

complicated, moreover, by the fact that recurrences or new growths may appear many years (15 to 20) after the removal and apparent cure of the first neoplasm. The high incidence of primary recurrences in the bladder of these workers may be gaged from an observation by Washburn, who reported that within five years eleven out of a total of twenty-two cases with papillomas developed new growths in the bladder. The curative results reported by various authors differ, therefore, considerably. It must be pointed out in this connection that even a benign papilloma may prove fatal in the long run because of its tendency to recur and, in some instances, to bleed profusely (Engel, 1937).

In the older statistics, the mortality among diseased workers is shown to have been high, especially regarding cancers caused by aniline, which Leuenberger considered as having an unfavorable prognosis. The curative prospects are low also in cases with multiple, sessile or highly anaplastic tumors (Washburn). Oppenheimer recorded the mortality as 73.5 per cent; Schwerin, as 66 per cent. Of Nassauer's 32 patients, 27 are dead; of Büttner's 10 patients, 5 have died; of Leuenberger's 18 patients, 11 have succumbed. But the figures of the two last-mentioned authors are not final, as some of the patients have been observed only a short time, and the ultimate fate of others is unknown. Mueller (1936) stated that 7 of his 36 cancerous patients were still living. The average duration of disease in his fatal cases was two years and a half. Death often was due to an ascending renal infection and urinary sepsis. In all of his cases the tumors proved to be very malignant and ran a rapid course. Mueller (1931) emphasized the fact that the clinical extent of the tumor in the bladder offers no information about the extravesical distribution of the tumor.

A much more favorable prognosis has been given recently to aniline tumors by Simon (1932). Bladder tumors with their genesis in exposure to aromatic amines run, according to him, a slower course and respond better to the various therapeutic procedures than bladder tumors of unknown origin. He reported three year arrests in 54 per cent and five year arrests in 48 per cent of his 81 cases of aniline carcinoma, whereas there were five year arrests in only 10.5 per cent of his cases of bladder tumors of unknown origin. Similarly favorable results were reported by Washburn. Among 86 patients there were 9 deaths, 7 of them directly or indirectly attributable to the neoplasms. Fifty-two (62 per cent) of the patients were tumor-free for varying lengths of time. Washburn ascribed these good results in part to the fact that the tumors were discovered in a rather early stage through the routine practice of cystoscopy. It appears doubtful, however, whether these good results will be maintained permanently, as the workers of this group have returned to the hazardous operation and their bladders are exposed again to the action of the carcinogenic agent. This may activate any latent preneoplastic mucosal lesion preexisting from the former exposure. Such a course must be expected, ac-