

## NEUROPATHOLOGY IN THE BIBLE

J. C. E. KAUFMANN, M.B., CH.B. (CAPE TOWN)

Neuropathology Department, South African Institute for Medical Research, Johannesburg

(Continued from p. 789 of the *Journal* of 3 October 1964)

## PART III

## INSANITY

Possession by an evil spirit or demon is frequently mentioned in the New Testament as the cause of epilepsy and mental disorder while in the Old Testament there is hardly any reference to the subject. The threat in the Old Testament,

'The Lord shall smite thee with madness, and blindness, and astonishment of heart.' (*Deuteronomy*: 28, v. 28).

indicated that madness was rather a punishment for disobedience. An exception was the madness of King Saul, to be considered presently, of whom it was said 'An evil spirit from the Lord troubled him'. Evil spirits were not sent by the Lord in the New Testament. On the contrary the Lord ordered them to leave their hosts who then regained their sanity.

Matthew, Mark and Luke with minor differences relate the frightening story of a madman (two madmen in Matthew), remarkable for the curious mass animal suicide that accompanied the exorcism and also because the patient after treatment is stated to be, perhaps for the first time, 'in his right mind'. The Marcan version is:

'So they came to the other side of the lake, into the country of the Gerasenes. As he stepped ashore, a man possessed by an unclean spirit came up to him from among the tombs where he had his dwelling. He could no longer be controlled; even chains were useless; he had often been fettered and chained up, but he had snapped his chains and broken the fetters. No one was strong enough to master him. And so, unceasingly, night and day, he would cry aloud among the tombs and on the hill sides and cut himself with stones. When he saw Jesus in the distance, he ran and flung himself down before him, shouting loudly, "What do you want with me, Jesus, son of the Most High God? In God's name do not torment me". [For Jesus was already saying to him, "Out unclean spirit, come out of this man!"] Jesus asked him, "What is your name?" "My name is Legion", he said, "there are so many of us". And he begged hard that Jesus would not send them out of the country. Now there happened to be a large herd of pigs feeding on the hill-side, and the spirits begged him, "Send us among the pigs and let us go into them." He gave them leave; and the unclean spirits came out and went into the pigs; and the herd, of about two thousand, rushed over the edge into the lake and were drowned. The men in charge of them took to their heels and carried the news to the town and country-side; and the people came out to see what had happened. They came to Jesus and saw the madman who had been possessed by the legion of devils sitting there clothed and in his right mind; and they were afraid. The spectators told them how the madman had been cured and what had happened to the pigs' (*Mark*: 5, v. 1-17, New English Bible).

*Luke*: 8, v. 29, New English Bible (NEB) states specifically that for a long time he had neither worn clothes nor lived in a house; and of the unclean spirit, 'Many a time it had seized him, and then for safety's sake, they would secure him with chains and fetters; but each time he broke loose, and with the devil in charge, made off to the solitary places'.

These descriptions are of attacks of violent, uncontrollable and ceaseless activity, such as might occur during the course of epileptic furor, catatonic schizophrenia, and manic-depressive psychosis. Noise, episodes and self-mutilation are common to all, the latter perhaps being most frequent in manic-depressive psychosis especially in the depressed phase. The picture of spirits talking might fit best with catatonia but does not exclude mania. The coherence of the madman, his ability to make contact with Jesus and his recovery are in favour of a manic state. Points against epileptic furor are the absence of a history of fits, and the fact that the exorcism would perhaps have ushered in a fit if he had been epileptic. The weight of evidence, therefore appears to be in favour of manic-depressive psychosis.

Exorcism was tried by others with less favourable results:

'But some strolling Jewish exorcists tried their hand at using the name of the Lord Jesus on those possessed by evil spirits; they would say, "I adjure you by Jesus whom Paul proclaims." There were seven sons of Sceva, a Jewish chief priest, who were using this method, when the evil spirit answered back and said, "Jesus I acknowledge, and I know about Paul, but who are you?" And the man with the evil spirit flew at them, overpowered them all, and handled them with such violence, that they ran out of the house stripped and battered. This became known to

everybody in Ephesus, whether Jew or pagan; they were all awestruck, and the name of the Lord Jesus gained in honour' (*Acts*: 19, v. 13-17, NEB).

We can be certain of the diagnosis in the following account. It is simulated insanity. Fleeing before Saul, David took refuge with the hereditary enemies of his country, the Philistines, but at the court of Achish, the King of Gath, the king's servants recognized him as none other than the famous David who had slain 'his ten thousands' (of Philistines). Fearing for his life David pretended to be mad.

'And he changed his behaviour before them, and feigned himself mad in their hands, and scrambled on the doors of the gate, and let his spittle fall down upon his beard. Then said Achish unto his servants, "Lo, ye see the man is mad: wherefore then have ye brought him to me? Have I need of mad men, that ye have brought this fellow to play the mad man in my presence? Shall this fellow come into my house?"' (*1 Samuel*: 21, v. 13-15).

According to the legend<sup>45</sup> when David sought refuge with Achish, Goliath's brothers who formed the heathen King's bodyguard demanded David's death. Achish tried to pacify David's enemies, saying that it was Goliath who started the trouble with his challenge to combat. They retorted that if that was his opinion, David should have Achish's throne because according to the rules of combat the victor has the control over the vanquished and his servants. This was a dangerous situation for David. In his distress he asked God to let him appear as a madman in the eyes of Achish and his court. His wish was granted. Because both his wife and daughter had lost their reason, the King asked 'Do I lack madmen that ye have brought this fellow to play the madman in my presence?' So David was saved. Then he composed the psalm beginning 'I will bless the Lord at all times' which includes even the time of lunacy. This is Psalm 34, although in the title it is stated that it is a Psalm of David when he changed his behaviour before Abimelech (instead of Achish). There is only an apparent contradiction, however, because the word Abimelech means 'father of the King' in Hebrew<sup>46</sup> and was very possibly the title of the King of Gath.

The madness of the great King Nebuchadnezzar who conquered all the surrounding nations, made Babylon the centre of the civilized world, and built the famous hanging gardens, also seems to have been a punishment for the sin of pride.

Nebuchadnezzar was much troubled by a dream he could not recall and slept badly. Daniel, a captive of royal birth at his court, succeeded in telling and interpreting the dream which the magicians, astrologers and sorcerers could not do. Consequently he was richly rewarded. Later Nebuchadnezzar was troubled and frightened by another dream. This time he remembered the dream and related it to the professionals but they failed to interpret it. He dreamt he saw an enormous and splendid tree growing up to heaven and giving protection and nourishment to all. Then an angel descended from heaven and ordered that it be felled, leaving only the stump and roots. The tree was then revealed as a human being and its heart was to be changed from that of a man to a beast's and 7 'times' would pass. After being dismayed for a moment Daniel pronounced the following interpretation: The tree was the King himself and for his pride he would be humiliated and driven from society to live with the beasts in the field, and eat grass like an ox until 7 'times' had passed. The stump and roots meant that his kingdom would remain for him. The forecast proved correct:

'At the end of twelve months he walked in the palace of the kingdom of Babylon. The king spake, and said, "Is not this great Babylon, that I have built for the house of the kingdom by the might of my power, and for the honour of my majesty?" While the word was in the King's mouth, there fell a voice from heaven, saying, "O King Nebuchadnezzar, to thee it is spoken; The Kingdom is departed from thee. And they shall drive thee from men, and thy dwelling shall be with the beasts of the field: they shall make thee eat grass as oxen, and seven times shall pass over

thee, until thou know that the most High ruleth in the kingdom of men, and giveth it to whomsoever he will. The same hour was the thing fulfilled upon Nebuchadnezzar: and he was driven from men, and did eat grass as oxen, and his body was wet with the dew of heaven, till his hairs were grown like eagles' feathers and his nails like birds' claws. And at the end of the days I Nebuchadnezzar lifted up mine eyes unto heaven, and mine understanding returned unto me. . . . At the same time my reason returned unto me; and for the glory of my kingdom, mine honour and brightness returned unto me; and my counsellors and my lords sought unto me; and I was established in my kingdom, and excellent majesty was added unto me. (Daniel: 4, v. 29-36).



Fig. 6. Nebuchadnezzar's madness. The king is shown in his unkempt state with long nails, beard and hair. From a panel by Jacob Pynas. (By courtesy of the Netherlands Institute for Art History, The Hague.)

Some scholars maintain that these events (Fig. 6) are improbable historically because Nebuchadnezzar would not have vacated his throne for 7 years without any record having survived. They have thus interpreted 'times' as years. But a damaged inscription relating to Nebuchadnezzar and bearing a list of royal duties left undone for 4 years has been found and is believed corroborative, e.g. by Short.<sup>48</sup> It has also been suggested that the story arose from the tradition that Nebuchadnezzar called down a curse upon Cyrus, the Persian who was revealed to him as the overthrower of his kingdom, wishing that he might be driven out among the beasts. But we are less concerned here with trying to establish the mental illness of Nebuchadnezzar as an historical fact than with the diagnosis of his illness from the Biblical passage.

The illness seems to have been an episode which lasted a certain time, perhaps 7 or 4 years, and was followed by recovery. These periods are too long for hysteria and an hysterical reaction would probably follow immediately upon a prophesy, not 12 months later. Paranoia, diagnosed by Short,<sup>49</sup> Shepherd,<sup>50</sup> and Preuss<sup>50</sup> is irreversible, yet Nebuchadnezzar recovered. Also there was no discrepancy between his high opinion of himself and his prodigious achievements. A demented state can be ruled out by the fact of recovery.

The episodic nature of the illness and recovery are compatible with a prolonged depressed state, as are the fears and troubled mental state before the interpretation of the second dream. Other congruous features are the nihilistic ideas expressed by the voice (auditory hallucination), the picture of bovine submissiveness, and the presence of insight as shown by his statement after recovery. A single, prolonged depressed episode may be the only manifestation of manic-depressive psychosis. It could be argued that Nebuchadnezzar's 'rage and fury' vented earlier on Shadrach, Meshach and Abed-nego (Daniel: 3, v. 13) suggests a manic phase; however, this need not have been abnormal behaviour on the part of a despot on learning of disrespectful behaviour by three captives. Similarly, although Nebuchadnezzar's achievements might be regarded as the results of a manic drive, they could equally well have been the rewards of well-directed ambition, energy and power. Shepherd<sup>50</sup> and Preuss<sup>50</sup> also consider manic-depressive psychosis as an alternative diagnosis. A prolonged depressed episode is more characteristic of involuntional melancholia than

of manic depressive psychosis. The former begins usually between 55 and 60 years of age. Nebuchadnezzar reigned from 604 BC to August-September in 562 BC when he died—a period of 42 years. Assuming he had ascended to the throne at the age of 20, he would have been old enough to have a depression lasting 7 years and recover in 562 BC and it is known that he was an old man when he died.<sup>51</sup> Waterson reaches the same conclusion.<sup>52</sup> His bestial appearance means that he was unkempt in the extreme: To writers of old, Nebuchadnezzar's madness was lycanthropy—a form of madness in which the patient imagined himself to be a beast. What the modern diagnosis of lycanthropy would be is uncertain; it was perhaps a concept forced upon patients during the Middle Ages, similar to the witch concept.

Haunted by fear and consumed by jealousy of David, King Saul endured episodes of possession by an evil spirit and was given to outbursts of homicidal violence. The narrative occupies nearly all of the first book of Samuel and extends into the second. It is slightly more than 23 chapters and is too long for quotation in full. The main events follow:

Having been under the leadership of Judges and the Prophet Samuel, the people of Israel requested a King to rule them like other nations. Samuel then chose Saul.

... a choice young man and a goodly: and there was not among the people of Israel a goodlier person than he: from his shoulders and upward he was higher than any of the people' (1 Samuel: 9, v. 2).

Saul was humble and shy and hid himself before his presentation to the people. When he was revealed to them they uttered a shout to be echoed throughout history, 'God save the King' (1 Samuel: 10, v. 24). Saul's task was to deliver Israel from the Philistines and in the beginning all went well. Then he incurred the displeasure of Samuel twice; on the second occasion for disobeying a divine command to exterminate the Amalakites: he spared Agag their King and saved the best of the plunder. Samuel announced the divine sentence of rejection from the monarchy and killed Agag himself.

Saul now showed signs of illness, 'But the spirit of the Lord departed from Saul, and an evil spirit from the Lord troubled him' (1 Samuel: 16, v. 14). His servants were concerned and suggested music therapy. Saul assented and in this way the shepherd David was introduced to Saul . . . 'that is cunning in playing, and a mighty valiant man, and a man of war, and prudent in matters and a comely person' (1 Samuel: 16, v. 18).

'And it came to pass, when the evil spirit from God was upon Saul, that David took an harp, and played with his hand: so Saul was refreshed, and was well, and the evil Spirit departed from him' (1 Samuel: 16, v. 23).

The Philistines menaced Saul's kingdom and their champion Goliath defied the army of Israel and issued a general challenge to any comer. The arrogant words were widely heard and frightened Saul. David came forward and with Saul's blessing went out and killed Goliath in the manner recounted previously. Encouraged by his deed the Israelites routed the Philistines and on their return Saul and his men were given a hero's reception by the women who made the significant observation that 'Saul hath slain his thousands, and David his ten thousands' (1 Samuel: 18, v. 7). These words enraged Saul.

'They have ascribed unto David ten thousands, and to me they have ascribed but thousands: and what can he have more but the Kingdom? And Saul eyed David from that day and forward' (1 Samuel: 18, v. 8-9).

And so the seeds of jealousy were sown. The next day Saul was once more possessed by the evil spirit (the RSV says 'raved') and held a javelin in his hand while David played (Fig. 7). Suddenly he hurled the javelin at David who avoided him twice. Saul now became afraid of David and sent him away in command of a detachment of troops. David's prudent behaviour only aggravated Saul's fear. Hoping that the Philistines would kill him, Saul offered David his elder daughter, Merab, in marriage in return for fighting the Lord's battles. When David should have received Merab she was given to another. With the same thought in mind Saul next offered David his daughter, Michal, in marriage on condition that he obtain 100 Philistine foreskins: David brought 200.

'And Saul saw and knew that the Lord was with David . . . and Saul was yet the more afraid of David; and Saul became David's enemy continually' (1 Samuel: 18, v. 28-29).

Saul's hostility was openly displayed and he vainly persuaded his servants and even his son Jonathan to kill David.

Then Saul made an attempt on David's life in his own house but Michal had let him down through a window. David was forced to flee to Samuel at Ramah and when three groups of

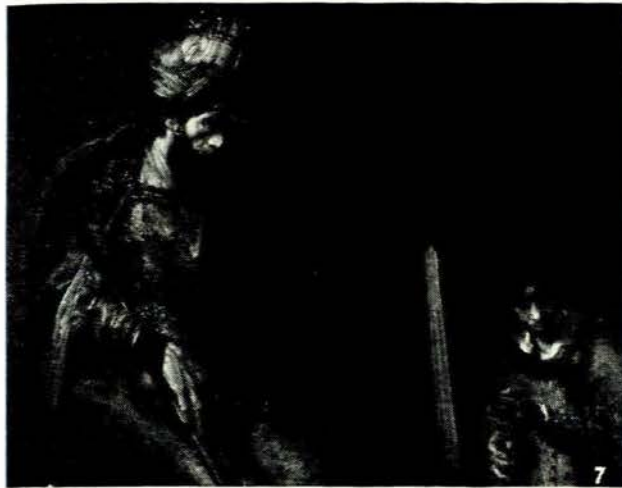


Fig. 7. Rembrandt's 'David playing the harp before Saul'. King Saul, possessed by the evil spirit, conceals his face behind the curtain because he does not wish David to see his expression which would reveal his homicidal intention. His javelin is ready in the crook of his arm. By courtesy of the Mauritshuis, The Hague. (Photo: A. Dingjan.)

messengers failed to take David through coming under the influence of Samuel, Saul went there himself.

'And he stripped off his clothes, also, and prophesied before Samuel in like manner and lay down naked all that day and all that night . . .' (*I Samuel*: 19, v. 24).

David by now was well aware of his danger for he said, 'There is but a step between me and death' (*I Samuel*: 20, v. 3). Jonathan interceded for him and also had a javelin hurled at him by his father for his trouble. David fled to Nob, obtaining food under false pretences from some priests there. Saul learnt of the visit from a head-servant who happened to be present and accused the priests of conspiring against him,

'That all of you have conspired against me, and there is none that sheweth me that my son hath made a league with the son of Jesse, and there is none of you that is sorry for me, or sheweth unto me that my son hath stirred up my servant against me, to lie in wait, as at this day?' (*I Samuel*: 22, v. 8).

He then had the priests executed and exterminated almost everything in Nob.

In the meanwhile David had taken refuge with Achish the King of Gath and according to one version had to feign madness in order to save his life as recounted previously. From there David took refuge in the cave Adullam with his men. He was now an outlaw and had given up hope of reconciliation with the King, who hunted him determinedly. Next David took refuge in the wilderness of Ziph where he was visited by Jonathan.

'And he said unto him, Fear not: for the hand of Saul, my father shall not find thee; and thou shalt be king over Israel, and I shall be next unto thee; and that also Saul my father knoweth' (*I Samuel*: 23, v. 17).

The chase was interrupted by another Philistine invasion. Saul returned with 3,000 men, traced David to the district of Engedi, and by chance entered the cave in which he was hiding. David rejected the suggestion of his men that he should seize the opportunity to kill Saul and instead cut off a piece of his robe while he was asleep. After Saul's departure David called out to him and recounted what had happened to prove he was innocent of any design on Saul's life. This chivalrous action greatly affected Saul who observed that David was a better man than he. The two then parted.

[In what some scholars take to be a parallel version and others a separate occasion, David steals into Saul's camp at night and removes his javelin and a cruse of water from his bolster. A similar dialogue followed and Saul promised to refrain from trying to harm David and said 'I have played the

fool, and have erred exceedingly' (*I Samuel*: 26, v. 21).]

The Philistines were now prepared for yet another invasion of Israel and Saul mobilized his men, but when he saw the host of the Philistines he was again frightened. Having been unable to obtain a divine oracle to foretell the outcome of the battle he was driven in despair to disguise himself and consult a medium, an old woman at Endor. He persuaded her to bring up Samuel who was dead. She did so and in reply to questions Samuel predicted the defeat of Israel on the next day and the death of Saul and his sons. Saul collapsed on hearing the prophecy, apparently from fear and hunger, and was revived with food. And so, on the following day it happened that, according to one version, Saul was wounded by arrows and requested his armour bearer to thrust him through so that he should not be captured by the Philistines. He refused, so Saul took a sword and fell upon it: thus ended his reign.

In this story Saul is revealed as a tall, shy young man who is possessed by an evil spirit on more than 3 occasions and is temporarily cured by music; who is intensely jealous of a rival whom he knows to be his superior morally and who will be his successor. He knows of his rejection, that his line will not continue and that his rival has gained his son's allegiance. He is subject to homicidal outbursts, even against his own son, and he also endeavours to persuade others to kill his enemies. Yet he is moved by David's magnanimity. He collapses twice, and eventually commits suicide.

Preuss<sup>50</sup> stresses the considerable misfortunes that befell Saul, implying that he suffered from a reactive depression and his fears were justified by the facts and were certainly not delusions. But he regards the underlying abnormality (the evil spirit) as an epileptic equivalent. Short<sup>51</sup> states that King Saul would now be diagnosed as a typical example of manic-depressive psychosis. Shepherd<sup>18</sup> also diagnoses manic-depressive psychosis and Zilboorg and Henry,<sup>54</sup> recurrent depressions, both homicidal and suicidal.

In addition to depression and epilepsy, catatonic schizophrenia must be considered in Saul's case: Throughout the long history of Saul's reign only 2 events superficially resemble convulsions and are easily shown not to be. The first, at Ramah, follows a period of prophesying which resembles religious ecstasy and hysterical abandon, associated with religious contagion, because all the messengers were affected. The fact that Saul was susceptible is a point in favour of manic-depressive psychosis. The second event is the collapse at Endor and the text plainly states that fear and hunger (he was revived by food) were the cause. Saul's homicidal attacks were directed at certain persons against whom he bore a grudge, while the anger and impulses of epilepsy tend to come from the blue and to be directed indiscriminately against bystanders.

Saul's physique and shyness are more typical of schizophrenia but do not exclude manic-depressive psychosis. Saul's age also has to be considered. Schizophrenia begins between 15 and 40 years and manic-depressive psychosis usually in the late twenties. Because Jonathan his son was on the scene, and old enough to take part in fighting, one may suppose that Saul was mature at about the time of onset of his illness and therefore that schizophrenia is a less likely diagnosis. The type of homicidal violence Saul gave vent to is unlike that of catatonic schizophrenia: it was impulsive and purposeful, not automatic and under the direction of a hallucination. Music could be expected to have an effect on depression but not on catatonic stupor; music consistently refreshed and cured Saul.

The descriptions of episodes of possession by an evil spirit which troubled him, his insight into the first of these, and their cure, strongly suggest recurrent depressions of an endogenous type. The events preceding the first and last episodes mentioned in the narrative could be the reactive components which precipitated these particular attacks. The use of the word 'raved' in the RSV in connection with one episode could mean a manic phase. Some of the other points in favour of manic-depressive psychosis have already been mentioned. Saul's fears, his suspicions and also his emotional reaction to David's chivalrous behaviour on one occasion would be compatible with an anxious depressed personality. The persistent pursuit of David can be interpreted as the expected behaviour of a monarch faced by a rival of whom he has reason to be jealous.

Finally, a curiosity: Jeremiah prophesied against a certain town of Moab (*Jeremiah*: 48, v. 2) which is otherwise unknown apart from this incident. The English translation of the name of the town is Madmen.

The Director of the South African Institute for Medical Research has given permission to publish. Grateful acknowledgement is made to the following: The late Dr. J. Oberzimmer for the translation from the German; Prof. L. A. Hurst for help with the analysis of the illnesses of Saul, Nebuchadnezzar and the Gerasene madman; Miss L. du Bruyn of the Netherlands Institute for Art History for finding the illustration by Jacob Pynas; Drs. A. G. Oettle, H. B. W. Greig and S. Levin for criticism of the manuscript; my wife for checking scores of Biblical passages; Dr. N. S. F. Proctor for reading the manuscript; Messrs. Oxford University Press for permission to use extracts from the New English Bible; and Dr. Bernard Schlesinger and the Department of Medical Illustration, The Hospital for Sick Children, London, for the photograph of Lord Leighton's painting.

## REFERENCES

- Ginsberg, L. (1956): *Legends of the Bible*, p. 537. New York: Simon & Schuster.
- Carter, H. and Mace, A. C. (1923): *The Tomb of Tut-ankh-amen*, vol. 3, p. 122. London: Cassell.
- Erith, L. E. P. in Gore, C., Goudge, H. L. and Guillaume, A. eds. (1951): *A New Commentary on Holy Scripture including the Apocrypha*, part I, p. 204. London: S.P.C.K.
- Ginsberg, L. (1956): *Op. cit.*, p. 521.
- Blair, D. M. (1959): *A Doctor Looks at the Bible*, p. 19. London: Inter-Varsity Fellowship.
- Bicknell, E. J. (1951): *Op. cit.*, part III, p. 368.
- Grollenberg, L. H. (1959): *Shorter Atlas of the Bible*, map facing p. 169. Edinburgh: Thomas Nelson & Sons.
- Conybeare, W. J. and Howson, J. S. (1898): *The Life and Epistles of St. Paul*, p. 546. London: Longmans, Green.
- Ladell, W. S. S. (1957): *Trans. Roy. Soc. Trop. Med. Hyg.*, **51**, 189.
- Friedenwald, H. (1944): *The Jews and Medicine*, vol. I, p. 104. Baltimore: John Hopkins Press.
- Smith, C. R. (1950): *The Physician examines The Bible*, p. 118. New York: Philosophical Library.
- Cooke, G. A. (1951): *Op. cit.*, part I, p. 583.
- Osler, W. (1895): *The Principles and Practice of Medicine*, 2nd ed., p. 892. Edinburgh: Young J. Pentland.
- Blair, D. M. (1959): *Op. cit.*, p. 10.
- Smith, C. R. (1950): *Op. cit.*, p. 49.
- Short, A. R. (1953): *The Bible and Modern Medicine*, p. 62. London: The Paternoster Press.
- Brim, C. J. (1943): *J. Nerv. Ment. Dis.*, **97**, 656.
- Shepherd, P. M. (1955): *Glasg. Med. J.*, n.s. **36**, 348.
- Levin, S. (1957): *S. Afr. Med. J.*, **31**, 16.
- Short, A. R. (1953): *Op. cit.*, p. 61.
- Smith, C. R. (1950): *Op. cit.*, p. 27.
- Wassermann, H. P. and Brink, A. J. (1959): *S. Afr. Med. J.*, **33**, 189.
- Sigerist, H. E. (1951): *A History of Medicine*, vol. I, p. 381. London: Oxford University Press.
- World Health Organization (1962): *World Health, special issue Malaria*, p. 6.
- Guthrie, D. (1945): *A History of Medicine*, p. 32. Edinburgh: Thomas Nelson.
- Herodotus Quoted by Sigerist, H. E. (1951): *Op. cit.*, vol. 1, p. 253.
- Rufer, M. A. (1913): *J. Path. Bact.*, **18**, 149.
- Short, A. R. (1953): *Op. cit.*, p. 62.
- Levin, S. (1962): *Med. Proc.*, **8**, 311.
- Thomson, W. E. F. (1960): *E. Afr. Med. J.*, **37**, 724.
- Oswald, F. (1915): *Op. cit.*, p. 80.
- Laveran, A. and Mesnil, F. (1907): *Trypanosomes and Trypanosomiasis*, p. 115. London: Ballière, Tindall & Cox.
- Smith, C. R. (1950): *Op. cit.*, p. 56.
- Ginsberg, L. (1956): *Op. cit.*, p. 336.
- Grier, J. (1937): *A History of Pharmacy*, p. 77. London: Pharmaceutical Press.
- Preuss, J. (1923): *Biblich-talmudische Medizin*, p. 342. Berlin: S. Karger.
- Bicknell, E. J. (1951): *Op. cit.*, part III, p. 346.
- Preuss, J. (1923): *Op. cit.*, p. 354.
- Turner, C. H. (1951): *Op. cit.*, part III, p. 83.
- Preuss, J. (1923): *Op. cit.*, p. 351.
- Short, A. R. (1953): *Op. cit.*, p. 63.
- Stenning, J. F. (1951): *Op. cit.*, part I, p. 232.
- Preuss, J. (1923): *Op. cit.*, p. 353.
- Ginsberg, L. (1956): *Op. cit.*, p. 544.
- Idem* (1956): *Ibid.*, p. 538.
- Young, R.: *Analytical Concordance to The Bible*, 7th ed., p. 5. Edinburgh: George Adam Young.
- Binns, L. E. (1951): *Op. cit.*, part I, p. 549.
- Short, A. R. (1949): *Modern Discovery and The Bible*, 2nd ed., p. 192. London: Inter-Varsity Fellowship.
- Idem* (1953): *Op. cit.*, p. 65.
- Preuss, J. (1923): *Op. cit.*, p. 356.
- Thomson, R. C. (1925): *The Cambridge Ancient History*, vol. III, p. 215. London: Cambridge University Press.
- Waterson, A. P. (1962): *The New Bible Dictionary*, p. 313. London: The Inter-Varsity Fellowship.
- Short, A. R. (1953): *Op. cit.*, p. 64.
- Zilboorg, G. and Henry, G. W. (1941): *A History of Medical Psychology*, p. 29. New York: W. W. Norton.