against John H. Emerson by Warren E. Collins, Inc., manufacturers of hospital equipment in Boston, who were sole licensees under the patents. The defendant, John H. Emerson, maintains a machine shop in Cambridge for the manufacture of hospital and research equipment, and began the manufacture of respirators in 1931.

The patents covered the construction of apparatus for producing prolonged artificial respiration, especially for human beings suffering from infantile paralysis as well as in cases of gas poisoning, electric shock, drowning. These respirators worked admirably and were in great demand since 1929 for use in hospitals.

The court found that the defendant began to make his respirators after having seen the Drinker respirator. The defendant, however, excused his infringement on the ground that the patents were invalid because all the alleged novel features covered by the patents were old and disclosed in the prior literature.

After considering all the evidence and prior publications produced by the defendant the court agreed with the defendant that the Drinker patents were invalid. The important features of the patent claims of all three patents were found to be anticipated by prior publications, some as far back as 1876, or by prior issued patents.

The patent statutes permit the defendant in an infringement suit to excuse his acts if he can definitely prove that the patent or patents on which the suit is brought are invalid on account of prior knowledge, use or publication more than two years before the filing date of the patent application on which the patent was granted.

It is the duty of the Patent Office to make an investigation of prior practices and publications before granting patents, but owing to limited facilities, funds and personnel such investigations are not always thorough. Of course it must be borne in mind that defendants in infringement suits often employ experts at a cost of thousands of dollars who spend many months in order to uncover prior practices or obscure publications to anticipate issued patents. It is impossible for the Patent Office to make such thorough investigations at present on account of the larger number of patent applications filed each year. In the fiscal year 1934, for example, there were 60,363 patent applications filed in the Patent Office.

The patent statutes fortunately provide for the invalidation of erroneously issued patents, because it would be an injustice to enjoin the use of those apparatus, processes or compositions which are within the domain of public knowledge and hence free for any one to use for any desired purpose. The courts will therefore sustain and enforce only those patents which cover new and original inventions not known or used before by others within the statutory time limitation previously mentioned.

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## ASCORBIC ACID IN CATARACT WITH SPECIAL REFERENCE TO DINITROPHENOL CATARACTS

THIS is a preliminary report of success in the treatment of the toxic effects of dinitrophenol, especially cataracts, and of cataracts of all types with ascorbic acid, vitamin C.

The presence of vitamin C in the normal lens in fairly high amounts has been confirmed by several workers, including Birch, Harris and Ray, Muller and Buschke, Gurewitch and others. With advancing age and with cataract formation the vitamin C content of the lens diminishes, and in some cataractous lenses may be entirely absent. The drop in the vitamin C content of the cataractous lens has been observed to parallel the drop in its glutathione content, as determined by Goldschmidt, Jess and Shoji, and also parallels the drop in its oxidative activity. Birch and Dann have adduced evidence that cevitamic acid and glutathione form part of the auto-oxidation system of the cell.

These data suggested the use of vitamin C in the form of ascorbic acid in cataract. Slit-lamp microscopic studies revealed that within a few days after administration of from 0.015 gm to 0.30 gm per day to patients with cataracts, marked improvement took place in the pathologic picture. First the swelling of the lens capsule was reduced and it became more transparent; and progressively the cells in the deeper layers improved in the same manner. Within less than a week of treatment mature and hypermature cataracts became sufficiently transparent to permit of examination of the eye-grounds, and vision improved from total or sub-total blindness to counting fingers. Cataracts involving vision less seriously responded at an equal pace, though in no case has the treatment been administered sufficiently long to determine whether the opacity of the lens will undergo total resolution.

The response of the very rapidly progressive dinitrophenol cataracts to ascorbic acid therapy was surprisingly rapid. When the treatment was intermitted, the cataract regressed; and progress was resumed with the resumption of treatment. Treatment was supplemented by food rich in glutathione content, in the hope that this element might also be replenished in the lens tissue, though our knowledge of the metabolism of glutathione is still so inadequate that there is no definite information available on this topic.

Other toxic symptoms of dinitrophenol poisoning such as the typical neuritis also responded promptly to the ascorbic acid therapy. This raises the question as to whether the toxic effects of dinitrophenol may not be due to the destruction of the auto-oxidative system elements of the cells as a result of the hyperoxidation which it induces, or whether it be due to direct chemical interaction with them.

The prophylactic treatment of all persons who have been the victims of dinitrophenol for reducing with the therapy in question is indicated; for a number of them who have been examined with the slit-lamp, in spite of the fact that there are no subjective symptoms, show early cataract formation.

An additional noteworthy finding in connection with the ascorbic acid therapy is the regeneration of lens fibers in an eye that had been aphakic following cataract extraction for many years. In this case, after two weeks of therapy, the lens capsule became filled out and the scarred anterior capsule of the lens, as well as the posterior, resumed its normal shagreen, and some of the fibers assumed normal transparency.

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## THE DEVELOPMENT OF LIVER THERAPY IN ANEMIA[1]

PRIOR to 1922, no published records or reports are available of the use of liver in "sprue-anemia" by Sir Patrick Manson (1844–1922), although later editions of Manson's works revised by Manson-Bahr, of London, do contain mention of *liver soup* in the treatment of sprue. Sprue was first accurately described by Sir Patrick Manson[2] in 1880.

C. S. Engel, of Berlin (1898), used *"sanguinoform"* (made by a Berlin druggist and containing hog liver, stomach and other organs) in the treatment of anemia. He also noted an increase in eosinophiles from the use of this hog-organ preparation!

Professor Adalbert Czerny, pediatrician, did *not* mention liver therapy in the treatment of anemia of children before the First International Congress on Pediatrics, at Paris, in his paper on "Rapport sur l'Anèmie d'Origine alimentaire,"[3] as Oxenius, of Chemnitz, and George Roeder, of Rahway, N. J., claim.[4]

Hans Günther,[5] of Leipzig, refers to Engel's (1898) use of hog liver and stomach, but does not mention the work of Pirera and Castellino (1912) with liver in anemia nor the use of red bone marrow by Fraser (1894).

R. L. Fenlon[6] included liver in the diet for pernicious anemia patients.

R. B. Gibson and C. P. Howard, of Iowa City, gave liver daily, together with egg yolk and green vegetables, to anemia patients.[7]

Finally, Professor Alfonso Pirera, of Naples, in his article[8] on "Intorno ad alcuni problemi recenti di patologia epatica,"—Studio Sperimentale—mentions the research work (1912) with liver juice by Germano and Pizzini and Cafiero—using 12 injections of a concentrated liver preparation.

Pirera, of Naples, reviews the subject in his article "Epatoterapia ed emopoiesi epatica. Anemie da disepatismo."[9]

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# SCIENTIFIC BOOKS

## ATOMIC SPECTRA

*Introduction to Atomic Spectra.* By HARVEY E. WHITE. McGraw-Hill Book Company, N. Y. (1934). $5.00.

ONE of the most interesting chapters in some future history of contemporary physics will amaze the reader with an account of the rapidity with which physicists of the last two decades have brought order out of the apparent chaos of empirical information on the wave-lengths and intensities of spectrum lines. In 1924, one of the major problems of spectroscopy, namely, the cause of the fine structure of the alkali terms, was apparently in a hopeless snarl. There was no generally accepted notation for the cataloguing of spectral terms, and the confusion of the various schemes in use was an almost insuperable obstacle

[1] References: H. I. Goldstein, *Medical Review of Reviews* (New York), 41: 5, 227–229, May, 1935; *Medical Life* (New York), 42: 4, 207–216, April, 1935; *Wiener klin. Wochenschr.*, 16, 496–497, April 19, 1935; *Medical Record* (New York), 142: No. 3, pp. 136–138, August 7, 1935; SCIENCE, 80: 2085, 561, December 14, 1934; *La Riforma Medica*, 51: No. 7, 267–268, February 16, 1935; No. 9, 343–347, March 2, 1935.

[2] *Customs Gazette*, 1880.

[3] *Comptes Rendus de l'Ass'n. int. de Pédiatrie Premier Congrès* (7–9 Octobre, 1912), pages 91–101, 1913, G. Steinheil, Editeur, Paris.

[4] *Deutsche Med. Wochenschr.*, 60: 51, 1977, December 21, 1934; 61: 23, 929, June 7, 1935.

[5] "Uber Fortschritte in der Diättherapie," *Med. Klin.*, 27: 2, 48–50, January 6, 1931.

[6] *Jour. of Iowa State Med. Soc.*, XI: 2, 50, February, 1921.

[7] *Arch. Int. Med.*, 32: 1, 1–16, July, 1923.

[8] *Il Tommasi*, September 20 and 30, 1912, pages 601–617 and 625–636, Naples.

[9] *Rinascenze Medica* (Napoli), Anno XI, 13: 22, 683–685, November 30, 1934; 13: 23, 715–717, December 15, 1934.