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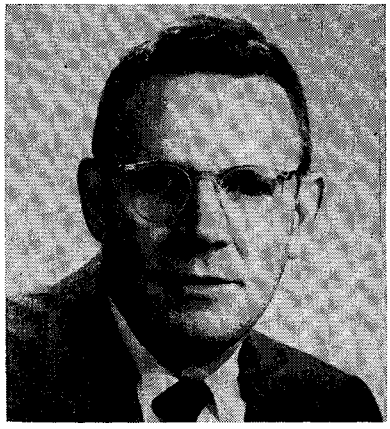

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INTRODUCTION

No matter what their belief concerning this subject, both attorneys and doctors agree that it presents complicated and highly controversial questions. It is my hope that this article will demonstrate that there are two schools of thought within both professions, and that even though their views are divergent they are usually based upon an honest difference of opinion.

There can be no question that the reasons advanced against the theory that a single trauma can cause or aggravate tumor are impressive. In the two recent world wars, there were millions of men who were subjected to various types of trauma, but so far there is little evidence of any increase of cancer developing from the scars of the millions who were so injured. It has also been pointed out that the United States is an athletic country; that among the many athletes who participate in all types of sports there are relatively few cases of cancer found. Stewart[1] calls attention to the fact that surgeons are daily performing all types of major operations, including chiseling of bone and the insertion of such objects as pins and screws therein, and that the surgeons perform these operations without fear that the trauma involved will result in cancer. Stewart does not comment upon the reasoning of the medical profession which apparently insists that when malignant tumors are removed an area encompassing the entire tumor must be removed, rather than cutting into the tumor itself. Might this be an indication that those surgeons who are so emphatic in their statements that trauma cannot aggravate or metastasize[2] a tumor,

1 Stewart, *Occupational and Post-Traumatic Cancer*, 23 Bull. N.Y. Acad. Med. 145 (1947).

2 Metastasis: "The transfer of disease from one organ or part to another not directly connected with it. It may be due . . . to transfer of cells, as in malignant tumors." Am. Illus. Med. Dict. (21st ed. 1948).

are not yet prepared to take such a risk?[3]

MEDICAL OPINIONS

The opinions of scholars and experts range from the dogmatic to the uncertain. A few examples of positive statements are:

> "A single injury does not cause any form of cancer."[4]
>
> "I would refuse to entertain even the suspicion that mammary carcinoma is caused by trauma."[5]
>
> "A single trauma to normal tissues is incapable of producing a malignant tumor; also there is no definite experimental evidence that a single trauma either aggravates the tumor already present, determines the time or extent of its metastatic spread, or fixes the site at which its metastases shall localize."[6]
>
> "Present data confirm the view, long since adopted by pathologists, that a single trauma to normal tissue is incapable of producing a malignant tumor."[7]
>
> "The pathological anatomists who have interested themselves in this subject are in absolute agreement that a single trauma is incapable of causing a malignant neoplasm."[8]

A plaintiff's attorney attempting to prove a causal relationship between trauma and cancer would, at first blush, throw up his hands in despair, summarily dismiss his client and vow never again to entertain the notion of interviewing a client who complains that trauma caused or aggravated a malignant tumor. Upon closer reading of the authorities, however, an infinitestimal ray of light streaks through to remove the hopelessness which has previously engulfed him. The attorney after careful search finds those opinions wherein certain doctors frankly declare that there is "some uncertainty" as to the relationship of trauma to cancer.

> "Trauma, as far as we know, does not cause bone tumor."[9]
>
> "After many years of experience in the field of bone tumors, the author must confess to an uncertainty of opinion and to a feeling that the final answer has not as yet been provided. He does not hold that a single injury cannot ever be a factor of etiologic significance."[10]

Dr. Gray[11] states that compensation boards and juries hesitate to make a finding that tumors are found to be related to accidents

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3 For such an indication, see the discussion of Dr. Grantley W. Taylor of Boston, Mass., before the NAACA Convention held in Boston in 1954 wherein he stated: "I tried to anticipate, when I said earlier, that we assume in all of our surgical conduct, in approach to cancer, that we may aggravate, we may disseminate it by improper surgical manipulation. We do so conduct ourselves. There is some ground for thinking that it is an entirely justifiable fear that we may disseminate the disease by these uncouth manipulations."

4 McBride, Disability Evaluation 653 (5th ed. 1953).

5 Stewart, *Occupational and Post-Traumatic Cancer*, 23 Bull. N.Y. Acad. Med. 145-46 (1957).

6 Brahdy & Kahn, Trauma and Disease 507 (1937), cited in Emerson & Reed, The Relation Between Injury and Disease 470-71 (1938).

7 Ewing, *Modern Attitude Toward Traumatic Cancer*, 19 Archives of Pathology 690 (1935).

8 Brahdy & Kahn, op. *cit. supra* note 6, at 440.

9 Ackerman, Surgical Pathology 670 (1953).

10 Coley, *Trauma in Malignant Tumors of Bone*, 73 Am. J. Surg. 300 (1947).

11 1 Gray, Attorneys' Textbook of Medicine 881 (3d ed. 1950).

since the medical profession as a whole does not feel that injuries play a part "except perhaps in very rare instances." He goes further and states, "Chronic irritation, apparently does play some part," and again sets out examples such as a tumor on men's lips, generally thought to be caused by pipe smoking or irritation from a certain tooth; cancer at the mouth of the uterus in women who have borne children, probably caused by irritation over a period of years; tumor of the stomach, leading to the conclusion that the tumor was frequently preceded by years of irritation due to a gastric ulcer; and cancer of the breast in women who have nursed children and who have a history of cracked nipples during the period of nursing.

Willis[12] states that injuries have often been regarded as the cause of sarcoma[13] of bones but the evidence is inconclusive. He concludes, however, that a thorough investigation makes it clear that the trauma either plays no part at all, or only a very infrequent one, in the causation of bone tumor.

After further research, the plaintiff's attorney is somewhat encouraged to find statements which strongly indicate that in some instances it is logical to conclude that trauma does cause or aggravate tumor. "Certain types of cancer seem to be caused by irritation such as has been observed in those working with coal tar products, dyes and radium."[14]

"To assert that an accident of exceedingly minor degree should charge the entire condition to the fracturing force is not logically true. . . . It is only logical to charge accident if the force is of significant magnitude."[15]

"Assuming that trauma may cause sarcoma and the author believes that such cannot categorically be denied, one is nevertheless at a loss to state how severe or minimal an injury must be. . . . There is some difference of opinion among surgeons as to the effect of trauma inciting metastases, which is illustrated in opinions referrable to open biopsy."[16]

"Bone tumor following trauma is not impossible according to recent medical authority."[17]

COURT DECISIONS

In view of the above divergence in medical opinion, it is not surprising to find that in quoting from and relying upon various medical experts the courts have used language which I am sure is horrifying to the cancer expert. A typical example reads as follows: "The accident or strain either caused the cancer, or excited or accelerated it, and thus brought on his death."[18]

The courts find it more palatable to allow recovery upon the

12 Willis, Pathology of Tumors 194, 678 (1948).
13 Sarcoma: "A type of tumor; often highly malignant." Am. Illus. Med. Dict. (21st ed. 1948).
14 McBride, op. cit. supra note 4, at 653.
15 1 Gray, Attorneys' Textbook of Medicine 891 (3d ed. 1950).
16 Address by Paul E. McMasters, M.D., Tenth NACCA Convention, Los Angeles, 1956.
17 Ellenbogen, J. of Med. Soc. of N.J., June 2, 1954, p. 33 (quoting Leedy & Leclerq).
18 Boyd v. Young, 193 Tenn. 272, 246 S.W.2d 10, 11 (1951). (Both parties presented medical testimony in this case. For an excellent analysis see 10 NACCA L.J. 60.) See Branson v. Firemen's Retirement Fund, 79 Idaho 167, 312 P.2d 1037 (1957); Averbach, *Causation: A Medico-Legal Battlefield*, 6 Clev.-Mar. L. Rev. 209 (1957).

theory that trauma "activated,"[19] "accelerated,"[20] or "caused metastasism."[21]

In one case a wart-like lesion was injured by a worker while working in a shipyard. The claimant suffered amputation of the leg and an orthopedist testified: "Trauma does play a part in activating a preexisting benign lesion. . . ."[22]

Cancer of the face occurred following a blow and the doctor testified that the blow and failure of the wound to heal "was the exciting cause of the cancer."[23] Judgment for plaintiff was affirmed on appeal.

Where female workmen's compensation plaintiff had an undiagnosed injury of the left breast requiring mastectomy some two weeks after trauma to the exact spot it was held a prima facie case for recovery without medical testimony. "If the reasonable probabilities flowing from the undisputed evidence disclose a progressive course of events beginning with an external accident in which each succeeding happening, including the injury, appears traceable to the one that preceded it, medical evidence is not essential for an injured employee to make out a prima facie case."[24]

However, a somewhat similar New Jersey case[25] was decided to the contrary although partially supported by medical testimony. The court relied heavily on the fact that the plaintiff was in good health prior to receiving the blow.

A physician testified that accidental injury "could have" aggravated a cancer "but I can't testify that it did." Yet the court in reaching its decision stated that the sequence of events added to this testimony tipped the scale in favor of upholding the award upon appeal.[26]

On the other side, attorneys for defendant should read carefully a series of New York Appellate opinions, in which these courts have examined with a critical eye plaintiff's verdicts in which cancer was allegedly caused or aggravated by trauma.[27]

LEGAL CAUSE

We, as lawyers, have long since learned that "certainty" of causal connection has never been required. Doctors, too, may have to accept this fact. Certainly, the majority are already aware that "Medical science has not developed to the extent where it can

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19 Heppner v. Atchison, T. & S.F.R.R., 297 S.W.2d 497 (Mo. 1956).
20 Roth v. Board of Trustees, 49 N.J. Super. 309, 139 A.2d 761 (App. Div. 1958).
21 Lyons v. Swift & Co., 86 So. 2d 613 (La. Ct. App. 1956).
22 Charleston Shipyards, Inc. v. Lawson, 227 F.2d 110, 112 (4th Cir. 1955); cf. Hartford Acc. & Indemnity Co. v. Industrial Comm'n, 43 Ariz. 50, 29 P.2d 142 (1934) (trauma to small benign tumor); United States Fidelity & Guaranty Co. v. Youmans, 49 Ga. App. 678, 176 S.E. 808 (1934) (same); Harris v. Southern Carbon Co., 162 So. 430 (La. Ct. App. 1935) (trauma to growth); Bollinger v. Wagaraw Bldg. Supply Co., 122 N.J.L. 512, 6 A.2d 396 (1939) (trauma to mole). But cf. Gibson v. State Compensation Comm'r, 127 W.Va. 97, 31 S.E.2d 555 (1944) (trauma to mole).
23 Harris v. Hindman, 130 Ore. 15, 278 Pac. 954 (1929).
24 Valente v. Bourne Mills, 77 R.I. 274, 75 A.2d 191, 194 (1950); accord, White v. Valley Land Co., 64 N.M. 9, 322 P.2d 707 (1957); cf. Lyons v. Swift & Co., 86 So. 2d 613 (La. Ct. App. 1956).
25 Ricciardi v. Marcalus Mfg. Co., 26 N.J. 445, 140 A.2d 215 (1958).
26 Blackfoot Coal & Land Corp. v. Cooper, 121 Ind. App. 313, 95 N.E.2d 639 (1950).
27 Sikora v. Apex Beverage Corp., 282 App. Div. 193, 122 N.Y.S.2d 64 (1953). aff'd, 306 N.Y. 917, 119 N.E.2d 601 (1954); Dennison v. Wing, 279 App. Div. 494, 110 N.Y.S.2d 811 (1952) (court recognizes diversity of medical opinion); Ranney v. Habern Realty Corp., 279 App. Div. 426, 110 N.Y.S.2d 496 (1952).

diagnose human ailments with the exactitude of the mathematician."[28]

Professor Ben F. Small, professor of law at the University of Indiana, in a very interesting law review article[29] states that the doctor narrowly admits that trauma might have something to do with cancer developing but merely as an aggravation. As to the lawyer, "He is looking for some footing on which to affirm or to dismiss liability for a condition of harm. . . . Yet while explanation might escape him, cause does not."[30]

In workmen's compensation and occupation disease cases, the lawyer is not limited by the word "cause." He may use "aggravation" or "acceleration" or both. And if the evidence does not show cancerous condition in trauma-time he may theorize as to a dormant unknown condition, "lighted-up" or activated by trauma. It is Professor Small's opinion that: "It appears that if a claimant shows trauma followed by cancer, either old or new, at the point of injury, he has better than an even chance of recovery."[31]

A recent article sets out with great clarity the problem of defining cause.

> "Medically, the real cause of cancer is not known. But while medicine demands proof specific, beyond a reasonable doubt that minor trauma can produce cancer, the law will take 'reasonable inferences' from all the circumstances of a case that minor trauma could have produced a major disability like cancer. The law had to draw such reasonable inferences although often they are contrary to generally accepted medical thinking. For, after all, a court of law is not a hospital clinic or a medical laboratory and a court of law has to decide 'yes' or 'no' when plaintiff alleges and attempts to prove that a minor legal situation was the cause of his cancer. A court of law in such a case cannot, like a medical laboratory or a medical clinic, say 'We cannot tell you with any degree of certainty whether or not the cancer was produced by the minor legal trauma.' This lag between the legal necessity for final 'yes' or 'no' answers in such cases, conflicts with the medical necessity for a high degree of scientific proof which may not be available today."[32]

COLORADO CASES

The writer has been able to locate only two appellate decisions dealing with the particular subject under discussion. Transcripts of medical evidence given in several workmen's compensation cases were made available for inspection,[33] and comments thereon are hereinafter included.

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28 Blackfoot Coal & Land Corp. v. Cooper, 121 Ind. App. 313, 95 N.E.2d 639 (1950). For an excellent collection of cases involving trauma to various parts of the body and its causal relation to cancer (pro and con), see 1 Belli, Modern Trials 665-67 (1954). See also Small, *Gaffing at a Thing Called Cause*, 31 Texas L. Rev. 630 (1953); Annots., 20 A.L.R. 23 (1922) and 73 A.L.R. 498 (1931).

29 Small, *supra* note 28.

30 *Id.* at 639.

31 *Id.* at 644.

32 1 Current Medicine for Attorneys, No. 2, p.1 (1953).

33 The writer expresses his thanks to Attorney Carl Luplow, of Denver, for making these transcripts available.

The Canon Reliance Coal Company case[34] was decided by the Colorado Supreme Court in 1922. The following facts were found by the Commission:

> "On or about February 5, 1920, while the decedent was engaged in loading coal, he was struck on the cheek by a flying lump of coal . . . he died August 26, 1921. [H]is death was caused by the malignant growth in his cheek. . . . From and after February 5, 1920, and beginning with the time decedent's face became sore and swollen, his condition became steadily worse and finally culminated in his death on August 26, 1921. No intervening cause is shown that would, or does, account for the sudden change in decendent's condition. . . . Our finding, therefore, is decendent's death was the proximate result of his accident of February 5, 1920."[35]

The last paragraph of the court's opinion is most interesting:

> "The foregoing statements of witnesses are in other places modified and by other experts disputed. The testimony may be unreliable. The whole subject is shrouded in more or less mystery and despite the present opinions and theories of some of the authorities and members of the profession the true cause of such a cancer may tomorrow be established as entirely separate and apart from such an injury. But in our opinion the foregoing is sufficient 'substantial and credible evidence' to support the findings and preclude us, under the rule repeatedly laid down by this court, from disturbing those findings, on the theory that the commission, in basing them upon such evidence, acted 'without or in excess of its powers'."[36]

In the Beatrice Creamery Company case,[37] the Colorado Supreme Court in affirming the decisions of the Industrial Commission, quoted the Commission as follows:

> "None of the experts gave it as their opinion that sarcoma cannot be occasioned or aggravated by trauma. The only clear evidence, therefore, is the testimony of claimant and decedent that the swelling arose shortly after the accident and at the site of the injury and did not antedate the accident. It is therefore, found as fact that decedent died on May 30, 1928, as the result of an injury received on March 28, 1927, arising out of and in the course of the employment of decedent."[38]

In the Pollitt case[39] the question before the referee was whether trauma received by the claimant caused teratoma testis. Dr. Charles B. Kingry, an outstanding pathologist of Denver, testified for the respondent, and concluded that the trauma as described by the claimant in this case did not cause the malignancy. Dr.

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34 Canon Reliance Coal Co. v. Industrial Comm'n, 72 Colo. 477, 211 Pac. 868 (1922).
35 *Id.* at 478, 211 Pac. at 869.
36 *Id.* at 480, 211 Pac. at 869.
37 Beatrice Creamery Co. v. Standley, 86 Colo. 290, 281 Pac. 110 (1929).
38 *Id.* at 292, 281 Pac. at 110.
39 Joe Pollitt v. Brown Constr. Co., No. 619722, Industrial Comm'n of Colo., Jan. 8, 1943.

Kingry said, "I know of no authenticated instance in which trauma *caused* testicular teratoma."[40]

In this particular case, Dr. Kingry based his opinion upon the claimant's failure to qualify under at least two criteria: (1) there was not, in the opinion of Dr. Kingry, a definite authenticated severe injury; (2) there was no reasonable time relation between the supposed origin and the course of this tumor.

In the case of J. Ford,[41] Dr. del Regato, an international authority on cancer and currently director of the Glockner-Penrose Cancer Clinic in Colorado Springs, gave his opinion on testimony presented in the case. The question before the Commission was whether or not the cancer was caused or aggravated by trauma. Dr. del Regato concurred in medical opinion given by Dr. Richard M. Mulligan which set out the argument of assumption of causative effect of trauma in the field of tumors. In summary, Dr. del Regato stated:

> "I do not believe that the trauma received by Mr. Ford did cause the development of a malignant tumor in his testicle. Assuming that the tumor was already present as it well could have been, the trauma was not intense enough according to the testimony to have caused any aggravation or change in the natural course of this malignant tumor."[42]

An interesting case that came before our Industrial Commission is that of Daniel C. McNaughton,[43] in which Dr. H. Mason Morfit gave an opinion on the testimony presented. The case centered around a claim made by the deceased's widow that as a result of an injury received on September 16, 1948, while at work for the State Bureau of Mines, Daniel C. McNaughton developed a malignant tumor of the liver which subsequently led to death. The claimant received a single blow and was not subjected to chronic, repeated injury.

Dr. Morfit stated that although there are some types of malignant tumor in which the part of trauma is somewhat open to question, there has never been a claim made by any well-recognized authority that primary cancer of the liver could be attributed to any such fact. The doctor went on to state that, although primary liver cancers are relatively rare, the consistent finding in any large series of cases is the coexistence of cirrhosis of the liver. This has led to the belief by many authorities that cirrhosis of the liver is one of the prime factors in the ultimate production of a primary malignant liver tumor. Dr. Morfit stated that the evidence indicated that this patient had changes in the liver that antedated the trauma and that these changes are a much more likely factor in the genesis of a malignant liver tumor than trauma.

In the *James A. Nichols* case[44] another case before our Industrial Commission involving cancer, Dr. Morfit again rendered an opinion.

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40 *Id.* Record, p. 15 (emphasis added).
41 Jay B. Ford v. Kearney Conoco Serv., No. 1046224, Industrial Comm'n of Colo., Nov. 17, 1954.
42 Opinion on testimony, filed at Colorado State Compensation Fund, File No: 74499, Jay B. Ford v. Kearney Conoco Serv.
43 Daniel C. McNaughton v. Colorado State Bureau of Mines, No. 850037, Industrial Comm'n of Colo.
44 James A. Nichols v. C. D. Rhoton, No. 818395, Industrial Comm'n of Colo., Feb. 17, 1948.

Dr. Morfit took exception to the testimony of claimant's doctor whose theory was as follows:

(a) The patient sustained an injury to the right knee,
(b) As a result of (a), a hematoma developed,
(c) That this hematoma failed to resolve spontaneously but that instead its abortive healing resulted in the formation of a malignant tumor.

Dr. Morfit stated that if hematoma was caused by the blow, it should have made its appearance immediately. Contrary to this, the patient stated that the first swelling appeared six weeks later. Further, there was no evidence pertaining to the state of the tissues immediately after the injury which would substantiate any claim of a swelling appearing before this date. He further took issue with the claimant's doctor's statement, "[I]t is well known that any pathologist will agree that an organized hematoma can, under certain circumstances, undergo malignant degeneration."[45]

Dr. Morfit stated that he called several reputable pathologists, one of them being Dr. Fred W. Stewart, Chief Pathologist at Memorial Hospital for Treatment of Cancer and Allied Diseases in New York City, and failed to get any one of them to say that they would agree with the above statement.

On April 24, 1959, the Industrial Commission entered an order making a full award to the widow of Robert Lopez[46] who died as a result of a metastasized malignancy.

The facts as related to the writer by claimant's attorney[47] are briefly as follows:

> "The claimant, now deceased, badly burned his leg from the ankle to the knee when about sixteen years old, resulting in skin grafting of the injured area. Some fifteen years later, while employed as a truck driver, he fell and badly bruised a portion of the grafted area of the leg (the bruise was located on the shin bone and was about the size of a silver dollar). The bruise or tear in the grafted skin did not heal readily and the claimant continued to use a salve which had been prescribed by a physician, and apparently the area became slightly infected. A little better than two months after the injury had been incurred, and the area still being unhealed, the claimant went to see a bone specialist who immediately had a biopsy made of the injured area and determined the existence of a hemangiosarcoma (a rapidly growing malignant tumor). The affected leg was immediately amputated above the knee, but apparently metastasis had begun and several months later the lower abdomen became involved and the claimant died."

The claimant's medical testimony was principally that of a pathologist of the Weld County General Hospital who testified in effect that although in his opinion a single blow in itself could not constitute the sole cause of the development of the malignancy which occurred in this case, the combination of a granulated area

45 Opinion on testimony, on file at Industrial Comm'n of Colo., No. 818395, p. 4.
46 Robert Lopez v. Shupe Bros., No. 1319840, Industrial Comm'n of Colo., Jan. 7, 1958.
47 Charles A. Karowsky, of Greeley, Colorado.

(skin which had been previously grafted), an injury which caused an open wound in the granulated area and the infection which undoubtedly ensued in the wounded area, causing chronic irritation, combined with the result that a hemangiosarcoma developed. This malignancy metastasized and eventually resulted in Mr. Lopez' death.

Respondents paid the award in full and there will be no appeal in this particular case.

The attitude of the Colorado Supreme Court relative to Industrial Commission cases can best be summed up by quoting from an opinion by Mr. Justice Sutton[48] when, in refusing to reverse the Commission, the Court quoted with approval a prior Colorado decision as follows:

> "Our Court in Industrial Commission v. Royal Indemnity Co., 124 Colo. 210, 236 P.2d 293, said, inter alia: 'There is no dispute concerning the principles of law which are involved. If the evidence, and logical inferences therefrom, can be said to warrant a conclusion that the accident, within a reasonable probability, resulted in the disability, the claimant is entitled to compensation, since he was successful before the commission. If, however, the evidence, as a matter of law is insufficient to remove the question of causation from the realm of conjecture and mere possibilities, the award of the commission cannot be upheld'."[49]

CONCLUSION

The plaintiff's attorney who is consulted in a case involving the question of whether or not a single or repeated act of trauma can cause or aggravate cancer, must, in all fairness to his client and to himself, give serious consideration to the following items:

1. It is essential that the attending physician and the client keep a detailed written record of all information concerning or having any bearing on the case.

2. The attorney must apply these facts to the minimal requirements[50] of the experts which, if satisfied, may cause even the most reluctant doctor to testify that your case appears to be an exception to the general rule. Failure of the facts of your case to satisfy all these requirements does not mean that your client will be denied a recovery under the law.[51]

3. Within the financial means of your client, obtain the best medical experts who believe in and will support the "probable causation" theory under the particular facts of your case. Most experts admit that there are reputable doctors who so believe.

4. In order to adequately prepare yourself to conduct cross examination of opposing experts, well in advance of the trial make an appointment and pay your own doctor for the time necessary

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48 In Vanadium Corporation of America v. Sargent, 134 Colo. 555, 307 P.2d 454 (1957).
49 *Id.* at 564, 307 P.2d at 459.
50 Ewing, 19 Archives of Pathology 690 (1935); 1 Negligence and Compensation Service, No. 20, p. 159: (continued)

to fully discuss the various theories of what will cause or aggravate cancer,[52] and consider also the theory of pre-disposition.

5. Be fair, but firm, in explaining the differences in the doctors' interpretation of the word "cause" and that which the courts have accepted.

Even though the medical opinions for the opposition appear impressive and almost overwhelming, ask yourself this question: "Why, if these experts are so positive that a single trauma will not cause or aggravate cancer under any circumstances, do they all set up minimal criteria before they will consider the question of cause or aggravation?"

I am reminded of the mother who scolds her son for believing in ghosts but ends up by telling him that, should he see a white shrouded object floating through the air, to call her immediately. Probably—or would it be more acceptable to the readers if I said possibly—mother still has an uneasy feeling about ghosts.

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1. There must be strongly demonstrable evidence of the authenticity of the trauma alleged, and of the adequacy of such trauma. (This envisages a trauma of force sufficient to have reached, and disrupted, tissues where the tumor is later found. Ed.)
2. There must be evidence of the prior integrity, (i.e., that no tumor was present) of the injured part. (Such integrity cannot be assumed on the basis of prior absence of symptoms nor in the absence of prior local examinations in competent manner. Ed.)
3. The tumor alleged to be of traumatic origin must have arisen at the exact point allegedly injured. (In a practical manner this is usually relaxed to allow for the tumor's location in very close relation to the injured point; it does not allow for more than about an inch leeway. Contra-coup trauma is not included within this scope. Ed.)
4. The time elapsing between the alleged injury and the appearance of the tumor must be a reasonable one for the type of tumor found, and there must be unbroken symptoms bridging this period. (Such period is variable; in general, a period of less than about 3 weeks or more than 3 months is not considered as fulfilling this postulate. The time interval must be judged in accordance with the type of tumor found and its natural growth rate if determinable. Ed.)
5. There must be a positive diagnosis that the mass felt is a tumor, and its type and nature must be positively known. (This means that a biopsy must have been performed. This postulate also implies that the neoplasm found is one that can arise from the type of tissue normally existent where the tumor is found; it does not include a metastasis found at the traumatic site. Ed.) And see Warren, 117 Annals of Surgery 585-95 (1943); 1 Negligence and Compensation Service, No. 20, p. 160:

1. The tumor site must be shown affirmatively to have had complete integrity (i.e., to have been devoid of tumor) prior to the injury alleged.
2. The injury must have been of force sufficient to have disrupted the continuity of the tissue at the site where the tumor is found and to have initiated cellular proliferation.
3. The tumor must follow the alleged injury by a reasonable length of time, this varying with the type of tumor found.
4. The tumor must be of the type that might reasonably develop as a result of regeneration and repair of the tissue allegedly injured.

See also cases cited note 27 *supra*.

51 See notes 18-26 *supra*.

52 See 1 Gray, Attorneys' Textbook of Medicine 877-83 (3d ed. 1950), for theories of inclusion, biologic origin, heredity, infection, race, traumatic and combination of causes.