri* (Krefft) or the "lung fish" of Queensland—once found only in the Burnett and Mary Rivers, to the North and South Pine Rivers; the upper Brisbane; and tributaries of the Albert, Coomera, Condamine, and Caboolture Rivers; and the Enoggera Reservoir.\(^{198}\)

Between 1899 and 1901, moreover, he sent about 600 specimens of mosquitoes, including many new species, to Theobald in England, to assist in the preparation of the British Museum classic on mosquitoes of the world, published in five volumes, between 1901 and 1910.

T. L. Bancroft also continued work on the heart worm of the dog (*Dirofilaria immitis* and various *microfilariae*); and also (1906) provided strong evidence to show that dengue was transmitted by the mosquito (*Aedes aegypti*).

(Most valuable later contributions have been made in these fields and in research regarding cattle tick and blossom pest in sheep, by his daughter, Dr. Josephine Mackerras, who has continued unbroken the scientific record of this family now (1959) extending over ninety-five years!)

It would be impossible to mention the medical men who "leavened the lump." Perhaps, one example may suffice for the many: J. Lockhart Gibson, Snr., and Jefferis Turner confirmed (1897) the suggestion of Hopkins that white lead from desiccated paint could produce lead-poisoning in infants and provoke nephritis in young predisposed adults about twenty years earlier than it otherwise would

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\(^{196}\) There were three wards for males and one for females; and a surgeon's residence. It functioned also as a benevolent institution where people unemployed in the bad years could collect a dole (when it was imposed for drunkenness). In 1866, there were about 100 inpatients and about 90 outpatients; and the applicants for dole relief numbered over 150. The cost of maintenance was £400 per month plus salaries for a staff of seven, including a surgeon. In 1899, the Brisbane and South Coast Hospitals Board will spend £5,850,000.

\(^{197}\) Dr. Joseph Bancroft was born at Stretford, near Manchester, England, on 21st February 1836, and after gaining his medical practising degree as L.S.A., became M.R.C.S. (England) and ultimately M.D. (in 1859). For five years he practised in Nottingham and then with his wife and family (including T. L. Bancroft, born 1860) came to Australia as ship's surgeon on the "Lady Young" and reached Brisbane in 1864. As resident surgeon at the new Brisbane Hospital (1867-1871) he soon showed great and versatile ability over a wide field. (Incidentally, he was visiting surgeon there from 1871-1887 while engaged in private practice; and he was also surgeon to the Lady Bowen Lying-in Hospital from 1866.) He was intensely interested in human, animal, and plant life and their reactions, diseases and utilities. In medical experiments he produced greatly improved grapes and strawberries and experimented to control rust in wheat and various diseases in buffalo and sugar cane. Within three years of his arrival, he had reported that the prevalent "scab" in sheep was due to a mite one-thirtieth of an inch long—the scab was the serum exuded by the irritation produced. He analysed and classified all the common scented trees and leaves round Brisbane. As far as Moroosyodendron and identified many volatile oils (some of commercial value and some of medicinal value). This permitted him later to make a considerable contribution to pharmacological knowledge: his chief discoveries in this field concerned "pituiri," *Duboisia pituri* (later *Hopwoodii*) and *D. myoporoides*. He discovered methods of preserving fish and set up a factory for the manufacture of pemmican (meat preserved by desiccation) at Deception Bay. He was also interested in oyster culture. All his work had a strongly practical basis. In medicine he described "tick" poisoning and "tick" blindness; and was the best authority of his day on leprosy. He invented a metal cup inhaler for anaesthesia which was contrary to all the models of his day—but it worked! He also made many of his own instruments for surgery, etc., was one of the first to use the catheter and, on one occasion, in an emergency with no instruments available, stopped a -on the side near a node, to catheterise a patient with a bladder stoppage.

He was full of enthusiasm, human kindness and the minor faults that go with them; a master of monosyllabic repartee, and universally respected and esteemed. In public life he was President of the Queensland Medical Board; a member of the Central Board of Health; a trustee of the Museum; President of the Royal Society; and filled other positions. He died, presum-

\(^{198}\) The "lung fish" has characteristics of certain types that died out elsewhere 200,000 years ago. The "lung" is a modification of an air bladder found in some other fishes, veined. T. L. Bancroft succeeded in rearing the fish and discovered its young can live only in very shallow water and will leave it as soon as possible, when the water is foul. Older and heavier adult fish cannot survive out of water. Some of this work was done round Theebine, a town named after the aboriginal word for the Ceratodus.
have shown itself. Jefferis Turner was also a redoubtable and well-informed pioneer in the field of child welfare.\(^\text{(199)}\)

Medical men also showed a live and discriminatory interest in the acclimatisation of plants and animals. (The Acclimatisation Society went into permanent recess only this year (1959).)

Legislators and officials, however, then as now, distrusted "innovators." Their non-professional advisers recommended no action unless fortified by overseas precedents, and, even then, evaded responsibility often, by the glib subterfuge of transfer for action "to the local authorities who are really responsible for these matters in their local government areas." In effect, therefore, except at rare intervals, with conscientious and enterprising Premiers, or Ministers, little but lip service was given to the practical application of these great discoveries. At least, this was the case in years when dirt and disease were not unduly obvious.

The first Health Act (1872) was largely a copy\(^*\) of an English Act to improve sanitation; a grave typhoid epidemic stimulated the next marked improvement (1884); and plague provoked those of 1900 and 1922. Control was left with the Metropolitan Board of Health, and local boards.

The curious composition of the first Board of Health is worth noting: it comprised the Colonial Architect; the Commissioner of Police; and the Engineer of the Harbours and Rivers Board, together with two medical men to advise on appropriate matters!

Panic, the Handmaid of Hygiene

It is a curious fact that the health of the nation is better served by an epidemic that terrifies the public, than by any other single agent; and that most of our social legislation has followed periods of crisis during the last four centuries. Bubonic plague (the "Black Death") in Europe (1348, and in diminishing waves, at intervals, till 1666) was, as Newman pointed out, the greatest European example of the

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\(^{199}\) Dr. A. Jefferis Turner (1861-1947), son of a missionary to China, was M.B. 1884, M.R.C.S. and M.D. (London) 1886, after a brilliant scholastic career. Migrating to Australia in 1888, he was appointed medical officer to the Brisbane Hospital for Sick Children in 1889. Within a year he was openly attacking the unsatisfactory diagnosis and treatment of diphtheria—widely prevalent and accompanied by a 40 per cent. death rate. He popularised anti-diphtheritic serum from 1893 onwards; developments since have virtually abolished the disease. Noting the presence of hookworm (imported by Kanakas and Chinese) he worked on that disease for nearly thirty years until the establishment of the great campaign of 1919-1932. He popularised here also the Widal reaction for the diagnosis of typhoid fever—the first step in the untangling of the skein of different diseases lumped together as "colonial fever." He was the first to advocate the compulsory notification of tuberculosis (in 1904!); aided research into the insect carriers of disease; emphasised the importance of dietetics before the discovery of vitamins and "accessory food factors"; urged "open" anaesthesia by ether; instituted the first pure milk supply for infants (founding the Lady Chelmsford Milk Institute); founded also the first orthopaedic clinic for crippled children, and with a scheme for "baby clinics" was, in 1925, appointed the first Director of Infant Welfare. In 1931, he encouraged Lady Cilento to establish, as founder-president, mothercraft training for Queensland women which grew to become a State-wide organisation, supplemented and largely replaced as time went on by Maternal and Child Welfare Centres set up by the State. Jefferis Turner resigned at the age of seventy-six in 1937 and died ten years later—an active warrior for child welfare till the end.

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South Australia made so exact a copy of one English Act that it included the clause: "This Act shall not apply to Scotland." (1)
Dr. and Mrs. A. Jefferis Turner with their Rover 1903-4, 6 h.p. model.

QANTAS' first aircraft, 1920.
QANTAS' first aircraft, 1920, recalling first "Flying Doctor" service.

PLATE LXX.
FIRST INTERNATIONAL PACIFIC HEALTH CONFERENCE, SYDNEY, 1926

Government Representatives:
Back Row: Dr. F. W. McCallum (Secretary); Dr. A. H. Baldwin (Dep. Dir. Aust. Inst. of Trop. Med.); Dr. R. W. Cilento (Director of Public Health Mnd. Terr. of New Guinea); Dr. H. B. Hetherington (C.M.O. British Solomon Is. Protectorate); Dr. J. S. C. Elkington Dir. Div. of Trop. Hygiene, Comm. Dep. of Health); E. W. F. Chinnery (Anthropologist; Terr. of New Guinea); Dr. A. Montague (P.M.O. Fiji); Dr. T. R. Ritchie (P.M.O. Samoa); Dr. W. M. Strong (P.M.O. Terr. of Papua); Dr. A. R. Wellington (P.M.O. Fed. Malay States and Straits Settlements).
Front Row: Dr. Genzo Katoh (Japan); Dr. Paul Hermant (France—Fr. Indo-China); Dr. J. H. L. Cumpston (Dir. Gen. of Health Comm. of Australia); Hon. Dr. Earle Page (Actg. Prime Minister Australia); Dr. Norman White (League of Nations); Sir George Buchanan, S.M.O., Ministry of Health (Great Britain); Dr. E. d’Aguilar (Philippines Is., U.S.A.); Dr. M. H. Watt (Dir. Gen. Health, New Zealand).
<table>
<thead>
<tr>
<th>Item</th>
<th>1860</th>
<th>1870</th>
<th>1880</th>
<th>1890</th>
<th>1900</th>
<th>1910</th>
<th>1920</th>
<th>1930</th>
<th>1940</th>
<th>1950</th>
<th>Latest Year Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (1st December)</td>
<td>28,056</td>
<td>115,272</td>
<td>211,430</td>
<td>392,116</td>
<td>599,015</td>
<td>750,522</td>
<td>916,736</td>
<td>1,031,547</td>
<td>1,205,418</td>
<td>1,401,427</td>
<td>1957</td>
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<td>Death Rate per 1,000 Population</td>
<td>1.9</td>
<td>1.7</td>
<td>1.5</td>
<td>1.5</td>
<td>1.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.8</td>
<td>0.9</td>
<td>0.8</td>
<td>1957</td>
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<tr>
<td>Birth Rate per 1,000 Population</td>
<td>11.4</td>
<td>10.7</td>
<td>10.6</td>
<td>10.6</td>
<td>10.5</td>
<td>10.3</td>
<td>10.1</td>
<td>9.8</td>
<td>9.3</td>
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<td>Infant Mortality Rate</td>
<td>2.0</td>
<td>1.6</td>
<td>1.5</td>
<td>1.5</td>
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<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1957</td>
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<tr>
<td>Enrolment - All Schools</td>
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<td>16,425</td>
<td>44,104</td>
<td>76,135</td>
<td>109,963</td>
<td>112,663</td>
<td>159,780</td>
<td>175,944</td>
<td>172,391</td>
<td>204,042</td>
<td>1957</td>
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<td>Patients treated Public Hospitals</td>
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<td>4,537</td>
<td>13,763</td>
<td>16,796</td>
<td>26,669</td>
<td>4,545</td>
<td>72,475</td>
<td>124,156</td>
<td>168,142</td>
<td>1958</td>
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<td>Area under Crop</td>
<td>3,353</td>
<td>52,190</td>
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<td>2,949,953</td>
<td>4,57,797</td>
<td>677,11</td>
<td>799,497</td>
<td>1,242,916</td>
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<tr>
<td>Sugar Cut for Crushing</td>
<td>1,738</td>
<td>2,869</td>
<td>10,204</td>
<td>40,206</td>
<td>62,263</td>
<td>94,041</td>
<td>89,342</td>
<td>222,044</td>
<td>323,999</td>
<td>261,5666</td>
<td>1958</td>
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<tr>
<td>Wheat harvested</td>
<td>1,961</td>
<td>1,872</td>
<td>10,544</td>
<td>9,173</td>
<td>9,390</td>
<td>10,663</td>
<td>17,781</td>
<td>21,946</td>
<td>32,681</td>
<td>48,639</td>
<td>1958</td>
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<tr>
<td>Pinesaples</td>
<td>1,000</td>
<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Beef Cattle</td>
<td>1,000</td>
<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Dairy Cattle</td>
<td>1,000</td>
<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Sheep</td>
<td>1,000</td>
<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
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<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Wool Produced</td>
<td>2,000</td>
<td>2,079</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Oversea Export Meat &amp; By-products</td>
<td>1,000</td>
<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Factory Employment</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>25,606</td>
<td>33,90</td>
<td>42,160</td>
<td>39,380</td>
<td>56,972</td>
<td>1958</td>
</tr>
<tr>
<td>Value of Factory Production</td>
<td>2,738</td>
<td>92,430</td>
<td>224,141</td>
<td>513,819</td>
<td>676,627</td>
<td>414,700</td>
<td>115,230</td>
<td>7,821</td>
<td>158,83</td>
<td>227,770</td>
<td>1958</td>
</tr>
<tr>
<td>Gold Production</td>
<td>2,738</td>
<td>92,430</td>
<td>224,141</td>
<td>513,819</td>
<td>676,627</td>
<td>414,700</td>
<td>115,230</td>
<td>7,821</td>
<td>158,83</td>
<td>227,770</td>
<td>1958</td>
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<tr>
<td>Copper Production</td>
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<td>92,430</td>
<td>224,141</td>
<td>513,819</td>
<td>676,627</td>
<td>414,700</td>
<td>115,230</td>
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<td>158,83</td>
<td>227,770</td>
<td>1958</td>
</tr>
<tr>
<td>Coal Production</td>
<td>2,738</td>
<td>92,430</td>
<td>224,141</td>
<td>513,819</td>
<td>676,627</td>
<td>414,700</td>
<td>115,230</td>
<td>7,821</td>
<td>158,83</td>
<td>227,770</td>
<td>1958</td>
</tr>
<tr>
<td>Sawm Timber Production</td>
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<td>n</td>
<td>n</td>
<td>n</td>
<td>23,606</td>
<td>33,90</td>
<td>42,160</td>
<td>39,380</td>
<td>56,972</td>
<td>1958</td>
</tr>
<tr>
<td>Shipping from outside Queensland</td>
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<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>23,606</td>
<td>33,90</td>
<td>42,160</td>
<td>39,380</td>
<td>56,972</td>
<td>1958</td>
</tr>
<tr>
<td>Railway Lines open</td>
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<td>n</td>
<td>n</td>
<td>n</td>
<td>23,606</td>
<td>33,90</td>
<td>42,160</td>
<td>39,380</td>
<td>56,972</td>
<td>1958</td>
</tr>
<tr>
<td>Constructed Roads</td>
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<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>23,606</td>
<td>33,90</td>
<td>42,160</td>
<td>39,380</td>
<td>56,972</td>
<td>1958</td>
</tr>
<tr>
<td>Motor Vehicles on Register</td>
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<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>23,606</td>
<td>33,90</td>
<td>42,160</td>
<td>39,380</td>
<td>56,972</td>
<td>1958</td>
</tr>
<tr>
<td>Imports - Oversea</td>
<td>1,000</td>
<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>State Public Debt (30th June)</td>
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<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Local Government Revenue</td>
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<td>1,077</td>
<td>3,163</td>
<td>5,558</td>
<td>4,078</td>
<td>5,132</td>
<td>5,782</td>
<td>4,123</td>
<td>7,087</td>
<td>9,031</td>
<td>1958</td>
</tr>
<tr>
<td>Savings Bank Deposits (30th June)</td>
<td>8</td>
<td>333</td>
<td>760</td>
<td>1,667</td>
<td>3,625</td>
<td>5,623</td>
<td>17,910</td>
<td>23,901</td>
<td>26,525</td>
<td>92,201</td>
<td>1958</td>
</tr>
</tbody>
</table>

Some figures for comparison in certain particulars.

PLATE LXXXII.

(By courtesy Deputy Government Statistician, S. E. Solomons, Esq.)
influence of disease on the social destiny of nations, for it began in earnest the vastly complex process of social defence.

It gave rise to the first Statute of Labourers for industrial betterment; it led to the first system of public health administration; and by the bitterest of lessons, taught the necessity of effective hygiene; of rat control; of effective agriculture supplemented by regular food importation and conservation; of State intervention in public health control, and all the essentials of maritime quarantine. The lesson is still half learned and needs frequent recapitulation. The panic provoked successively throughout Australia by smallpox, plague, “Spanish” influenza, and poliomyelitis was a vital factor in promoting health services and appropriate local legislation.

Positive Departmental Assault upon “Climate”

It may truly be said that it needed bubonic plague in a series of epidemic waves during the first decade of this century (with 499 cases and 219 deaths in Brisbane, Ipswich, Rockhampton, Townsville, Charters Towers and Cairns) to frighten the Government of Queensland into the appointment of the first Commissioner of Public Health in 1901 (Dr. B. Burnett Ham).

Burnett Ham was succeeded by Dr. J. S. C. Elkington, who actually made the Queensland Health Service, and subsequently was the architect of the Quarantine Service of Australia, to which he transferred in 1913. Earlier, he declined the top post in favour of a younger man of great administrative ability (Dr. J. H. L. Cumpston), and two years later accepted service under him.

Bubonic plague in Australia from 1900-1908 (introduced from Asia) resulted not only, as above, in the organisation in 1901 of a department of public health for Queensland; but in the elaboration of an effective system of maritime quarantine for Australia in 1911 (that became, for a generation, a model service); and in the establishment of the Institute of Tropical Medicine at Townsville (1909). (Another epidemic in 1922 postponed its sabotage for eight years.)

The Institute had the deliberate aim of defending the country against the epidemic diseases of Asia and Indonesia, and identifying and controlling those of tropical Australia and the adjacent areas of New Guinea, by continuous research.

The plague scare and consequent upsurge of interest in public health coincided, moreover, with the repatriation of the Kanakas (1906); and the prohibition of the entrance of coloured aliens; the transfer of control in Papua to the Commonwealth from Queensland (1911); and the capture (1914) of German New Guinea, which passed to Australia under mandate (1921) with an obligatory responsibility for the health of the population, constantly threatened by locally endemic tropical diseases. In 1910, too, Queensland gained a university, but not a medical school.
The "New View"

The germ theory of disease had shown that diseases were "separate blooms in the garden of Morbus, each with its specific seeds." Medical science had already found ways to meet and beat many of them by anti-sera, antiseptics, specific drugs, and so on. Antiseptics gave way to asepsis in surgery and, also, in sanitation, which had formerly been a matter of "drains and smells." In a generation it became a major factor in a world that was beginning to recognise that health was normal and could be maintained deliberately and, more dimly, that the health of every individual was an asset to the State.

With this went the realisation that removable risks were grossly uneconomic and that one of these was coloured labour, a reservoir of many parasitic diseases. At the turn of the century, with Queensland a State of the new Commonwealth of Australia, the first Official Year Book (1901) contains the following significant paragraph:

"Favourable as is the death rate of the State, the average mortality would be still further reduced but for the presence of coloured aliens. This section of the population contributes out of all proportion to their number, and thus adversely affects the general death rate. Pacific Islanders, Chinese, and coloured Asians of all kinds numbered 24,682 and their deaths 481, giving a rate of 19.49 per 1,000; and if these figures are eliminated from the calculation the ratio per 1,000 of deaths amongst the population of European extraction was 11.31 only." (The averages for other States were: New South Wales, 11.16; Victoria, 12.77; South Australia, 10.69; Western Australia, 12.62; Tasmania, 11.01; and for all the Commonwealth, 11.76.)

Even after coloured labourers had been repatriated, their diseases remained to plague white residents. A few seedbeds of dysentery and leprosy still persist; hookworm was so widespread in the wetter coastal strip that it was called "Hookworm Alley" and is still grossly infected; and, as late as 1909, 16 per cent. of all persons in hospital in Brisbane showed microfilariae (imported by the Kanakas) in the blood, though few showed actual signs of the disease! The disease gradually disappeared after its importation with every shipload of Kanakas ceased.

The Australian Institute of Tropical Medicine

In 1902, Dr. F. Goldsmith of Darwin voiced the opinion of tropical practitioners at the Australasian Medical Congress at Hobart, and succeeded in carrying a resolution to emphasise the need for a Research Institute in Tropical Diseases. The southern States recognised their inferiority for research in tropical diseases; Brisbane was proposed as a site, but Townsville and Cairns on geopraphical, epidemiological and other grounds, were outstandingly better localities than any other. The Institute was won for Townsville by the vigorous representations of Bishop Frodsham of North Queensland, and the medical men associated with the Townsville General Hospital.

The Queensland government was persuaded to assist by the strong support of Sir Wm. McGregor, M.D., Governor of Queensland (1909-1914) and formerly Lieutenant-Governor of Papua.

It was the first medical research institute in Australia, antedating by six years the Walter and Eliza Hall Institute in Melbourne, Victoria.

The first Director of the Institute was Dr. Anton Breinl, who performed excellent work under great difficulties from January 1910 until the outbreak of World War I in August 1914, and, during its whole course, assisted in the treatment of malarial casualties and other special work. (At the end of the War he resigned.)

The Institute at the time of his arrival was an empty storehouse provided by the Townsville hospital, with practice facilities in an upstairs ward. Later a small building on stumps, with three rooms and a verandah, was provided, and nearby, an animal house.

Elkington, who commenced duty as Commissioner of Public Health for Queensland the same day that Breinl took up duty at Townsville (1 January 1910), was anxious to co-ordinate the work of the Institute with that of his department, so that together they might establish the requirements for successful white colonisation of the tropics. His report of 1911 shows the preliminary steps taken for administrative control of diseases, and field work to supply material for the research units at Townsville, and for the Laboratory of Microbiology and Pathology he established at once at Brisbane.

Breinl's report for 1910 (pp. 5 and 6) includes the following apt reference to this joint objective:

"Anybody who has followed the development of tropical medicine since its foundation must have realised that the question of populating a tropical country with the white race has entered a new era. It is said to depend on sanitation alone. Free the tropics from disease, and the white race will thrive there just as well, if not better than in a temperate climate . . . (but) only an exact knowledge with regard to local conditions and the presence of possible intermediary hosts will enable us to obtain this end. . . . Tropical Australia affords a unique opportunity for studying the adaptability of the white race to a tropical climate and conditions, not only of a white race surrounded by a host of native servants but of a white race doing hard manual labour under a tropical sun. Results obtained in this direction would be of great economic importance not only for Australia but for the Tropics in general."

The campaign to show the absurdity of the claim that "climate"
was a permanent bar to white settlement, continued for twenty years, and sparked off at the outset a whole series of researches by reviving programmes even in unrelated fields.

One in particular was of the utmost importance economically—it was the battle to control \textit{caactus} (prickly pear), which had defeated and driven off settlers from thousands of square miles of rich soils.

A. P. Dodd, M.B.E., Director of the Biological Section of the Department of Lands of Queensland, says that the two major pests were the common pest pear (\textit{Opuntia inermis}) and, in central Queensland, the spiny pest pear (\textit{O.stricta}), and that by 1925 60-million acres were overrun, and that the pest was invading another million acres annually. Professor T. Harvey Johnston (202) in 1912-14 made two world tours in search of a suitable natural enemy for cactus. He was accompanied by the late Henry Tryon—a vigorous and alert but irascible colleague for whom the nickname of “the prickly pear.” From this investigation followed the introduction of \textit{Cactoblastis cactorum} at a later date (the first attempts at its establishment were unsuccessful) and the triumphant reclamation of the land. Johnston was Controller of the Commonwealth Prickly Pear Laboratories (1920-23); Dodd from 1925 to 1939. Kingsley Lewcock also did good work in this field. By 1940 the land was brought back into production as thriving farming, dairying and cattle and sheep-raising areas.

Queensland was unable, alone, to find funds to maintain the programme for the conquest of those diseases among men, animals and plants, that opposed the development of the tropical north. Moreover, this problem had a national quality that justified and, indeed, justly demanded Commonwealth assistance. Such assistance has been gained, however, by the State by one reluctant surrender after another to that Commonwealth pressure for unitary Commonwealth control, which, for fifty years, has slowly exposed the myth of “equal partnership.” (This applies in all States—indeed, it is recognised that all Federations between unequally developed States tend inevitably to unitary control located in the area of the most dominant partner—but in Queensland and in North-Western Australia, the \textit{extreme horns of the fertile crescent} within Australia, the effects have always been greater and the disparity more keenly felt.)

Frequently enough, the demand for control as the price of assistance stultified the work of the State, which lost interest with loss of authority. So it was with what had become the Australian Institute of Tropical Medicine, which met an undeserved end in 1930. The Hookworm Campaign (1919-1932) began similarly as a Queensland venture, and became a joint project of Queensland, the Rockefeller Foundation of New York, U.S.A., and the Commonwealth with Commonwealth assumption of control; the withdrawal, after its agreed period of co-operation, of the Foundation, and, finally, unilateral repudiation by the Commonwealth, during the depression (1932).

\textbf{The Struggle to Establish a Tropical Consciousness in Australia}

From the beginning Elkington based his schemes for tropical hygiene (and safe white colonisation) on the Institute of Tropical Medicine. With this objective in mind, when he transferred to the Commonwealth in 1913 in the sub-department of Quarantine (for which he wrote a textbook) he carried an interest in the Institute with him. The war of 1914-18 intervened, and was followed by the influenza pandemic of 1918-1919 which took a greater total of lives than that world-war; and, among others, decimated the populations of various island groups of the Pacific.

The panic provoked in Australia (where deaths were also heavy) and further alarm at the plague epidemic of 1921-22 provided an opportunity, skilfully used by Cumpston and Elkington, to expand their activities, beyond “Quarantine” (the sole activity authorised under § 51 of the Constitution Act of 1901), to include an unofficial responsibility for medical or health problems “involving more than one State,” and to claim, successfully, independent status for a Commonwealth Department of Health.

Medical opinion had been mobilised; Breinl, Sundstroem and others had investigated the physiological reactions of white men to tropical living conditions; a capable team was investigating mosquitoes and other disease carriers, and later was to add blood and worm diseases and fevers to its programme; and statistics were being analysed for mathematical support or denial of claims regarding the white man (and woman’s) capacity to colonise tropical Queensland without loss of longevity, mentality, fertility or health. A cadre of young administrative officers was in process of careful selection.

\textbf{The Challenge to the Traditionalists}

In 1920 the Australasian Medical Congress (meeting that year in Queensland) carried an emphatic resolution affirming their belief in white colonisation of the tropics. Their opinion was reinforced by one that could not be said to be prejudiced or controversial—it was based on the hard realities of cash risks. C. A. Elliott, Chief Actuary of the Australian Mutual Provident Society, after careful examination of the records of many years, made the following considered public report at that time:

“I have no hesitation in saying, that as far as we know at present, there is no need for life assurance offices to treat proponents who live in north Queensland differently from proponents who live in other parts of Australia.”

The traditionalists who had never examined their prejudices in the light of actual figures were confounded but unconvinced: they coun-

\footnotesize{(202) Thomas Harvey Johnston was born in Sydney 8 Dec. 1881; graduated B.A. (1904), B.Sc. (1906), later M.A. (1907) and D.Sc. (1911). When the University of Queensland was initiated he was appointed lecturer in biology (1911) and Professor of Zoology (1919). In conjunction with his work on prickly pear (1915-1925), he made himself a world authority on helminthology. In 1922 he was appointed to the newly established chair of Zoology at Adelaide and occupied it with distinction till his death on 30 Aug. 1951.}

\footnotesize{An indefatigable and remarkably thorough scientific worker pioneering many fields in natural history in Australia, he was awarded (among other honours) the David Syme Memorial Medal (1913); the King’s Polar Medal (1934) (he was engaged on the two Antarctic cruises of “Discovery I” 1929-31); the Sir Joseph Verco Medal of the Royal Society of South Australia (1935); and the Mueller Memorial Medal of the A.N.Z.A.A.S. (1959).}
tered with the claim that the excellent statistics for white people in the tropics depended on their being “a selected population, only saved from disaster by the fact that they depend for all mental services upon black labour”(!) In any event, they added, and even if the stamina they brought from their own cold countries of origin carried them through the ordeal of life in the tropics, they would never bear or rear any healthy children (unless these were part-coloured) and, finally, by a curious volte face that, if they did, Queensland was not truly tropical! Though these statements were utterly absurd, they needed deliberate refutation, especially as most of them originated in the southern States of Australia itself. It was strange to find Australians expressing about Queensland precisely those opinions that had been erroneously applied to Victoria, New South Wales and South Australia by their British critics and exemplars, fifty years before!

The whole of Australia’s climatic affinities are divorced from those of Europe, and are with areas we describe without hesitation as tropical or sub-tropical. (See Text Fig. 17, page 420.)

All Australia a Tropical and Sub-tropical Land

With the exception of the extreme southern fringe of Victoria the whole of Australia is nearer the equator than any part of Europe whatever, and even Tasmania lies on the level of the hotter parts of Spain.

If we compare Australia with the parts of West and North Africa with which it corresponds we find a ready explanation of the optimism with which the French in Algeria and the Jews in Israel are developing their merino industry—these correspond with our best sheep and wool producing areas; we see that the extreme south of Australia corresponds with southern Italy and the extreme north of Africa where vines and olives grow as vigorously; and, if one is unprejudiced, that every Australian born north of Melbourne (38° S.) should be as well “inured to the heat,” and competent to colonise Queensland as any Italian, Sicilian, Greek, or Levantine (between 39°-40° N.), thought by many Southerners the “only Europeans who can live in Queensland.” Compared with Central America Australia’s coastline stretches from near Panama, over all Mexico and into the United States: Brisbane (28° S.) is 2 degrees nearer the equator than New Orleans (30° N.); Sydney about on the level of Los Angeles (34°) and Melbourne 4° closer to the equator than New York (42° N.). These locations readily explain why those districts of Queensland which overlie Cuba and Jamaica grow sugar so well and why the coasts from immediately above Brisbane to the Northern Rivers districts of New South Wales which overlie Florida are, like it, becoming a “Millionaires’ Playground.”

By comparison with Asia the eastern coastline of Australia corresponds, from Melbourne to Rockhampton, with that of China, from Tsientsin to Canton; Queensland corresponds to Vietminh and Vietnam, Siam, Burma, or the east coast of India from 10° to 29°, i.e. from just above Ceylon to the Himalaya Mountains some hundreds of miles above Calcutta. Are these not truly tropical?

It is, of course, absurd to speak of the “climate” of an area of two-thirds of a million square miles, with widely varying rainfalls, vegetation, altitudes, distances from the sea, prevailing winds and so on. Whether it is in or out of the tropic limits any great area of the kind has a wide range of “climates,” some more attractive economically than others; some more favourable than others to disease germs and therefore more difficult to “sanitate.”

Nevertheless, some of Queensland’s richest mineral deposits are in sun-blasted areas—but not beyond the range of man’s ingenuity, as witness Mt. Isa and Mary Kathleen, and their model amenities. Consider, too, the canard that whites cannot work in the tropics. Breeds in north Queensland found that summer and winter working efficiency was approximately equal, except on a few days during the hottest months of the year, accompanied by northern winds, when it fell by 11 per cent. These occasions are rare, indeed.

To offset them, it may be added that recently the annual time lost in England from the one disease of rheumatism in winter was estimated to be 100,000 years!

Some years ago in U.S.A. (in a series where only absences of over eight days were recorded) it was found over a ten-year period from the records of thirty-five sick-benefit associations that 47 per cent. of absences were for respiratory disorders directly related to cold and wet, and reaching a maximum in cold February.

The suggestion that the people in tropical and sub-tropical Queensland are “only a few” and that they are depending on coloured labour for their menial tasks, is as false as the “climatic” barrier. Tropical Queensland contains 94 per cent. of the total white population of the tropics of Australia—now some hundreds of thousands. Queensland itself, which had a population of less than 25,000 in 1859, has one of almost one and a half millions in 1959. The total coloured population in service among Europeans is merely a few hundred. All work of every kind in this tropical country must be carried out by white men and women and the more they work, the better their health—not the reverse. The charges against the birth rate, the survival of infants rate, the fertility rate, etc., were examined (1921-1927) by Charles H. Wickens, the Commonwealth Statistician, who was able to report (1927):

“In only one year of the last fifteen has the rate of infantile mortality—the number of deaths under one year for 1,000 births—been higher in Queensland than the Australian average. That was in 1919, a year in which Queensland experienced a drought much severer than that experienced in other States. For the whole period of fifteen years, the Australian average was 11 per cent. higher than that for Queensland; and the Queensland rate for 1925 (of 45 per 1,000 births) is the lowest ever recorded for an Australian State.”

N.B.—for the last three quinquennial periods recorded, the infant mortality rate, which has dropped steadily in all States, is as follows:

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As for fertility, the birthrate in all Australia has fallen from 42.44 per 1,000 in 1861-65 to 22.50 in the year 1956.

Queensland’s birthrate has always been outstandingly high and in 1956 the rates were: N.S.W., 21.29; Vic., 22.42; Qld., 23.72; S. Aus., 22.33; W. Aus., 24.98; Tas., 25.45; with the Australian average 22.50. This is after five generations of colonisation in the “deadly” tropics. Moreover, the average issue of Queensland wives is greater at all ages. This is even more marked for Queensland-born wives, than for those born in other States and subsequently resident in Queensland.

As for the health of the children born, an investigation made in North Queensland of 2,080 children, drawn at random from a survey of schools, showed their weight to be equal to that of southern children; the height, if anything, was slightly greater, age for age, up to puberty; there were no signs of mental deterioration; and, no differences were apparent between newly immigrated children and first generation and second generation locally born children. In fact, there was nothing to distinguish them from other Australian children.

In the fifty years since the Australian Institute of Tropical Medicine opened the opponents of the tropics have fought a failing series of rearguard actions in their retreat, advancing “climate” first as an absolute, then as a partial, then as a probable and lastly as a possible barrier. They rely largely on statistics drawn (in artificial sweat-rooms in Scandinavia or the northern States of U.S.A.) from unacclimatised student volunteers whose reactions are of little value in comparison with the figures of insurance companies; or the mere sight of Queenslanders at work or at play. (203) If there is a need to adapt to tropical conditions, it is obviously being met adequately.

The Lukewarm Era

The battle of opinion was won; the strategic and administrative struggle was to continue from 1920 to 1935, so far as the Commonwealth was concerned; and to remain a constant matter of routine programme in Queensland.

Elkington, after the influenza epidemic of 1918-19 and the convincing victories of the Australasian Medical Congress of 1920; after Elliott’s findings on the lack of any need for treating pro-

ponents from Queensland’s tropics differently from those elsewhere in Australia, and the first series of Wickens’ statistics, returned confidently to the fray.

It was suggested to him in 1923 that, possibly, the fragmentary health and medical services of the Northern Territory, the Territory of Papua, the British Solomon Is. Protectorate, the Condominium of the New Hebrides and the “Mandated Territory of New Guinea” might, by persuasion, be correlated with the “outback” services of Queensland, to form an “Inland and Island Tropical Health Service,” ensuring better services to all those areas, and more attraction to medical men as a wide and worthwhile field of endeavour. He seized upon the idea avidly, and made it his main objective.

With his cadre of young and enthusiastic colleagues, he put his programme forward with sanguine expectations. He was dismayed, however, to find Cumpston less than lukewarm to any deliberate campaign for the control of tropical diseases and bent on extending and consolidating his administrative hold on public health in the narrower sphere of south-eastern Australia. (In twenty-five years he won an empire for himself in this regard by admirable tenacity and organisation.) It was with great difficulty that Elkington succeeded even in reorganising the Tropical Institute—his key point—after World War I. Only the plague epidemic tipped the scale.

It was reorganised, however, on a threefold basis, but with a niggardly hand so far as finance or autonomous functions were concerned. The threefold basis comprised (a) medical and sociological research (to prevent and control diseases and to investigate all phases of living in the tropics, including dietetics, working hours, environmental factors, infant feeding, child welfare and the “kitchen neurot
ingenia” of many mothers); (b) the provision of routine diagnostic laboratories to assist medical men in diagnosis and treatment by sera, etc., and (c) provision (with the assistance of southern universities) for education in tropical diseases and an Australian Diploma in Tropical Medicine, bestowed after examination. Commonwealth Serum Laboratories were established at the Institute itself (Townsville), at Rockhampton, and at Cairns (also in non-tropical Toowoomba).

The Test Case

At the end of 1923 circumstances provided an opportunity to reorganise the service of the Mandated Territory of New Guinea (formerly German New Guinea) and the Director of the Institute was commissioned to do this, and to correlate it if possible with the master-plan. This was done; a Commonwealth Health Laboratory was established; a research station set up; dual medical and health services of the “Administration” and the “Expropriation Board” were combined by consent. A conference of representatives of all the island groups bordering tropical Australia from New Guinea to the New Hebrides was held in Sydney in 1926, as a preliminary to mutual aid.
It was friendly and co-operative and its report was an excellent basis for action, but it was regarded coldly: moreover, the first chill blasts of the advancing depression of 1929-33 were already apparent and in 1923 Elkington resigned at the age of fifty-seven. (204)

Immediately after his resignation, negotiations began to rebuild the Institute within the University of Sydney, as a school of public health. This was, in fact, the first strategic advance in the struggle with the interests in the medico-social field. The authorities had become apprehensive about the growing power of the Commonwealth and its intrusion into their domestic problems. With the assistance of Dr. Frank S. Hone, of Adelaide, who had gradually replaced Elkington as chief adviser from 1924 Cumpston now sought the support of the British Medical Association and the Universities, to offset their weight. The Institute was a pawn in this strategic manoeuvre and proved a good gambit. The Universities with medical schools and the southern offices of the organised medical profession had only an academic interest in the tropics, while to the business community Queensland was merely a field for "fringe extension" to establish monopoly or merger interests for big southern firms. The distribution of administrative control in medico-social fields would have seemed of little significance, if they had thought of it at all. The depression demanded a token cut in services, and the interests of the remote North seemed a suitable sacrifice. The Institute was "transferred" in February 1930 and the clock was set back twenty years. The outcry in Queensland was stifled by an assurance that only the teaching side and the Diploma—since Queensland had no medical school and Townsville was too remote to attract medical men to do a post-graduate course—would be removed; other activities and the relationship with New Guinea and the other tropical island groups were to be better developed, better defined and better implemented. In effect, no part of this promise was ever honoured.

In 1931, to stifle a renewed clamour, the plan for a conference of all Powers having possessions in the South Pacific was revived: an essential item had been a draft proposal for an Inland and Island Tropical Health Service (1923) with a markedly larger share of support for the Flying Doctor Service, and a salaried service for the "outback," co-ordinated with the island services.

But, Victorian interests were already prominent (doing excellent work) in the Flying Doctor field, and this item was struck from the agenda, prior to the conference, after private discussions between Dr. Hone, of Adelaide, Dr. J. Newman Morris, of Melbourne, and Dr. Cumpston.

The conference was as genial and as blandly futile as all such conferences are: its resolutions were expansive enough to be innocuous and, once over, nothing resulted nor was intended to result. With the assistance of Dr. C. L. Park, an Australian (formerly of the Commonwealth Health Service), who had charge of the Far Eastern Bureau of the League of Nations at Singapore, a South-West Pacific Regional Health Zone was set up.

Its function was merely the interchange of information regarding quarantinable diseases, but its idea was revived twenty years later after World War II (1939-1945) and the present Commission for the South-West Pacific arose on its forlorn foundations. Meanwhile, the liquidation of Elkington's programme went on rapidly. Participation in the Hookworm Campaign ceased; responsibility for the safeguard through quarantine control of all the northern coasts of Australia was restricted to Queensland (formerly it had included the Northern Territory); direct relationships with the Territory of New Guinea were terminated and the Serum Laboratory established there was transferred to the local Administration as a sole and not a joint venture. A series of protests from Elkington's successor resulted only in the liquidation of the Division of Tropical Hygiene and his transfer in 1933 to Canberra. In 1934, at the invitation of the first Queensland Minister for Health and Home Affairs (E. M. Hanlon), he too resigned and entered the service of that State as its first Director-General of Health and Medical Services.

Queensland's Plan for "Positive" Health

The Hon. E. M. Hanlon, as first Minister for Health and Home Affairs in Queensland, fully adopted the idea that any real service must be one to assist every individual to reach the highest point in health attainable by him, physically and mentally, rather than one aiming merely at the correction of disease. He recognised that this meant the education of the medical profession along that line, and the establishment of a medical school to end Queensland's dependence on graduates from outside the State but, also, that this involved the improvement of all hospital and specialist services and a better distribution of medical men, especially for outback areas.

Successful approach was made to the Premier (Hon. W. Forgan Smith) for a Committee (see page 322) to report regarding a medical school, and upon receipt of the report it was put in hand at once: a proviso was that it should justify itself by making a unique contribution, viz.: it should include, as an integral part of its course, the separate study of tropical medicine and special instruction in the theory and practice of social medicine.

Plans were also formulated which led to (a) the establishment of the Queensland Radium Institute (the most up-to-date institution of its kind in Australia); and (b) a Queensland Institute of Medical Research to replace the Australian Institute of Tropical Medicine and to co-operate with the activities of the laboratories of the State, leaving routine diagnostic work largely to those latter. (The Institute was established in 1944 with Dr. Ian Mackerras as Director; Dr. E. H. Derrick, whose work on the fevers of Queensland had largely unravelled that tangled complex of diseases, and a team of other scientists, have already co-operated with the Director to effect work that is attracting attention and praise. Work on mosquitoes and other disease vectors is continued in collaboration with the Department of Entomology of the University, through Dr. Josephine Mackerras, Dr. Elizabeth Marks, and others.)

(204) A "secret" section of the report related to the activities of Japanese pearl divers and trawlers (in charge often of their Navy personnel in civilian dress) who were actively charting the shores and sounding the seas. Cumpston considered any threat from Asia fantastic; Elkington regarded it as inevitable. When Chapter VI "New Guinea" was written for the Medical History of the War (edited by Col. A. Butler), the former asked that the whole chapter be eliminated from the final report on this aspect of the war; no chain of contact was established through the island groups; and grave problems that might have been avoided faced the authorities on Japan's appearance as a foe in World War II at the end of 1941.
Unexpected Conflict

The organisation of medical and hospital services, however, provided unexpected difficulties. Hanlon had been persuaded from the perusal of various papers published by the leaders of the organised medical profession here, and in England, that there was a sincere and widespread demand for reform, or modernisation, or better definition of medical responsibilities and hospital services to the public. He was, therefore, astonished and indignant when his programme for services to the "outback"—his move to replace the outmoded "honorary system" of the Commonwealth by a system of payment on a sessional basis—was rejected by the Assistant Minister of the Commonwealth (who also together wrote the B.M.A. (Qld.) plan for provision of medical services) and of Surgeons; and two lay members appointed by the Commonwealth and through the Government of the United Kingdom on matters in which they had a discretion and, when one of these proved successful (vide 205), at the moment his scheme for hospital organisation was taking shape, he took the regrettable step of excluding medical men from hospital boards, except as advisers at call. (207)

Meanwhile, in 1936, the Federal Health Council (upon which State representatives were in the majority as befitted their actual responsibility for the domestic problem of health) was replaced by the National Health and Medical Research Council of Australia, and the balance of power reversed by the addition of representatives of the National Health and Medical Research Council of Australia, and salaried services for "outback" localities. War appeared inevitable—actually it was less than three years ahead—and the scheme for better distribution of medical and hospital care with wealth to represent the public. He was, therefore, astonished and indignant when his programme for services to the "outback"—his move to replace the outmoded "honorary system" by a system of payment on a sessional basis—was rejected by the Assistant Minister of the Commonwealth (who also together wrote the B.M.A. (Qld.) plan for provision of medical services) and of Surgeons; and two lay members appointed by the Commonwealth and through the Government of the United Kingdom on matters in which they had a discretion and, when one of these proved successful (vide 205), at the moment his scheme for hospital organisation was taking shape, he took the regrettable step of excluding medical men from hospital boards, except as advisers at call. (207)

For its first meeting, the representative for Queensland prepared a scheme for better distribution of medical and hospital care with salaried services for "outback" localities. War appeared inevitable within a decade—actually it was less than three years ahead—and the scheme was a modification of a paper prepared in 1923, but rejected in 1926 and 1931 and believed "dead" officially. (208) Prior to the meeting a representative of the organised medical profession stated that if it were to remain on the agenda, he had instructions to withdraw from the council's meeting. It was accordingly not read. This was a natural reaction: unaware of its special implications it appeared only to be a direct attack on private practice. Modified for general publication and applied only to civilian services in Australia, it was printed in 1944, (209) as a plea for nationalized medicine.

In 1938 the National Health and Pensions Insurance Act was rushed through the Federal Parliament; but it was never proclaimed. Professor Brigid had been named as its Director-General and Dr. Cumpston was alarmed at this portent, and at renewed interest in it in 1940, since it envisaged extensive control outside the Commonwealth Department of Health.

In the National Health and Medical Research Council, in 1941, a committee (210) was, at long last, set up to discuss a scheme for the better provision of health and medical services to the public, especially the "outback" population. Long resolutions reached by it were adopted by the Council in July and November 1941. War in the Pacific, however, that year, postponed other considerations to the immediate urgency of that threat. When peace returned, the position of the Commonwealth had been very greatly strengthened and the Referendum of 1946 (Section 23a) consolidated it effectively.

Post-War Epilogue

In 1934 and 1935 all medical men and related services in Queensland (except the Flying Doctor Service—see pages 310-11—which was, however, supported and encouraged) had been brought under one control—they had formerly been attached to eight different departments. They have since been maintained under a Director-General of Health and Medical Services.

The State had been divided into eleven (now twelve) medical districts each with a base hospital strategically located, and with as adequate a staff of medical officers and specialists as could be found locally, striving towards complete provision.

In certain fields specialists from Brisbane, e.g. in respect of cancer and tuberculosis, make State-wide visits as and when necessary. Free aerial transport is provided for special cases; and the swift motor vehicles of the Queensland Ambulance Transport Brigade (a service in which Queensland was a pioneer) are widely used.

Queensland, because of its admirable method of financing, largely the work of R. H. Robinson, former Under Secretary for the Department of Health and Home Affairs and a convinced advocate for local government, has for years had the best solvent system of base and
subsidiary hospitals in Australia: they cover the country adequately and their specialist services are excellently distributed. Free hospital treatment has been a feature also since the days of "Hanlon, the hospital-builder," but the organised medical profession regards it as an invasion of private practice and income, and has steadily opposed it. In view of their open stand against nationalization of medical care, this attitude is quite legitimate, though increasingly out of line perhaps with present-day social trends.

The tropical problem is a matter of constant research; vigilance has been increased to meet the situation in Indonesia and the "Near North" generally, where the assumption of control by local administrators not yet fully equal to their responsibilities and handicapped by economic difficulties and financial stringency, has caused some decline in efficiency in the control of epidemic diseases.

The recent Australia-wide warning to vaccinate against smallpox is a significant evidence of the renewed danger in this regard—once considered a thing of the past.

From the medical school—once opposed as unnecessary—943 graduates have come with special knowledge of tropical diseases.

So far as the "outback" is concerned, the great lack is still that of medical men. Salaried posts are difficult to fill because there is no incentive and no future in isolated appointments, detached from any prospects of promotion and interchange such as were contemplated in the "Inland and Island Tropical Health Service" proposals.

However, the medical, hospital, maternity, ancillary and welfare services of the State are steadily progressing and extending, with the ready co-operation, as always, of the vast majority of practising medical men and nurses, technicians and lay staff. The infantile mortality rate; the expectation of life figures; and the living standard compare favourably with those of any other country in the world. This is a period of transition and whatever the course ultimately taken, it is increasingly based upon the consideration of the interests of every section of the community and the profession.

All seem eager to forget any spirited and justified variation in viewpoints in the past, to concentrate upon success in the present, remembering that the lesson of history is

that to-day will be the past to-morrow!