

years). The occurrence of a bladder carcinoma in coexistence with a vesical schistosomiasis in a fellah 14 years old was reported by Kartulis. The occupational Bilharzia tumor of the urinary bladder conforms in this respect to the behaviour displayed by occupational cancers in general, that is, the duration of exposure determines the time of manifestation without regard to the absolute age of the person afflicted.

VI. SYMPTOMATOLOGY

The early symptoms, following several days after the invasion of the worms, are characterized by fever, malaise, general muscular pain, and a more or less generalized urticarial rash. There exist a leucocytosis and marked eosinophilia (up to 50 per cent and more) of the blood. These acute toxic symptoms are caused by substances eliminated by the juvenile and adult worms, as similar manifestations can be experimentally reproduced in animals artificially infected with large amounts of these trematodes (Hutchison). Several months later urinary disturbances make their first appearance, consisting in hematuria at the end of micturition. This symptom may disappear spontaneously and the infected person may remain symptom-free over a period of several years, until such time when the progressive development of chronic vesical lesions results in a reappearance of urinary manifestations, such as hematuria, dull pain in the bladder region and groins, pollakiuria, nocturia, burning sensation at the time of and after urination, etc. With the gradually increasing pathologic changes of the bladder wall, difficulties in urination ensue, as the bladder becomes of limited capacity and unable to contract. As the result of obstructive and destructive processes in the urethra, elephantiasis of the penis and urethral fistulas into the scrotum and perineum may develop. The infectious, inflammatory lesions may spread ascendingly into the wall of the ureter and kidney and thus cause an ureteritis and pyelitis. Secondary bacterial infections of the bladder are frequent during this stage. The urine contains a leucocytic sediment with a predominance of the eosinophilic cells (up to 80 per cent) and ova of *S. haematobium*. These are mainly present in the last portion of urine. The urine has usually an acid reaction, unless a secondary bacterial infection exists, which may cause an alkaline urine. The prostate gland is more or less considerably enlarged.

In addition to these symptoms from the urogenous organs, there exist, usually, more or less serious parasitic complications in other organs. A hypertrophic and less often an atrophic cirrhosis of the liver exists during a more advanced stage in many cases, especially in young adults (Kartulis; Symmers), as a reaction to the presence of ova in the portal system. Multiple pseudo-tubercular foci are not infrequently observed in the lungs caused in response to the toxic substances released by degenerating parasitic ova located in the vascular lumina, resulting in vascular obliteration with clinical symptoms similar to those observed in Ayerza's disease (Shaw and Ghareeb;