

on him a long-winged eagle, which ate his immortal liver, but it grew as much in all at night as the long-winged bird would eat all day<sup>4</sup>.

### Immortal liver

The liver is noted as immortal, not only because of its prodigious recuperative powers, but because for the ancient Greeks it was the seat of the soul and intelligence<sup>2</sup> (p 314). The indestructibility of the soul dovetails with the ever regenerative capacity of the liver. The equivalence of the liver and the soul enhances the suffering of Prometheus which is primarily psychic. The gnawing of the liver produces minor physical pain by comparison. The tension between the two kinds of pain is wonderfully portrayed in Rubens' painting where the writhing of Prometheus suggests a mental torment disproportionate to the delicate act of the eagle pecking at a rather inconspicuous liver. The liver also had to regain itself on a symbolic level to fulfil the temporal requirement of cruelty, that is, the repetitiveness.

The myth of Prometheus indicates that the ancient Greeks knew in some measure the liver's potential for repair. The assertion that the organ grew at night as much as the eagle ate all day hints at an understanding of the quantitative aspect and the rate of hepatic regeneration. In Aeschylus the eagle came every other day, allowing a full day for the recovery of the liver<sup>2</sup> (p 315). In either case, overnight or alternate day repair, the ancient Greeks could have gained their knowledge of hepatic growth through the practice of liver divination, and by observation of the healing of superficial wounds and draining abscesses of the human liver.

A second hypothesis has been offered to account for the significance of the liver in the Prometheus legend<sup>4</sup>. This states the punishment is a kind of castration as the liver could be linked with passion and lust. Several objections run counter to this conjecture. First, the erotic association of the liver does not appear in the literature until the time of Aeschylus<sup>2</sup> (p 313). Secondly, castration does not

fit the crime of Prometheus whose misdeed is not particularly oedipal or lustful. The emasculation theory, however, is more appropriate for the two other instances in Greek literature in which eating of the liver is mentioned. In the first, Hecuba wishes that she could eat the liver of Achilles, in retaliation for his treatment of her son, Hector (*Iliad* 24, 212 f). In the second, the liver of Tityus is pecked at by two vultures. This story, popular during the Renaissance period, tells of Tityus punished in this manner for assaulting Leto, the mother of Apollo and Artemis<sup>1</sup>. In both cases emasculation would be a fitting retribution.

### Conclusion

In summary, the immortal liver referred to the soul of Prometheus. It is the natural target for the cruelty of Zeus. The reparative capacity of the organ allowed not only the temporal aspect of the punishment, the recurrent eating by the eagle, but for the psychic trauma inflicted on Prometheus. One may argue that the ancient Greeks knew nothing of hepatic regeneration, that the repair of the organ was dictated by symbolic and literary reasons rather than based on factual knowledge. We believe otherwise. The close match between the amount of tissue removed by the eagle, the amount and appropriate rate of recovery suggests at the very least an inkling of the phenomenon of hepatic regrowth.

### References

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## Letter to the Editor

### The Plague of Athens

This is a contribution to the elucidation of the 'elusive chimera' reported by Professors McSherry and Kilpatrick (November 1992 *JRSM*, p 713) and mentioned in Dr Theodorides's letter to the Editor (April 1993 *JRSM*, p 244) in connection with the plague of Athens.

In his book *The History of the Peloponnesian War*<sup>1</sup> Thucydides describes almost perfectly the disease which attacked the population of Athens in the form of an epidemic in the second year of the Peloponnesian war (431-404 BC)<sup>2</sup>. From his thorough study of the clinical and epidemiological data he concluded that the onset of the disease was sudden, the rash consisted of small pustules and ulcers beginning on the head and spreading to the rest of the body. The patients were distressed and suffering from thirst and burning sensation of the eyes, throat and chest and could not even bear contact with bed sheets or the thinnest of clothing. The bad odour given off from the patients was due to the decay of the content of the pustules. The mortality was high but when the disease struck a patient a second time

it was mild and not fatal. Therefore, it is clear that Thucydides was the first to observe immunity after infection. The disease was transmitted from person to person by droplets and not by insect bites. The speedy spread of the epidemic made the population suspect that the Peloponnesians had poisoned the wells. The only signs not reported by Thucydides in his astute description were scars. However, it is self-evident that scars are always left after the healing of any ulcer.

In brief, these points support the contention that the plague of Athens was 'smallpox' and not Anthrax, Exanthematic Typhus or any other communicable disease.

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- 2 Gerassimos Alivizatos. The early smallpox epidemics in Europe and the plague of Athens after Thucydides. In: *Archives of Hygiene (in modern Greek)*, Vol 12. Athens: Greek Ministry of Health, 1949:1-88