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- M. P. = Master Plan Section der K. D. A.

THE PILGRIMAGE TO MECCA: SOME GEOGRAPHICAL AND HISTORICAL ASPECTS

With 2 Figures and 4 Tables

RUSSELL KING*)

Zusammenfassung: Die Pilgerreise nach Mekka: Einige geographische und historische Aspekte

Die „haj“, die alljährlichen Pilgerreisen der Moslems nach Mekka, sind 13 Jahrhunderte hindurch die bedeutendste Bevölkerungsbewegung im Mittleren Osten und möglicherweise auch das größte regelmäßige Treffen von Angehörigen der verschiedensten Rassen und Sprachen in der Welt überhaupt gewesen. Mekka beherbergt in der Tat einen Monat lang mehr Besucher als jede Stadt in der Welt und bis zur Entdeckung des Erdöls (1938) sind die Einnahmen aus dem Pilgerverkehr die Haupteinnahmequelle Saudi-Arabiens gewesen.

Reiseberichte bieten, da verlässliche Statistiken aus frühe-

rer Zeit völlig fehlen, die wesentlichste Grundlage für die Rekonstruktion der Pilgerreisen, die hier nach Ursprungsgebieten, Reiserouten, Reisegewohnheiten, benutzten Verkehrsmitteln, Aufenthaltsdauer usw. über die Jahrhunderte hinweg verfolgt werden. Heute sind die Pilgerreisen keine beschwerlichen Unternehmungen mehr: Der Flugplatz und der Hafen von Jiddah sind die bedeutendsten Landeplätze für die vielen ausländischen Pilger, die vor allem aus der Türkei, dem Jemen, aus Pakistan, Irak, Nigerien, Syrien, Sudan, Indien, Iran und Libyen kommen.

Saudi-Arabien hat mit Hilfe seiner Ölgelder den Pilgerverkehr beträchtlich verbessert, vor allem durch hohe Investitionen im Verkehrs-, Gesundheits- und Beherbergungswesen, obwohl alle diese Einrichtungen den größten Teil des Jahres über ungenutzt bleiben. Die ihrem Umfang nach dauernd wachsenden Pilgerreisen bilden nach wie vor die Erwerbsgrundlage für etliche tausend Menschen, doch sind sie, dank des Ölreichtums, längst nicht mehr das wirtschaftliche Rückgrat Saudi-Arabiens.

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Significance of the Pilgrimage

The annual pilgrimage to Mecca, although obviously of primarily religious significance, is a most interesting geographical phenomenon. The modern pilgrimage, or *haj*, is one of the most remarkable movements of population in the Middle East; remarkable not only for its size but also for its durability. Its influence extends throughout the Middle East and beyond to embrace all the countries of Islam from Senegal to the Philippines. For one month every year, Mecca, a city in Saudi Arabia with a resident population of about 150,000, has more visitors (over a million) than any other city in the world. The pilgrimage is one of the world's greatest gatherings of different races and languages. It has endured the 13 centuries of Islam virtually without interruption. Throughout this long period of time it has been the major source of income for the Hijaz region of Saudi Arabia. 'We sow no wheat or sorghum', runs an old Meccan saying, 'the pilgrims are our crops'. Without Islam relatively few people would dwell in these barren hills. The oasis of Mecca probably supports only 10–20% of the town's population. Until the 19th century when the cutting of the Suez Canal and technological improvements in shipbuilding and ocean transport led to a decline in trans-Arabian traffic, the bedouin tribes of the Hijaz and northern Arabia drew great profit and a considerable part of their livelihood from providing camels and guidance for the pilgrim caravans. Before the discovery of oil in 1938 spending by pilgrims provided the largest contribution to the Saudi Arabian Kingdom's foreign exchange earnings. Up till 1925 there was a heavy tax (about £25 per head) on all pilgrims. Today pilgrim revenue is the third largest credit item in Saudi Arabia's balance of payments, after oil exports and spending by oil companies. According to official estimates each pilgrim currently brings in an average of £100 into the country. Of this only £6 passes direct to the government however, mainly in the form of visa, port and quarantine charges. In 1969, the pilgrims brought in £40 million, of which £2.4 million accrued direct to the Saudi government.

Of the five pillars of the Islamic religion (profession of faith, prayer, charity, fasting and *haj*) the pilgrimage is the only one that is not obligatory. The individual is commanded to perform the pilgrimage only if he has the means to do so. Nevertheless for many moslems the *haj* is the culmination of a lifetime's saving. Some elderly pilgrims make the journey specifically in the hope that they will die on the road to Mecca or in the holy city, for death during the pilgrimage is considered doubly honourable and to ensure entry into the afterlife. Briefly, the pilgrimage rites include the following: the visit to the Kabaa (the holy shrine in Mecca), this being encircled seven times; visits to various other holy sites in and around Mecca,

including the Zamzam well, the Plain of Arafat (the climax of the *haj*), Muna village, where three pillars, representing devils, are stoned; the 10 km. walk between the two hills of al-Safa and al-Marwah; and finally the return to Mecca for a last visit to the Kabaa (for more details see GALLAND 1754 and GAUDEFROY-DEMOMBYNES 1923).

Over the centuries many millions have visited Mecca from every corner of the Islamic world, moving by land, sea, and more recently air, often under conditions of great hardship and personal suffering. Throughout sub-Saharan Africa, especially to the south of the desert, there is a continuous and inexorable movement of people travelling to and from Mecca. A Nigerian encountered by PHILBY (1946 p. 29) claimed to have spent 70 years working his way across Africa towards Mecca. Until recently many died on the way through exhaustion, hunger, thirst and disease. Somewhat smaller numbers have been born, for many wives also make the trip. Within Arabia the advent of the pilgrimage radically changed the existing transport network. New caravan routes were created, and passengers rather than goods became the main items of carriage.

Most pilgrims stay about a month in Mecca, although the actual ceremonies take only a few days. Many pilgrims, especially those coming from afar who are likely to make the trip only once in a lifetime, stay longer in the Hijaz, perhaps up to a year or more, usually visiting Medina also. Medina, 300 km. north of Mecca, is the second holy city of Islam, and contains the Prophet's tomb – Mohammed moved from Mecca to Medina about halfway through his life and died there. About a third of the pilgrims to Mecca also visit Medina. Although the town is never free from foreign pilgrims because there is no prescribed time for visiting Medina, the city does not experience the tremendously concentrated influx of pilgrims that characterizes Mecca. Both Mecca and Medina are forbidden to non-moslems; boundary stones on all routes leading to the cities mark the point, about 30 km. out, beyond which non-believers must not pass. Although restricted to moslems, Mecca is a very cosmopolitan city, for each year some pilgrims stay on. Many are too poor to return directly to their own countries, and become guides, porters or even beggars in Mecca. Former pilgrims and the descendants of past pilgrims are grouped in national communities and retain their languages to communicate with pilgrims arriving from their homelands each year (see HURGRONJE 1888 vol. 2).

The Origins of the Pilgrimage and its Effect on the Arabian Transport Network

Arabia in pre-Islamic times formed a transit area between the great civilizations of the Mediterranean and Near East on the one hand, and the Further East,

supplier of such products as silks, spices, peppers and ivory on the other (see DE PLANHOL 1968). Merchants probably regarded the desert routes as less hazardous than the sea, where there was risk of storms, and at least as early as the first millennium BC camel caravans had begun to cross Arabia, establishing commercial links between the Mediterranean and South Arabia, India and East Africa (ESIN 1963 p. 32, LEWIS 1966 p. 22). By far the most important caravan route was that linking the great Sabaean civilization of south-west Arabia (in what is now Yemen and South Yemen) with Petra and the Nabatean civilization in the north-west corner of Arabia. Mecca and Medina (then called Yathrib) were staging posts along this important route – called the ‘incense route’. By the time of Mohammed’s birth in Mecca in 570 AD the town had become a considerable commercial centre with trading and banking functions and foreign communities including Christians and Jews (DOZY 1864, LAMMENS 1911). It had long been a holy city of sorts, for the moslem pilgrimage had its origin as a pagan institution of the surrounding Arabs. The annual gathering at Mecca was an important economic and cultural event for the nomads of the region, providing a truce from raiding warfare, a forum for the exchange of goods, news and views, and an opportunity for ritual celebration (LAMMENS 1924). Islam remodelled this gathering, giving it new religious and geographical significance. Incense trade had already been declining well before the birth of Mohammed, for the decline of Rome led to a fall in demand, and between the 6th and 10th centuries the commercial trade of Mecca died away almost completely, to be replaced by a movement of a very different character.

Never in the history of transport in Arabia has there been a factor more important than Islam (ABDO 1971). Although four of the main pilgrim caravan routes – from Egypt, Syria, Yemen and the Arabian Gulf – followed pre-islamic trade routes, new *haj* routes linked Mecca with Iraq, Persia and Oman, serving not only these territories but also pilgrims coming in from other areas newly converted to the faith. Whereas previously the transport network consisted of transit routes across Arabia, now all routes led to Mecca; the pattern became strongly centripetal (SOPHER 1967, p. 52). Another important characteristic of the new pattern was that the pilgrim traffic was heavily concentrated at one time of the year, and it was unidirectional at any one time – towards Mecca before the pilgrimage, and from Mecca after. People replaced materials as the items of transport. Settlements and oases along the pilgrim routes expanded to cater for the demands of the pilgrim traffic, providing food, water and shelter. The oases at Yamama and Fayd in particular (see Fig. 1) grew to become important halfway stations on *haj* routes from Iraq, Persia, the Gulf and Oman (ABDO 1971, AMER 1925).

The Pilgrimage through the Ages

As might be expected, very little is known about the early history of the pilgrimage in the centuries following Mohammed’s death. Certainly in this early phase, as in later periods, the nature and volume of pilgrim traffic must have reflected historical and political events within Arabia and throughout the moslem world. Pilgrim numbers declined in periods of war and political unrest, and grew in times of peace and strong central government. The break-up of the Moslem Empire at the end of the 9th century must have caused a sharp decline in the pilgrimage. Throughout the early part of the 10th century the Iraq caravan was attacked and several years it did not arrive in Mecca (DE GOEJE 1862 p. 84). Nor has the *haj* itself always been a peaceful procedure. Later in the 10th century the pilgrim caravans from Egypt and Iraq fought outside the city gates for the privilege of entering Mecca first. In 1185 100 pilgrims were crushed to death by overcrowding in the shrine itself, and in 1210 and 1212 there were fights between the Meccans and the Iraqi pilgrims (DE GAURY 1951 pp. 58, 68, 83). From the 11th until the 13th centuries the Crusades in the Levant affected pilgrim movements from countries to the north of Arabia. The Mongol invasions of Persia and Iraq in the 13th century and of Syria in the 14th similarly prevented many from departing from or passing through the countries concerned. Whenever there was weak central government and the bedouin tribes were unconsolidated and hostile, attacks on pilgrim caravans were frequent; even under peaceful conditions nomad tribes often exacted large amounts of money from pilgrim caravans for safe passage across their territory. Periods of tribal unrest and hostility were particularly characteristic of the 16th century when the Hijaz was being incorporated into the Ottoman Empire, and again much later when the Wahhabs (a warlike sect who stood for religious reform and purification) under the House of Saud were expanding over much of the Arabian Peninsula (see HITT 1958). For several years after 1803 no regular caravans arrived at Mecca (DE GAURY 1951 p. 187 and see ALI BEY 1816 Vol. 2 pp. 30–116). In 1814 when BURCKHARDT was there only two, the Egyptian and the Syrian, of the normal five or six regular caravans appeared (BURCKHARDT 1829 Vol. 2 p. 3). As recently as 1923 the caravans linking Mecca and Medina (a journey of 10 days) were held up for several weeks by bedouin demanding money, and in 1924 none reached Mecca (MAJID 1926). In 1925 the Egyptian caravan did not go to Mecca because of further Wahhabi troubles (RUTTER 1928 Vol. 2 p. 168).

Up to the 19th century, when the Suez Canal was cut and when the growth of the East Indies steamship lines led to large numbers of Far Eastern pilgrims coming by sea, most pilgrims, comprising especially

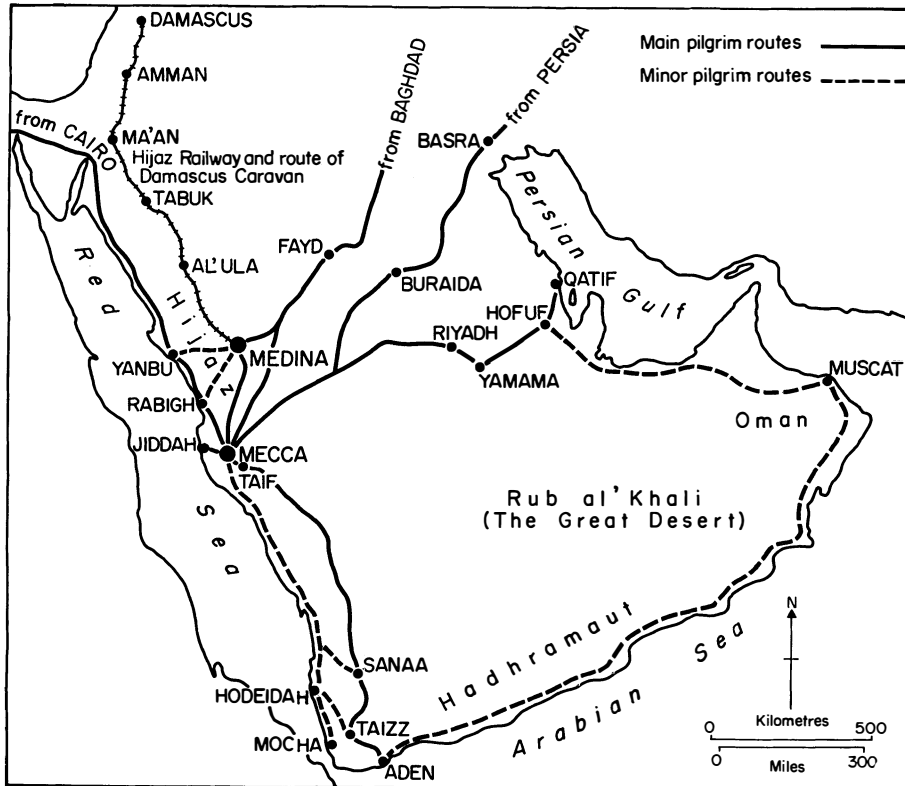


Fig. 1: Pilgrim Routes in Arabia up to the Beginning of the 20th Century

those from the Middle East, travelled overland. This was also true of African pilgrims, apart from the short Red Sea crossing. Persian pilgrims however, after the Wahhabis had blocked the passage of their caravan in the early 19th century, took to the sea, embarking at Basra for Mocha in the Yemen, where they joined the overland Yemen caravan; or running straight for Jiddah (the port of Mecca) if the trade winds were favourable (BURCKHARDT 1829 Vol. 2 p. 10). For most of the 13 centuries of the *haj* then, for reasons principally of safety, but also no doubt of economy, company and convenience, the chief means of pilgrim transport has been the camel caravan. Before the advent of motor and air transport the camel caravan was the only means of crossing the vast desert and semi-desert areas that separate Mecca from the more densely inhabited areas of the Middle East whence came the majority of the pilgrims. The pilgrimage became a vehicle for extraordinary displays of wealth and largesse on the part of individual muslim rulers. BOVILL (1933 p. 71) for example relates that in the 14th century the personal train of the negro emperor Mansa Musa of Mali counted 15,000 people and carried several sacks of gold. An important feature of the pilgrim caravan was the *mahmal*, an elaborately embroidered camel-litter containing gold, tapestries and other presents sent to Mecca as a mark of respect

from other muslim countries. Traditionally the Egyptian *mahmal* brought each year the huge black silk awning that covers the Kabaa, and the Syrian *mahmal* brought medicines for the pilgrims, but in practice the *mahmal* came to have a distinct political significance and represented, or was an attempt to establish, suzerainty and protective responsibility over the holy city on the part of the sender. The *mahmal* became the symbol of first Egyptian and then Ottoman 'emprise' in the Hijaz.

The two most important collecting points for pilgrims en route for the Hijaz were Damascus and Cairo, and the Syrian and Egyptian caravans were generally the largest and most important. From the earliest pilgrimages until the 19th century the Syrian caravan was the 'official' route for pilgrims from Syria, Turkey and Persia (D'AVRIL 1868 p. 167). Both DI VARTHEMA (in 1503) and DOUGHTY (in 1876) rode down with the Damascus caravan (see DI VARTHEMA 1863, DOUGHTY 1888). The 1300 km. journey from Damascus to Medina took 40 days, with a further 10 to reach Mecca. During the Ottoman rule the Syrian caravan started at Constantinople, collecting pilgrims from North Asia on its passage through Anatolia and Syria. At Damascus the pilgrims rested for several weeks preparing for the desert part of the voyage, and the camels were changed, Anatolian

beasts being unsuited to the hot deserts of North Arabia (BURCKHARDT 1829 Vol. 2 p. 3; for details of the route between Damascus and Medina see BURCKHARDT 1822 Vol. 3 Appendix 3 and TRESSE 1937 pp. 215–220). Between Damascus and Medina the caravan met 26 oasis staging posts, all of which were guarded during the Ottoman period. The settlement of Ma'an (now in southern Jordan) was particularly important; well-provided with water and with a small garrison in residence, it offered a degree of comfort and safety unknown elsewhere along the route (TRESSE 1937 p. 219).

The Yemen caravan, departing from Sanaa but with links to Hadhramaut and Oman also (Map 1), must have been one of the earliest to appear and its performance has been regular, continuing up to the present. Taking a route through the cool Asir highlands rather than following the hot dusty Tihama coast plain, this was one of the safest routes and numbers were often swollen by Persians arriving at Mocha and by African contingents crossing by dhow to various points along the coast. The caravan took 45 days to travel from Sanaa to Mecca (for the route see BURCKHARDT 1829 Vol. 2 pp. 373–381).

The Egyptian caravan was the chief rival of the Syrian. Its route lay along the eastern Red Sea coast, by-passing Medina and leading straight to Mecca, the time taken from Cairo being 40 days. The Egyptian caravan was always heavily guarded. According to JOMIER (1953 pp. 97, 161) it carried 350 soldiers in 1553, 500 in 1583 and 473 in 1900, the reason being continuous bedouin hostilities.

Just as Cairo has been the rallying point for pilgrims travelling overland from and via Egypt, so Alexandria, and, after the opening of the canal, the Suez ports, have been important transit points for sea-travelling pilgrims. Many Turks and Syrians travelled down to Alexandria by ship as an alternative to the long land journey, and a number of coasting vessels picked up North Africans from Algiers, Tripoli and other ports of the Maghreb. In 1853 BURTON (1893 Vol. 1 Chs. 10 and 11) took the pilgrim ship from Suez to Yanbu, but most pilgrim boats arrived, and continue to arrive, at Jiddah. Pilgrims disembarking at Jiddah come from all over the Islamic world, from South Arabia and the Persian Gulf, from Bombay and other Indian ports, from Malaya and the East Indies, from East Africa, and, since the cutting of the Suez Canal, from the Mediterranean. Fleets of buses now ferry the pilgrims the 70 km. up to Mecca. Pilgrims intending to go initially to Medina often come into Yanbu, or leave via that port after travelling from Mecca to Medina overland, and considerable numbers have at various times, especially when Jiddah has been occupied or under siege, arrived at Rabigh, a smaller port situated midway between Yanbu and Jiddah.

Our knowledge of the varying numbers of people

who made the pilgrimage over the centuries is very scanty. No accurate statistics were kept prior to the present century, so reliance must be made on travellers' estimates. Because the holy cities of Islam are forbidden to non-moslems, very few Europeans have been to Mecca, although it has been said that hardly a pilgrimage season passed without somebody being done to death on the suspicion of being a Christian in disguise (JEFFERY 1929 p. 221). Accounts by westerners of the pilgrimage are therefore either by those who like BURCKHARDT, BURTON, KEANE and WAVELL possessed sufficient skill and courage to impersonate a moslem, or by people like PHILBY and COBBOLD who are moslem converts. The role of these 'christian' pilgrims is an interesting one, and their record has a fascination of its own, quite apart from the important information which they impart, which is generally less impassioned, and therefore more valuable and accurate, than oriental and moslem sources. Early estimates of pilgrim numbers are available from Arab authors, but they are very fragmentary. Thus we know for example (JOMIER 1953 p. 86) that the 1279 *haj* was very large, with 40,000 Egyptians alone, and the same number of Iraqis and Syrians; and that in 1324 the negroes from south of the Sahara numbered 15,000.

The first European 'pilgrim', as far as is known, was the Italian DI VARTHEMA who travelled to Mecca in 1503 (see DI VARTHEMA 1863 pp. 16–85). Although his travel accounts enjoyed an extraordinary vogue, being translated into seven languages before the close of the 16th century, he left few reliable details. He estimated that Mecca then contained 5–6,000 resident families, and that the Syrian caravan counted 50,000 persons, but although he was the first person to dispel the popular myth that Mohammed's tomb hung suspended in mid-air at Medina the fact that he claimed to have seen two live unicorns in the Great Mosque – he even gives the length of their horns – leads one to suspect his accuracy. Later authors (e.g. TRESSE 1937 p. 284) have in particular judged 50,000 to be an exaggeration for the size of the Damascus caravan.

The next three Europeans to visit Mecca all did so as slaves. LEVI DELLA VIDA (1942) tells us of a Portuguese slave who was in Mecca in 1565, and the Austrian Wild, a war captive sold into slavery, was taken by his Persian master to Mecca in 1607 (WILD 1623). The English sailor PITTS was enslaved after being captured by Barbary pirates and was obliged to perform the *haj* in 1685 (BECKINGHAM 1950, PITTS 1788). Both WILD and PITTS provide little quantitative data on the pilgrimage, although they present vivid pictures of conditions at the time. WILD, travelling by the Cairo caravan across Sinai, tells us that by the halway stage 1,500 men and 900 camels had already died. Neither have much good to say about Mecca. PITTS described it as a dismal and barren place, with thin half-starved inhabitants. Certainly Mecca, set in the midst of bare hills and with only

a small oasis, has been prone to famine and heavily reliant on food supplies from north-east Africa. In 1667, 18 years before PITTS' visit, Mecca suffered its worst famine in history; even cats and dogs (although it is forbidden to touch animals in the holy city) were eaten (DE GAURY 1951 pp. 144–145).

From the point of view of the historical geography of the pilgrimage, the three most important accounts are probably those of ALI BEY, BURCKHARDT and BURTON, each of whom visited the holy cities in the 19th century. Other less informative and less scholarly accounts are listed in the bibliography. ALI BEY was the pseudonym probably of a Spanish Christian professing Islam. He is the subject of considerable mystery, particularly as he was able, by travelling with a princely retinue of attendants, to convince the Sherif of Mecca that he was a descendant of the Abassid Caliphs of the West, and to be accommodated in the Sherif's special guest palace. ALI BEY saw the Egyptian caravan leave Cairo and estimated it contained 5,000 camels and 2–3,000 horses; his estimate for the total pilgrimage was 80,000 men, 2,000 women and 1,000 children (ALI BEY 1816 Vol. 2 p. 27).

By the early 19th century the pilgrimage seemed to be losing numbers. 'The time has passed,' wrote the Swiss traveller and orientalist BURCKHARDT, 'when the hadjys or pilgrims, from all regions of the muslim world, came every year in multitudes, that they might visit devotionally the sacred places of the Hijaz'. (BURCKHARDT 1829 Vol. 2 p. 1). He put forward two reasons for this – increasing expense and a religious indifference spreading throughout Islam. Equally responsible too was probably the political situation. As long as the Turks were in power pilgrim numbers tended to increase. The Turks had an almost obsessive sense of responsibility for the *haj* and spent great sums to guarantee pilgrims' safety. When the various Wahhabi incursions upset this pattern of safety, as they did in BURCKHARDT's time, pilgrim numbers fell. Thus numbers on the Damascus caravan, which may have reached 40,000 in the 18th century, declined drastically in the 19th; BURCKHARDT (1829 Vol. 2 p. 4) in 1814 estimated 15,000 camels and 4–5,000 persons, and BURTON (1893 Vol. 1 p. 416) in 1853 quoted 7,000 persons. By 1890 the number may have fallen below 1,000 (TRESSE 1937 pp. 286–287), and the departure of pilgrims from Damascus was no longer a great spectacle. In 1880 according to GAUDEFROY-DEMOMBYNES (1923 p. 166) the Cairo caravan counted only 1103 persons. By the time of the First World War both caravans were a thing of the past (PHILBY 1930 p. 340), although the Egyptian caravan arrived sporadically between the wars. As far as total numbers of pilgrims are concerned – a rather more difficult figure to estimate – from a maximum of maybe 200,000 in the 18th century the number dropped to an estimated 70,000 in 1814 (BURCK-

HARDT 1829 Vol. 2 p. 46) and to 50,000 in 1853 (BURTON 1893, Vol. 2 p. 394).

The relative numbers of pilgrims from the various countries of Islam have of course varied over time according to political conditions and ease of travel. The largest numbers have generally come from within Arabia and from adjacent countries like Egypt, Syria and Persia. But large numbers have also regularly come from much further afield, notably Malaya and the East Indies. The colourful Javanese pilgrims were always popular in the Hijaz since, like the pre-Revolution Russian pilgrims in Jerusalem, they travelled furthest and usually arrived first (CRANE 1928), and COBBOLD (1935) has photographs of pilgrims from as far away as Mongolia, Sinkiang, Russia and Uzbekistan. Of the travellers only KEANE (1887 p. 69), in the late 19th century provides us with any percentage estimate of relative numbers from different parts of Islam, and his figures must only constitute a rough guess. He estimated the following: Hindis (Indians) 20%, Arabs 15%, North Africans 15%, Negroes 10%, Persians 10%, Turks 6%, Syrians 6%, Malays 5%, Tartars 5%, Bedouin 3%, and the rest (5%) 'a nondescript rabble from China, the west coast of Africa, Russia, and wild Darwaysh-looking savages from God knows where'.

The Pilgrim Railway

An important part of the historical geography of the pilgrimage concerns the pilgrim railway from Damascus to Medina. The idea of a railway to the holy cities originated in 1864, but work did not start on the construction till 1900 when Abdul Hamid, Sultan of the Ottoman Empire, decided to mark his 25th year of rule by building a railway to revive the pilgrimage. There were also political motivations. Turkish control of the Hijaz was weak and a railway line would facilitate the movement of arms and troops to the Yemen and elsewhere. That the railway was completed so rapidly in such a hostile environment – 1293 km in 8 years – was largely due to the driving force of those in charge – the Syrian Izzet al-'Abed, president of the Hijaz Railway Commission, and Miessner, the German engineer-in-chief. The Hijaz Railway was the first railway in history to be paid for before selling its first ticket and the first to be operated by a *waqf* – a self-perpetuating non-profit religious endowment. Funds came from donations from moslems all over the world, sale of 'bey' and 'pasha' titles, house and head taxes, and a 10% levy on all Ottoman civil servant and soldier pay. Some £5 million was raised in this manner, and when the railway was completed there was a cash surplus of over £1½ million (DA CRUZ 1965 p. 25).

Estimates of the number and nationalities of the engineers supervising the work vary (see eg. TRESSE 1937 Ch. 7, MAUNSELL 1908, BLANKENHORN 1908).

They were chiefly German and Turkish, with some French and Italians; 5,000 Turkish soldiers were drafted in to perform the manual labour. The final stage, from Al' Ula to Medina, some 450 km., was completed exclusively by moslems. Needless to say conditions of work in the desert, with the heat, shortage of food and water, and opposition from local bedouin, were extremely hard. Natural obstacles – sand-dunes, wadis etc. – were also considerable (for detailed descriptions of the route see ADMIRALTY 1943 and 1946, AULER 1906 and 1908, BONIN 1909). The 55 steam locomotives were German and the rolling stock Belgian. Rails were supplied by companies in France, Belgium and America (MAUNSELL 1908 p. 585). The 1.05 metre gauge is unique and was selected for military reasons – the line would be useless for enemy rolling stock. Main stations en route were constructed at Ma'an, Tabuk and Al' Ula, but 48 smaller fortress-like buildings occurred at intervals of about 30 km. Most of these were built around wells, but some depended on water waggons. Their function was mainly military; they had rifle-slots instead of windows (DA CRUZ 1965 p. 27). The line was never extended to Mecca as planned. The Young Turks who came to power in 1908 would probably not have been able to overcome bedouin opposition, for the extension would have killed the intensive Mecca-Medina caravan trade.

The Hijaz Railway operated for only five full years, until the outbreak of war in 1914. The journey took four days, for the quality of the track, especially on the hastily-laid southern section, was such that speeds in places were reduced to 15 km. p. h. During the pilgrim season trains travelled three times per week in each direction. According to WAVELL (1912 p. 54), the first Englishman to travel the length of the railway, a third class ticket in 1909 cost £3.50.

There can be no doubt that the railway brought about a revival in the pilgrimage. In 1909 15,000 pilgrims travelled on the railway and in 1911 the figure was 29,000 (TRESSE 1937 p. 344). Syrians, Turks and Russians constituted the main body of passengers, although Iraqis, Persians and Afghans also used it, and Egyptians and other North Africans joined the railway via the branch line from Haifa. The railway also brought increased prosperity to Medina, largely at the expense of Yanbu, from which pilgrim traffic was diverted. Authors visiting Yanbu at this time (eg. ZWEMER 1917) describe it as a forlorn deserted place. Medina, with its gardens (it has a much larger oasis and better water supplies than Mecca) and its railway bringing fruits, vegetables and merchandise from the north, became a pleasant place of retirement for moslems. The influx of wealthy residents swelled the city's population to 70–80,000, probably larger than Mecca at the time (RUTTER 1928 Vol. 2 pp. 209–210). Soon however war came, the railway was partially destroyed by Lawrence, and the end of the 15 month Wahhabi siege found Medina with only 6,000 resi-

dents. The line was used for a brief spell in 1924 but interest in repairing it declined. Engines rusted in the sheds at Medina or lay for decades untouched in the desert at the spot where Lawrence blew them up.

Thirty years later, in 1954, the governments of Saudi Arabia, Jordan and Syria agreed to rebuild the railway, sharing the cost, about £20 million, between them. In 1964 work started. By June 1967, when the Arab-Israeli conflict caused the hasty departure of 40 western engineers and the temporary abandonment of the project, 75% of the bridges had been rebuilt, 450 km. of embankments had been reconstructed, and track laying had just commenced southwards from Ma'an. Already in 1965 new buildings had been going up around the old station in Medina in anticipation of the increased pilgrim traffic (RAYESS 1965 p. 13). Although the IBRD reports to both Jordan and Saudi Arabia advised against rebuilding the railway on economic grounds (International Bank for Reconstruction and Development 1957 p. 25, 1960 p. 63), the fact that it has been started is a strong argument for its completion, and its total cost is not high in comparison with expenditure on other infrastructural projects connected with the pilgrimage. Although the line runs parallel to the Red Sea and to two projected paved motor roads, with the increasing importance of the pilgrimage in recent years possibilities for fast conveyance (the journey will take 24 hours in air-conditioned carriages) of pilgrims to Medina are clearly considerable, especially if the Suez Canal remains closed.

The Changing Character of the Pilgrimage

Even in the 20th century the pilgrimage has undergone remarkably fluctuating fortunes. From the 152,000 non-Arabian pilgrims computed by RUTTER (1929 p. 273) for 1925 the number fell to 20,000 in 1933. The drop was primarily due to the world depression. Malaya and the East Indies in particular had been sending over 50,000 pilgrims a year; these countries produced the primary products like sugar and rubber that were especially vulnerable to slumping prices. Again, at a time when pilgrim numbers were rising once more (67,000 in 1936; 100,000 in 1937), World War Two intervened, and in 1939 the number of non-Arabian pilgrims plummeted to 9,000.

Since the end of World War Two numbers have rapidly, if irregularly, increased (Table 1). The June War caused a check in the rate of increase, when many moslems gave up their *haj* savings to the Arab cause, and the closure of the Suez Canal prevented many North Africans from making the journey, but 1968 saw a substantial increase of 18% from 318,500 to 375,000. The recently received figures for the 1969 pilgrimage (406,300) and the 1970 pilgrimage (431,300) show that the upward trend is continuing. In any one year about 0.1% of the world's nearly 500 million moslems may be in Mecca, although according

Table 1: Pilgrim Numbers 1946-1970

| Year | Number | % increase over previous year | Year | Number | % increase over previous year |
|------|---------|-------------------------------|------|---------|-------------------------------|
| 1946 | 55,244 | - | 1958 | 204,367 | - 1.0 |
| 1947 | 75,614 | + 36.9 | 1959 | 262,318 | + 28.4 |
| 1948 | 99,069 | + 31.0 | 1960 | 277,238 | + 5.7 |
| 1949 | 107,981 | + 9.0 | 1961 | 216,442 | - 21.9 |
| 1950 | 100,471 | - 7.0 | 1962 | 197,133 | - 8.9 |
| 1951 | 147,650 | + 47.0 | 1963 | 260,285 | + 32.0 |
| 1952 | 149,450 | + 1.5 | 1964 | 283,319 | + 8.8 |
| 1953 | 162,361 | + 8.6 | 1965 | 294,118 | + 3.8 |
| 1954 | 232,271 | + 43.1 | 1966 | 316,226 | + 7.5 |
| 1955 | 220,513 | - 5.1 | 1967 | 318,147 | + 0.6 |
| 1956 | 216,166 | - 2.0 | 1968 | 374,784 | + 17.8 |
| 1957 | 206,379 | - 4.5 | 1969 | 406,295 | + 8.4 |
| | | | 1970 | 431,270 | + 6.1 |

Note: Saudi Arabian pilgrims excluded

Source: Ministry of the Pilgrimage and Passport Department

Table 2: Pilgrims by Main sending Countries 1965-1969

| | 1965 | 1966 | 1967 | 1968 | 1969 |
|----------|---------|---------|---------|---------|---------|
| Turkey | 25,984 | 39,309 | 41,998 | 51,055 | 56,578 |
| Yemen | 28,865 | 2,095 | 31,489 | 51,577 | 54,658 |
| Pakistan | 8,694 | 23,951 | 25,052 | 27,402 | 28,535 |
| Iraq | 18,338 | 20,519 | 19,475 | 24,875 | 24,902 |
| Nigeria | 7,623 | 8,535 | 10,790 | 16,177 | 24,185 |
| Syria | 18,458 | 19,208 | 14,521 | 12,814 | 22,383 |
| Sudan | 6,454 | 20,168 | 18,035 | 21,649 | 20,495 |
| India | 16,006 | 15,865 | 15,826 | 16,154 | 16,057 |
| Iran | 24,937 | 35,334 | 22,903 | 13,642 | 15,132 |
| Libya | 14,788 | 18,326 | 10,444 | 16,565 | 13,547 |
| Others | 123,971 | 112,916 | 107,974 | 122,874 | 129,823 |
| Total | 294,118 | 316,226 | 318,147 | 374,784 | 406,295 |

Note: Saudi Arabia excluded

Source: Ministry of the Pilgrimage

Table 3: Pilgrims by Mode of Arrival 1956-1970

| Year | Air | % | Sea | % | Land | % |
|------|---------|------|---------|------|---------|------|
| 1956 | 54,513 | 25.2 | 104,262 | 48.2 | 57,530 | 26.6 |
| 1957 | 32,037 | 15.5 | 122,169 | 59.2 | 52,183 | 25.3 |
| 1958 | 31,719 | 15.5 | 114,421 | 56.0 | 58,227 | 28.5 |
| 1959 | 50,812 | 19.4 | 125,114 | 47.7 | 86,392 | 32.9 |
| 1960 | 49,107 | 17.7 | 143,047 | 51.6 | 85,084 | 30.7 |
| 1961 | 53,481 | 24.7 | 93,943 | 43.4 | 69,018 | 31.9 |
| 1962 | 59,952 | 30.4 | 81,150 | 41.2 | 56,031 | 28.4 |
| 1963 | 85,369 | 32.8 | 105,604 | 40.6 | 69,312 | 26.6 |
| 1964 | 83,483 | 29.5 | 128,498 | 45.3 | 71,338 | 25.2 |
| 1965 | 90,980 | 30.9 | 101,406 | 34.5 | 101,732 | 34.6 |
| 1966 | 107,078 | 33.9 | 113,391 | 35.8 | 95,757 | 30.3 |
| 1967 | 119,184 | 37.5 | 83,984 | 26.4 | 114,979 | 36.1 |
| 1968 | 129,744 | 34.6 | 94,248 | 25.1 | 150,792 | 40.3 |
| 1969 | 144,972 | 35.7 | 90,992 | 22.4 | 170,331 | 41.9 |
| 1970 | 208,663 | 48.4 | 84,547 | 19.6 | 138,060 | 32.0 |

Note: Saudi Arabian pilgrims excluded

Source: Ministry of the Pilgrimage and Passport Department

to JOMIER (1953 p. 2) the proportion may be as high as 25% in some Egyptian villages. It is not possible to say exactly how many Saudi pilgrims perform the *haj* as they are not subject to passport control. Estimates at various times however show that Saudi pilgrims usually number about double foreigners; they currently number about one million each year.

The *haj* is clearly increasing in importance. With rising standards of living all over Islam, especially in those Middle Eastern countries endowed with oil resources, and with swifter and cheaper transport, more and more moslems are able to journey to Mecca. Table 2 shows that pilgrim numbers during the period 1965-69 especially increased from Turkey, Yemen, Pakistan, Nigeria and Sudan. The low figure for Yemen in 1966 was due to civil war in that country and the antipathy of Saudi Arabia. Table 3 demonstrates that the character of the *haj* is changing. Camel caravans for the most part no longer thread their way through the desert to Mecca. As early as 1937 an airplane flew twice daily between Jiddah and Mecca ferrying pilgrims, and some 700 lorries were circulating in the Hijaz (ADMIRALTY 1946 p. 467), a remarkable increase over a couple of years previous when automobiles were restricted to King Saud's retinue. The replacement of the camel by the automobile led to overland routes becoming increasingly important in the pilgrimage, at the expense of sea routes. Nowadays most moslem countries operate charter flights to and from the Hijaz. The total cost of an airborne pilgrimage from Senegal for instance - one of the countries furthest from Mecca - is now about £300 (MOREAU 1967), a sum not beyond many moslems backed by a few years' savings. The total number of pilgrims coming by air (Table 3) doubled during the decade 1956-1966, and quadrupled over the decade 1958-1968. In the *haj* of December 1970 nearly half of the foreign pilgrims came by air. The vast majority of airborne pilgrims arrive at Jiddah airport; only 2-3% land at the airports at Medina and Dhahran (the Arabian-American Oil Company's headquarters near Qatif). Pilgrims arriving overland were increasing up to 1969; by three times over the period 1956-1968. The number of pilgrims arriving by sea, chiefly at Jiddah, has remained very roughly constant, although a decreasing proportion of the whole. Yanbu is an alternative disembarkation point and considerable effort has been directed toward improving and expanding its facilities for pilgrim reception. However, while ideally located for Suez Canal traffic, Yanbu is in a less favourable position for pilgrim ships entering the Red Sea from the south. Thus, while there were over 10,000 pilgrim arrivals at Yanbu for the 1966 *haj*, the subsequent closure of the canal has resulted in virtually no pilgrims using that port since 1967. Of the 94,000 pilgrims arriving by sea in 1968, almost 90,000 came into Jiddah; the rest, some 4,000, arrived via Al Khobar, a small port just south of

Qatif on the east coast. That the majority of Yemeni pilgrims still journey overland (see Table 4) is not surprising in view of the backwardness of that country and the relatively short distance (about 1,500 kms.) to Mecca. The continued movement overland across Africa is perhaps less easy to explain, except in terms of strength of religious conviction and again of poverty. Data on these migrations do not exist, and many of these Africans travelling slowly and in stages are

not represented in the official statistics of the Saudi Arabian Ministry of the Pilgrimage (Table 4). Many thousands still pass eastwards and westwards through the town of Kano. Pilgrims from the northern parts of central Africa converge on the Sudan and provide much of the labour needed for cotton-growing in the Gezira (DAVIES 1964). According to RUTTER (1929 p. 273) there is a great village of grass and skin huts in the Misfala quarter of Mecca where the Africans live. This shanty town still exists today. The west Africans and south-east Asians provide a striking exception to the rule that the largest proportion of pilgrims come from countries near to Arabia whence travelling is easy. Fig. 2, based on figures from Table 4, indicates the relative numbers of pilgrims sent by various countries, and their principal mode of travel.

In contrast to the past the *haj* is now a highly organized affair, and the credit for this must largely go to the Saudi Arabian government. Pilgrims can now fly direct to Jiddah airport. *Haj* travel agencies operate in many countries and there are motor coach pilgrimages from North Africa, Turkey, Iran, Afghanistan and other countries. Within Arabia and especially the Hijaz there has been a considerable growth in recent years in vehicles for conveying pilgrims. Large numbers of buses remain idle for most of the year but are used to capacity during the *haj* season. Since 1951 a number of pilgrims approaching from eastern Arabia and the Gulf use the Dammam-Hofuf-Riyadh railway, the only line at present operating in Arabia. At Riyadh the pilgrims transfer to the Trans-Arabian Highway and continue to Mecca by road, or there is an air link. The whole business is streamlined, and much is provided by the Saudi government. New 'pilgrim-cities' near Jiddah airport and docks house poorer pilgrims free (TOMKINSON 1969).

Perhaps the most important aspect of the changing character of the *haj* concerns medical improvements. In the past the mortality rate among pilgrims was extremely high because of their weakened state after their long journey, the unsanitary and crowded conditions in the holy cities, and exposure to contagious diseases introduced from all over the world. The most lethal diseases were smallpox, cholera and malaria. Between 1831 and 1912 27 cholera epidemics were connected with the pilgrimage. An extension of the infection from Mecca was responsible for the English cholera epidemic of 1865-1866, and the world epidemic of 1893 had its origin in the *haj* (ADMIRALTY 1946 p. 464). Pilgrims travelling by ship were probably most instrumental in spreading disease, for in 1866 it was proved that returning camel caravans were often travelling in the desert long enough to be quarantined (TRESSE 1937 p. 281). In 1872 the Syrian caravan lost 280 of its 2,000 persons to cholera (TRESSE 1937 p. 257). BURCKHARDT (1829 Vol. 2 pp. 310-340), visiting Yanbu in 1814, described it

Table 4: *The 1968 Pilgrimage, by Country of Origin and Mode of Arrival*

| Nationality | Total Pilgrims | Air | Sea | Land |
|---------------------|----------------|---------|--------|---------|
| Morocco | 9,449 | 8,916 | 132 | 401 |
| Algeria | 7,053 | 7,027 | — | 26 |
| Tunisia | 1,349 | 1,347 | 1 | 1 |
| Libya | 16,565 | 16,564 | 1 | — |
| Egypt | 12,413 | 6,788 | 5,234 | 391 |
| Sudan | 21,649 | 13,172 | 8,476 | 1 |
| Lebanon | 3,901 | 1,270 | 1 | 2,630 |
| Palestine | 536 | 390 | 7 | 139 |
| Syria | 12,814 | 9,288 | 4 | 3,522 |
| Iraq | 24,857 | 2,901 | 1 | 21,955 |
| Jordan | 5,179 | 980 | 14 | 4,185 |
| Yemen | 51,577 | 50 | 1,650 | 49,877 |
| South Yemen | 7,865 | 2,433 | 4,774 | 658 |
| Oman | 1,617 | 899 | 338 | 380 |
| Trucial States | 728 | 652 | — | 76 |
| Qatar | 1,690 | 166 | 8 | 1,516 |
| Bahrein | 1,974 | 354 | 1,590 | 30 |
| Kuwait | 6,684 | 361 | — | 6,323 |
| Total: | | | | |
| Arab Middle East | 187,900 | 73,558 | 22,231 | 92,111 |
| Turkey | 51,055 | 5,110 | 3 | 45,942 |
| Iran | 13,642 | 10,936 | 62 | 2,644 |
| Afghanistan | 8,744 | 4,327 | 7 | 4,410 |
| Pakistan | 27,402 | 4,652 | 18,811 | 3,939 |
| India | 16,154 | 1,665 | 14,391 | 98 |
| Malaysia | 6,591 | 434 | 6,153 | 4 |
| Indonesia | 17,062 | 1,336 | 15,725 | 1 |
| Other | 6,706 | 1,342 | 5,359 | 5 |
| Total: Other Asia | 147,356 | 29,802 | 60,511 | 57,043 |
| Senegal | 2,076 | 2,067 | 9 | — |
| Niger | 2,058 | 206 | 1,852 | — |
| Nigeria | 16,177 | 13,462 | 2,714 | 1 |
| Chad | 3,065 | 529 | 2,536 | — |
| Ethiopia | 1,840 | 350 | 1,488 | 2 |
| Somalia | 1,517 | 564 | 949 | 4 |
| Other | 9,962 | 8,001 | 1,950 | 11 |
| Total: Other Africa | 36,695 | 25,179 | 11,498 | 18 |
| Yugoslavia | 1,554 | 11 | — | 1,543 |
| Other Countries | 1,279 | 1,204 | 8 | 77 |
| Grand Total | 374,784 | 129,744 | 94,248 | 150,792 |

Summary: % of pilgrims from:

| | |
|----------------------|------|
| Arab Middle East | 50.1 |
| Other Asia | 39.3 |
| Other Africa | 9.8 |
| Europe, America etc. | 0.8 |

Source: Kingdom of Saudi Arabia, *Statistical Yearbook*, 1969. p. 163-166.

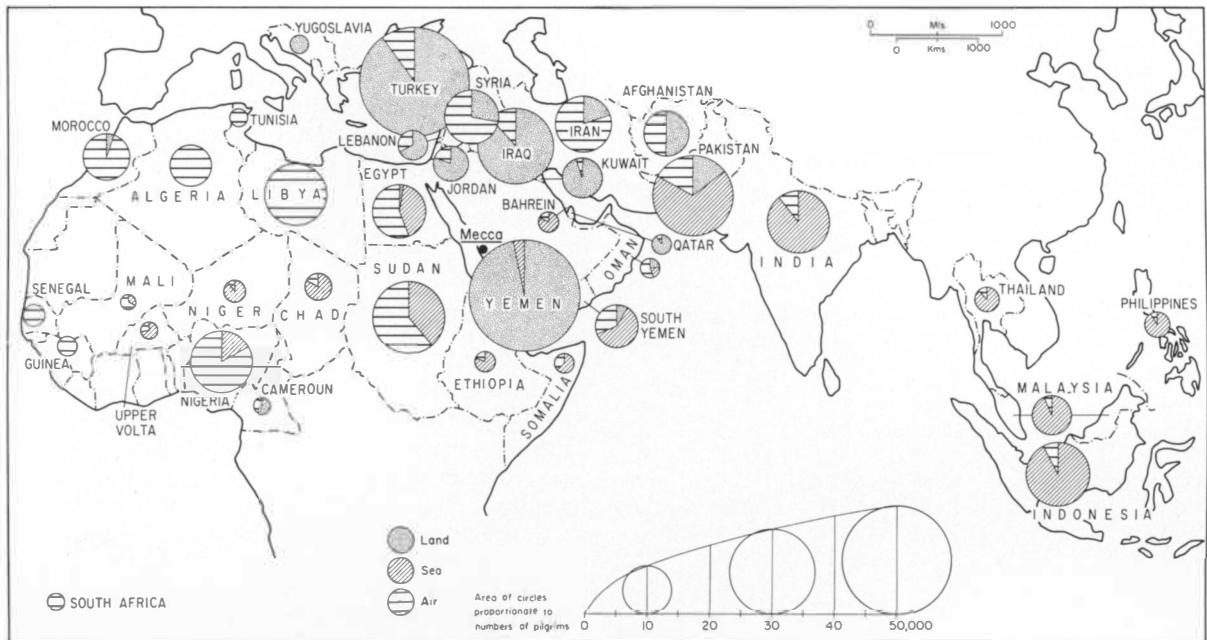


Fig. 2: The 1968 Pilgrimage by Main Sending Countries

as gripped by the plague, with bodies littering the streets and 40–50 people dying daily.

The heat of the Hijaz also constitutes a considerable health hazard, especially for pilgrims from very different climates. Mecca itself, due both to its geographical position within Arabia and to its site in an enclosed inland depression, has a particularly overbearing climate, a fact to which most travellers allude; RUTTER (1928 Vol. 1 p. 117) called it 'a breathless pit enclosed by a wall of rock'. The obligation of wearing the *ihram* (a piece of white cloth draped round the body) and the custom of shaving heads leaves much skin exposed to the fierce Arabian sun. Statistics for heat illness during the 1961 *haj* showed that the highest rates were suffered by Greeks (25‰), Tunisians (16‰) and Yugoslavs (13‰); the lowest – almost nil – accrued, not surprisingly, to pilgrims from the countries of the Arabian Peninsula – Saudi Arabia, Yemen, South Yemen and Kuwait (EL HALAWANI 1964 p. 284–285). In 1824 a fifth of the 20,000 of the Syrian caravan died through heat and thirst. Two years later 12,000 died through the heat of the Khamsin wind. But the *haj* can fall at any time of the year; due to differences between the Hijah and Gregorian calendars the pilgrimage takes place 11 days earlier each year. In 1846 the problem was cold crossing the high plateaux; 500 pilgrims, 1,200 horses and 900 camels died on the journey north to Damascus (see TRESSE 1937 pp. 252–254). In 1924, although the pilgrimage was declared officially free from epidemics, the mortality rate was 22‰ amongst Javanese and 15‰ amongst Malaysians (FARID 1956 p. 829, MAJID 1926 p. 286). The high percentage of old people

making the pilgrimage from these far-off places is a contributory factor, for RUTTER (1928 Vol. 1, p. 275) informs us that at this time the average death rate on a normal (ie. non-plague) *haj* was about 2‰. The figure is now lower still, about 0.01‰.

Such health problems, especially the cholera epidemics of the 19th century, did stimulate action. Several studies of the pilgrimage from the medical point of view appeared (BORREL 1904, BUEZ 1873, DUGUET 1932, STEKOULIS 1883) and a number of international conferences took place during the latter half of the century. Two quasi-international organizations – the *Constantinople Superior Board of Health* and the *Conseil Sanitaire Maritime et Quarantenaire d'Egypte* – were set up and played an important role in the control of pilgrim traffic and the spread of disease. In 1926 anti-cholera vaccination was made compulsory for all pilgrims, and in the same year a quarantine station was set up on Kamaran Island in the southern Red Sea. All pilgrim ships approaching from the south must stop there. More recently the Saudi government has set up quarantine stations at Jiddah and at points of entry along the northern border. The quarantine hospital at Jiddah, built in 1956, can provide medical care for over 22,000 outpatients and hospital care for up to 1,800 at a time. Mobile hospital units are at work along *haj* routes. The government has also built modern slaughterhouses and freezers to improve sanitary conditions during the *haj*'s ritual slaughtering of animals, a custom which previously seriously aggravated health problems (WALPOLE et al 1966 p. 124, FODA 1965).

Conclusion

Although Saudi Arabia undoubtedly derives considerable religious and political prestige from being the host country, and is more than content to continue enjoying the duty of organizing the *haj*, recent expenditure on facilities for the pilgrimage currently outweighs receipts, and many of the roads, buildings and transport equipment are inherently uneconomic as they are only used for a few days each year. Many medical and housing services are provided free or at low fixed charges. Hundred of miles of new roads have been constructed in the vicinity of Mecca, Medina and Jiddah, including a Mecca by-pass so that non-moslems can drive from Jiddah to Taif without seeing the forbidden city. Jiddah is planning a £24 million airport on the Mecca road (the old airport is virtually in the city centre) and is enlarging its harbour at a further cost of £12 million. Recent costly extensions have been made to the principal mosques at Mecca and Medina. Such facts and figures indicate that although the pilgrimage still provides a livelihood for some thousands of people, and although the *haj* itself is rapidly increasing in size, it is no longer regarded, thanks largely to the advent of oil royalties, as the economic backbone of the country.

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BERICHTE UND KLEINE MITTEILUNGEN

L'ANALYSE INTERDISCIPLINAIRE DE LA CROISSANCE URBAINE BERICHT ÜBER DAS COLLOQUE NATIONAL DU C.N.R.S.

vom 1.–4. Juni 1971 in Toulouse

Die vom Vorstand des Geographischen Instituts der Universität Toulouse Prof. BERNARD KAYSER mustergültig vorbereitete Tagung befaßte sich an drei Tagen mit drei verschiedenen Themenkreisen.

Thema Nr. 1 behandelte die Phänomene der Interdependenz, d. h. die in gegenseitiger Wechselbeziehung zueinander stehenden Erscheinungen des städtischen Wachstums. Hierbei wurde auf den interdisziplinären Charakter der Untersuchungen besonderer Wert gelegt. Der Soziologe M. LEDRUT erblickte den Zweck des Kolloquiums nicht so sehr in der Erfassung der Komplexität und Globalität des städtischen Wachstumsprozesses, sondern vielmehr im Bemühen, die vielfältigen Verbindungen und Beziehungen zwischen den verschiedenen urbanen Phänomenen aufzuzeigen, von welchen jedes für sich Forschungsgegenstand einer oder mehrerer der mit diesem Fragenkomplex befaßten Spezialdisziplinen ist. Um hier zu einem befriedigenden Resultat zu kommen, wird es vor allem notwendig sein, zunächst rein methodisch die Struktur der einzelnen Phänomene der Interdependenz aufzuhellen. Von seiten der Soziologie sind diesbezüglich Untersuchungen zu erwarten.

PH. PINCHEMEL zeigte anhand von Untersuchungen des Wanderungssaldos bzw. der räumlichen Mobilität der Bevölkerung zwischen 1954–1968 bei französischen Städten mit über 50 000 Einwohnern, daß die großen Städte immer mehr die Rolle von Zwischenstationen und Durchgangszentren übernehmen, anstatt Orte dauerhafter oder wenigstens langfristiger Niederlassung zu sein. Er unterscheidet hinsichtlich der Zuwanderungsintensität zwischen „mobilen“ Städten und Städten mit „geringer Mobilität“. Die mobilen Städte mit einer jährlichen Mobilitätsrate von über 4,5% lassen sich je nach ihrem Retentionsvermögen gegenüber der wandernden Bevölkerung weiter untergliedern in reine Durchgangsstädte bis zu solchen, welche die Zuwanderer zu ständiger Ansässigkeit veranlassen (z. B. Belfort–Toulouse–Grenoble). Unter den Städten mit geringer Mobilität ist der Wanderungsgewinn entweder sehr niedrig oder sie weisen bereits einen negativen bzw. über längere Zeit ausgeglichenen Wanderungssaldo auf (z. B. Le Havre–Marseille–Lyon). Neben der quantitativen Erfassung der Wanderungsströme werden auch andere Fragen aufgeworfen, etwa nach der räumlichen Ausdeh-