and lay behind the occiput. The posterior arm was delivered first in the usual manner, then the anterior flexed and pulled down.

The term "usual manner" means the delivery described above.

The after-coming head was mentioned as being delivered by the Smellie-Veit method in twenty-four cases. The delivery was recorded as spontaneous in twelve cases. No mention was made of the delivery of the head in twenty cases. No craniotomy was done on an after-coming head.

The forceps were never applied to either the head or the breech, although they were frequently held in readiness when we expected trouble. The only three cases in which the head stuck and forceps might have been of help occurred in tenements when forceps were not at hand. It might be a good rule always to have forceps ready before starting a breech delivery.

Chloroform was used in twenty-six cases, ether in one case. There was no anesthesia in nineteen cases. No mention was made as to any anesthesia being used in the remaining eleven cases. I myself prefer the patient well anesthetized for the actual delivery.

The longest labor in the series lasted thirty-three hours and fifteen minutes. This was in the case of a primipara, aged 23. The membranes ruptured one day before she went into labor. Finally, a breech extraction was done and she was torn through the sphincter ani. The shortest labor was two hours and fifteen minutes. This occurred in a tertipara. The baby weighed 5 pounds and 9 ounces. The average length of labor in the primigravidae was seventeen hours and four minutes. The average length of labor in the multigravidae was nine hours and eight minutes. From these figures it would seem that the length of labor was not much influenced by the presentation.

The time of rupture of membranes was: in the second stage of labor, seventeen cases; in the late first, ten cases; during the first stage, ten cases; at the onset of labor, one case, and before labor began, three cases, in one of these two days and in another one day, before labor began. The time of rupture was not mentioned in fifteen cases.

There were only two cases of definite prematurity. In both, the baby was born dead; one was macerated. One case was ten days past term. This baby was also born dead after a difficult labor.

Of lacerations of the perineum, in the primigravidae there were six first degree; two second degree, and one third degree; in the multigravidae, four first degree and one second degree. It seems to me that there were as few lacerations in this series as there would have been in a similar number of vertex deliveries, with the exception of the third degree laceration.

In these cases, deformity of the pelvis seemed to play little part, as only one woman is recorded as having any deformity, and she only a moderately generally contracted pelvis.

One baby was a monster; two had club feet; and one of these also had spina bifida. Aside from these, there were no marked abnormalities.

CONCLUSIONS

1. The most dangerous condition in breech delivery seems to be disproportion between the size of the child and the pelvis.

2. Deformities of the pelvis and child did not seem to play much part in determining the breech presentation.

3. Early rupture of the membranes is a serious happening.

4. Manual extraction of extended arms is seldom indicated. Manual extraction of the arms was used twice in this series, and in both cases the child was stillborn.

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DIGESTIBILITY OF STEAM-COOKED SOY BEANS AND PEANUTS*

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The unusual demand for foods, coupled with the high price of labor and fertilizer, makes it necessary that each acre of land devoted to food crops produce the maximum amount. From an agricultural standpoint the legumes are considered a profitable crop, since they enrich the soil with nitrogen while producing valuable food for man and beast. The legumes in general have long been important sources of food, and on account of their high protein content are sometimes referred to as the "poor man's beefsteak"; but two valuable kinds, soy beans and peanuts, have been relatively little used in this country in the human dietary.

Studies of the food value of soy beans and peanuts have supplied considerable data relative to their dietary importance. A comparison¹ of the composition of legumes in general with the composition of soy beans and peanuts shows that the latter are much richer in protein and fat, the expensive constituents of the diet, and accordingly from this standpoint are very valuable. For dietary purposes, however, the nature as well as the quantity of protein is of importance, since incomplete proteins cannot serve over long periods of time as the sole source of tissue-forming material.

Studies of the amino-acids from legume proteins made by Osborne and co-workers² and by Johns and Jones³ have shown that those from the proteins of soy beans and peanuts are in kind and proportion such as are believed to be essential to normal development. Such was not the case with the other legume proteins studied.

This belief is confirmed by biologic studies. McCollum, Simmonds, and Pitz,⁴ in discussing the effects of feeding laboratory animals on a diet rich in navy beans, say: "We feel safe in saying that this legume should under no circumstances form a principal part of any relatively monotonous diet." McCollum and Simmonds⁵ conclude that "the protein mixture from maize 80 and navy beans 20 per cent. has just about one-half the biological value for growth that the total protein mixture in milk possesses." Daniels and Nichols⁶

* Prepared under the direction of C. F. Langworthy, Chief, Office of Home Economics, Department of Agriculture, Washington D. C.

1. Bull. 28, U. S. Dept. Agr., Office Exper. Sta., 1899, pp. 65-75. Farmers' Bull. 121, U. S. Dept. Agr., 1916, p. 17. Bull. 717, U. S. Dept. Agr., 1918, p. 5.

2. Osborne, T. B., and Co-Workers: Am. J. Physiol. **18**: 307, 1907; *ibid.* **19**: 468-474, 1907; *ibid.* **22**: 368, 1908; *ibid.* **22**: 424, 1908; J. Biol. Chem. **5**: 198, 1908.

3. Johns, C. O., and Jones, D. B.: J. Biol. Chem. **28**: 77, 1916; *ibid.* **30**: 33, 1917.

4. McCollum, E. V.; Simmonds, N., and Pitz, W.: J. Biol. Chem. **29**: 521-536 (April) 1917.

5. McCollum, E. V., and Simmonds, N.: J. Biol. Chem. **32**: 35 (Oct.) 1917.

6. Daniels, A. L., and Nichols, N. B.: J. Biol. Chem. **32**: 95 (Oct.) 1917.

find that "the protein of the soy bean appears to be quite as valuable as the casein of milk." Osborne and Mendel,⁷ in discussing the use of soy beans as food, state that "the proteins of the soy bean, unlike those of the other leguminous seeds thus far investigated, are adequate for promoting normal growth." Referring to reproduction of laboratory animals restricted to soy beans as a source of protein, these investigators⁸ say: "On diets containing either the soy-bean meal or the commercial soy-bean meal, together with fats and 'protein-free milk' or our 'artificial' salt mixture, several broods of vigorous young have been produced, and these young have grown normally on diets the same as those on which their parents were raised. This is a further demonstration of the nutritive efficiency of this legume, in striking contrast with the adverse results obtained with kidney beans and garden peas." Daniels and Loughlin,⁹ in discussing feeding experiments with peanuts, report: "Good growth was secured also with a ration supplying 15 per cent. protein from the peanut meal. The proteins of peanuts are comparable to those of the soy bean, since it has been shown that both legumes supply the essential amino-acids in sufficient amounts for normal growth and reproduction."

Owing to the convincing results of a large number of carefully controlled metabolism studies with laboratory animals, students of nutrition are agreed that in order to maintain the well-being of the body through the processes of growth, maintenance and reproduction it is necessary that the diet supply in addition to an adequate amount of protein, fat, carbohydrate, and mineral matter, three as yet unidentified food accessories, which have been designated fat-soluble A, water-soluble B, and water-soluble C. In a number of the studies referred to already and in reports of others,¹⁰ the value of legumes as sources of these accessories or vitamins is reported. Fat-soluble A is nearly, if not entirely, lacking in all legumes thus far reported on with the single exception of the soy bean. Water-soluble B is found in satisfactory amounts in all thus far investigated. Water-soluble C appears to be lacking in the dried seeds of all the legumes studied, but to be abundant during the sprouting state. Whenever present, it appears to lose its dietary efficiency when cooked at a temperature and under pressures such as were used in the experiments described in the present paper.

Studies of the digestibility of legume proteins have been made by Rubner,¹¹ Malfatti,¹² Prausnitz,¹³ Snyder,¹⁴ Richter,¹⁵ Woods and Mansfield,¹⁶ and Wait,¹⁷ and the general conclusion to be drawn from the experimental data obtained by these investigators is that while the legume proteins are fairly well utilized

by the human body, comparing favorably in this respect with the cereal proteins, they are not so completely utilized as the animal proteins supplied by meats, eggs and milk. Few studies have been made of the digestibility of proteins present in soy beans and peanuts. Oshima¹⁸ reports three experiments in which the average digestibility of the total protein of a diet of tofu (soy-bean curd) and rice, of which 83 per cent. was soy-bean protein, was 95 per cent. Mendel and Fine¹⁹ found the digestibility of soy-bean protein to be 85.3 per cent., as compared with 77.9 per cent. for that of the navy bean. Lyman and Bowers²⁰ have also studied the digestibility of soy-bean meal and report two digestion experiments with bread made with soy-bean meal in which the digestibility of the protein averaged 91.1 per cent. No data were found in the literature consulted regarding the digestibility of peanut protein.

During the period of unprecedented demand for foods occasioned by the recent war, it appeared to me that soy-bean and peanut press cakes could well be utilized for food purposes, especially the cakes that resulted from "cold pressing" sound soy beans and peanuts. Accordingly, experiments were conducted in the Office of Home Economics Laboratory of the Department of Agriculture to determine the digestibility of the proteins supplied by these legumes when the press-cake flours were blended with wheat flours and served in the form of an unleavened bread. Seven experiments with soy-bean flour and eleven with peanut flour showed the proteins to be 85.3 per cent. and 85.8 per cent. digested, respectively.²¹ In view of the high digestibility of soy beans and peanuts and the possibility of using these legumes as vegetables served in the same manner as navy beans and garden peas, additional tests seemed desirable, and the experiments here discussed were conducted to determine the digestibility of soy beans and peanuts when cooked under conditions approximating those employed in the preparation of commercial canned beans.

GENERAL PROCEDURE

For these experiments whole mammoth yellow soy beans grown at the government field station at Arlington, Va., were obtained from the Bureau of Plant Industry, and raw shelled peanuts were bought from a local dealer. The soy-bean and peanut experiments were carried on separately, but the general procedure was the same. The peanuts were skinned and divided into half kernels, and both beans and peanuts were thoroughly washed and placed with sufficient salt and water in a pressure cooker under 15 pounds pressure for two hours, at which time they were thoroughly cooked.

The diet, so chosen that the accessory foods should supply a limited amount of protein and at the same time be typical of a simple mixed diet, consisted of soy beans or peanuts, bread, butter, sugar, oranges, and tea or coffee. Tea and coffee were taken hot; the rest of the diet was eaten cold. The experimental periods were of three days' duration. The six subjects were men from 19 to 41 years old who had acquired considerable experience in this type of work. They were informed that a large consumption of soy beans or

7. Osborne, T. B., and Mendel, L. B.: *J. Biol. Chem.* **32**: 373 (Dec.) 1917.

8. Footnote 7, p. 375.

9. Daniels, A. L., and Loughlin, Rosemary: *J. Biol. Chem.* **33**: 296 (Feb.) 1918.

10. Memorandum on Food and Scurvy by the Food (War) Committee of the Royal Society, *Lancet* **2**: 756 (Nov. 30) 1919. Chick, H.; Hume, E. M.; Skelton, R. E., and Smith, A.: The Relative Content of Antiscorbutic Principle in Limes and Lemons, *Lancet* **2**: 735 (Nov. 30) 1918. Chick, H., and Delf, E. M.: The Antiscorbutic Value of Dry and Germinated Seeds, *Biochem. J.* **13**: 199 (July) 1919. These and other articles on vitamins are summarized by Blunt and Wang: *J. Home Econom.* **12**: 1-14 (Jan.) 1920.

11. Rubner: *Ztschr. f. Biol.* **16**: 119-128, 1880.

12. Malfatti: *Jahresb. f. Tier-Chem.* **15**: 412, 1885.

13. Prausnitz: *Ztschr. f. Biol.* **26**: 227-232, 1890.

14. Snyder: *Bull.* 74, Minnesota Sta., 1902, p. 122; *Bull.* 92, 1905, pp. 267-270.

15. Richter: *Arch. f. Hyg.* **46**: 264-273, 1890.

16. Woods and Mansfield: *Bull.* 149, U. S. Dept. Agr., Office Expt. Sta., 1904, p. 60.

17. Wait: *Bull.* 187, U. S. Dept. Agr., Office Expt. Sta., 1907, p. 55.

18. Oshima: *Bull.* 159, U. S. Dept. Agr., Office Expt. Sta., 1905, p. 224.

19. Mendel, L. B., and Fine, M. S.: *J. Biol. Chem.* **10**: 438, 447, 1912.

20. Lyman and Bowers: *Ohio J. Sc.* **18**: 279, 1918.

21. *Bull.* 717, U. S. Dept. Agr., 1918, pp. 18, 24.

peanuts was desired and that they could follow individual inclination in regard to the remainder of the diet.

A record of the weight of food consumed and the weight and chemical analysis of feces resulting from the experimental diet supplied data for calculating the coefficients of digestibility of the ration as a whole. The digestibility of the protein supplied by the soy beans or the peanuts was estimated by making correction for the undigested protein remaining from the accessory foods according to a method fully outlined in previous papers.²² It was assumed that the proteins of bread,²³ butter,²⁴ and oranges²⁵ were 88, 97 and 85 per cent., digested, respectively.

STEAM-COOKED SOY BEANS

The six digestion experiments that were conducted with soy beans were divided into two series of three tests each. The first series commenced on January 29 and the second on April 9. Uniform experimental conditions were maintained in both series, the soy beans were all from the same lot, and none of the subjects assisted in more than one experiment. The cooked beans were soft and tender, but in many the thin skin remained unbroken.

The results of these experiments are summarized in Table 1.

TABLE 1.—DIGESTION EXPERIMENTS WITH SOY BEANS (STEAMED) IN A SIMPLE MIXED DIET

Experiment Number	Subject	Digestibility of Entire Ration				Estimated Digestibility of Soy-Bean Protein Alone, per Cent.
		Protein, per Cent.	Fat, per Cent.	Carbohydrate, per Cent.	Ash, per Cent.	
769	P. K.	78.8	88.0	97.0	62.3	74.8
772	J. C. M.	79.5	90.3	95.9	49.7	76.0
773	W. O'C.	84.5	88.8	97.9	57.5	82.7
835	J. F. C.	85.2	88.6	98.3	81.3	82.9
837	T. G. H.	80.1	84.5	96.5	74.0	80.0
838	F. A. K.	85.7	90.0	98.1	81.4	83.4
Average.....		82.3	88.4	97.3	67.7	79.9

The ration as a whole supplied 103 gm. of protein, 114 gm. of fat, 415 gm. of carbohydrate, and 3,100 calories of energy for each man daily. Its digestibility was found to be 82.3 per cent. for protein, 88.4 per cent. for fat, 97.3 per cent. for carbohydrate, and 79.9 per cent. for soy-bean protein, a value somewhat lower than the 85.3 per cent. previously reported²⁶ for protein of soy-bean flour. One subject ate an average of 478 gm. of soy beans daily for three successive days and experienced no physiologic disturbance.

STEAM-COOKED PEANUTS

Six digestion experiments were conducted with peanuts cooked as already described. The peanuts prepared in this manner were rather mealy, very palatable, and apparently thoroughly cooked; but while they still retained their original form (half kernels), the interior cellular structure was obviously somewhat altered, for the peanut kernels could be reduced to a pasty mass by very slight pressure. A summary of the results of the experiments with peanuts is given in Table 2.

Considering the diet as a whole, the subjects ingested 92 gm. of protein, 162 gm. of fat, 354 gm. of carbohydrate and 3,240 calories of energy daily; the digesti-

bility was found to be: protein, 90.7 per cent.; fat, 83 per cent.; carbohydrate, 99.0 per cent. One subject consumed an average of 457 gm. of peanuts on each of three successive days without noting any physiologic disturbance. Contrary to expectations, the digestibility of the protein of steam-cooked peanuts, 92.8 per cent., was much higher than 85.8 per cent., that previously reported²⁷ for the digestibility of the protein of peanut

TABLE 2.—DIGESTION EXPERIMENTS WITH PEANUTS (STEAMED) IN A SIMPLE MIXED DIET

Experiment Number	Subject	Digestibility of Entire Ration				Estimated Digestibility of Peanut Protein Alone, per Cent.
		Protein, per Cent.	Fat, per Cent.	Carbohydrate, per Cent.	Ash, per Cent.	
854	J. F. C.	90.8	80.2	99.2	88.2	92.7
856	J. J. D.	90.0	81.1	99.2	86.9	94.0
857	T. B. H.	89.2	79.1	98.9	84.4	89.7
858	F. A. K.	93.0	90.7	98.5	90.4	95.9
859	P. K.	89.3	84.0	98.5	86.5	90.0
863	W. O'C.	92.0	83.0	99.5	83.9	94.4
Average.....		90.7	83.0	99.0	86.7	92.8

flour. No data are available for ascertaining whether the peanut flour if steam-cooked would have been equally well assimilated. These results show that steam-cooked peanuts, which furnish relatively large amounts of essential amino-acids, are of unusual value for human food.

COMPARISON OF THE DIGESTIBILITY OF SOY BEANS AND PEANUTS WHEN STEAM-COOKED AND WHEN GROUND INTO FLOUR

The results of the study of the digestibility of steam-cooked soy beans and peanuts and flours prepared from soy-bean and peanut press cakes are summarized in Table 3.

The digestibility of the protein supplied by steam-cooked soy beans is apparently less than that of the protein of soy-bean flour, owing, perhaps, to the fact that the thin unbroken skin that surrounds the cooked soy bean is impervious to the action of the digestive juices. It also may be due to difference in cooking.

The digestibility of the protein supplied by steam-cooked peanuts was found to be higher than that of

TABLE 3.—DIGESTION EXPERIMENTS WITH STEAM-COOKED SOY BEANS AND PEANUTS

Legumes	No. of Experiments	Digestibility of Entire Diet			Aver. Daily Consumption of Legume Protein, Gm.	Estimated Digestibility of Legume Protein, per Cent.
		Protein, per Cent.	Fat, per Cent.	Carbohydrate, per Cent.		
Steam-cooked soy beans.....	6	82.3	88.4	97.3	67	79.9
Steam-cooked peanuts.....	6	90.7	83.0	99.0	59	92.8
Soy-bean flour*.....	7	86.6	94.2	96.3	70	85.3
Peanut flour†.....	11	90.1	95.9	97.9	65	85.8

* Bull. 717, U. S. Dept. Agr., 1918, pp. 18 and 19.

† Bull. 717, U. S. Dept. Agr., 1918, pp. 24 and 26.

the protein of peanut flour; but since no data are available regarding steam-cooked peanut flour, it is impossible to judge whether the particular cooking process is responsible for the higher digestibility of the steam-cooked peanuts.

CONCLUSIONS

While the carbohydrate content of the diet was well utilized in each series of experiments, it was found

27. Bull. 717, U. S. Dept. Agr., 1918, p. 24.

22. Bull. 470, U. S. Dept. Agr., 1916, p. 7. Bull. 525, 1917, p. 4. Bull. 717, 1918, p. 15.

23. An average of forty-five unreported experiments with white flour.

24. Bull. 310, U. S. Dept. Agr., 1913, p. 21.

25. Connecticut Storrs Sta. Report, 1899, p. 104.

26. Bull. 717, U. S. Dept. Agr., 1918, p. 18.

that the carbohydrate of the entire diet of which steam-cooked peanuts formed a part was especially well utilized, 99 per cent. being digested.

The fact that large quantities of soy beans and peanuts were consumed daily for three successive days, without causing any physiologic disturbances, indicates that these foods cooked for two hours by steam at 15 pounds pressure are well tolerated by the human body.

The results of this investigation, considered in connection with the previously reported data regarding the nutritive and biologic values of these two legumes, gives evidence to justify the belief that soy beans and peanuts are especially valuable for human food, as compared with other legumes that have been studied with the same thoroughness.

Clinical Notes, Suggestions, and New Instruments

COMPLETE CLOSURE OF THE URINARY BLADDER AFTER COAGULATION OF TUMORS

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It has always been a cause of regret to genito-urinary surgeons that in most operations on the bladder it is impossible to deliver a finished product on account of the necessary or supposedly necessary tubal drainage of this viscus. This was one of the more important reasons for their taking up so enthusiastically the cystoscopic endovesical methods in the treatment of bladder tumors. Endovesical treatment today includes fulguration, galvanocauterization and diathermy.

There are cases, however, in which fulguration is not advisable on account of the character of the growth, or in which even the repeated application of the galvanocautery or the diatherm through the operative cystoscope is not successful, or cases in which, on account of the location or the extent of the tumor, an endovesical intervention *a priori* could not be expected to be sufficient.

The superiority of destruction by heat of vesical tumors over the excision with the knife is becoming more and more appreciated by urologists. The problem forced itself on our surgical judgment as to how to combine the advantages of this procedure with the elimination of the disagreeable features of the postoperative vesical drainage. In this endeavor we were guided by experiences in developing a method of complete closure of the bladder which quite constantly ensures primary union, even in the presence of vesical infection.

The essential features of this method are mattress sutures of the bladder wall with inversion of the mucosa edges, which union is reinforced by whipping over a simple continuous suture, and thorough subfascial drainage accomplished by placing a narrow rubber tube under the fascia of the recti and parallel to the incision. The ends of this tube are brought out at each end of the skin wound. The bladder is opened by suprapubic cystotomy in the usual manner. The seat of the tumor is freely exposed by retractors made of fiber or hard rubber, and the coagulation is thoroughly accomplished by the galvanocautery or by diathermy. The bladder and abdominal wall are then closed completely, except for the subfascial drainage.

The patient, after operation, urinates spontaneously or is catheterized at regular intervals. A permanent catheter is not used because of the danger of urethritis, vesical irritation and ascending infection. If cystitis occasioning marked or moderate symptoms is present, 20 per cent. argyrol solution is instilled into the bladder twice a day. The subfascial drainage tube is removed after twenty-four hours. The bladder incision and abdominal wound are usually entirely healed in seven or eight days. The condition and appearance of the former site of the tumor depends on the type of the destruc-

tive agent used. An eschar produced by the galvanocautery is exfoliated in from five to eight days, while that produced by the diatherm sloughs in from ten to sixteen days.

If malignancy is suspected or proved, radium or mesothorium is inserted into the bladder cavity by means of a urethral carrier.

It seems that the advantages of this procedure over the routine method of vesical drainage are obvious. Whether this technic is applicable to extensive carcinomas involving the base of the bladder remains to be proved by further experience.

A SUBSTITUTE FOR OPEN OPERATION IN SOME IRREDUCIBLE FRACTURES

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Pursuant to the surgical principle of accomplishing most in the least radical manner, we have resorted to a simple method of reduction in several cases of fracture in which open operation seemed obligatory.

The mechanism of the reduction is a lever in the form of a small, strong, steel probe acting between the displaced fragment ends and retained in situ by the plaster cast. It is resorted to under surgically aseptic conditions with anesthesia, while being observed under the fluoroscopic screen. The instrument is introduced through the iodized skin on the side of the extremity most remote from large vessels. Its end is guided by watching in both axes under the fluoroscopic screen. It is carefully placed between the fragments in such a manner as best to pry them back into apposition. Then when they are reduced, the instrument may be withdrawn; or, in the event of a recurrence of displacement, it is surrounded with a small sterile dressing and the plaster splint is immediately applied. When this is firmly set, the protruding part of the instrument is cut off with a hack saw. No infection should occur, and in from seven to ten days we remove the probe with a pair of pliers without a change of the cast unless otherwise desired. No death of bone should occur in this time with the degree of pressure here necessary.

It is an occasional experience to find, in a fracture of both bones of the forearm or leg, an irreducible condition of one or both bones. It is a frequent experience to find that, once reduced, they do not so remain. We believe this simple method will satisfactorily retain many such fractures and prevent a much more radical operation or a more cumbersome dressing in extension.

PATHOLOGIC LYING IN A CRIMINAL*

A PSYCHOPATHIC PERSONALITY

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The case here reported shows emphatically the character deviation of a pronounced and persistent fabrication, abnormal in type; this is a degenerate condition and almost invariably accompanies other forms of degeneracy, as shall be illustrated in our subject, who was likewise guilty of the most hideous crimes.

It was Delbrück¹ who definitely isolated this form of falsification, and for it he coined the term "pseudologia phantastica," a name that has since been adopted by many German writers; others have styled the disorder "mythomania."

Kraepelin² under the caption of "pathologic liars and swindlers" says: "Here we have in general to deal not only with a hyperexcitability of the imagination and defective faithfulness of the memory, but also with a certain unsteadiness in the sphere of the emotions and of the will."

Swindling has not entered into the activities of our criminal, but this may have been due to lack of opportunity—he has long been a convict.

* Read before the Philadelphia Neurological Society, Jan. 23, 1920.

1. Delbrück, A.: Die pathologische Lüge und die psychisch abnormen Schwindler, Stuttgart, 1891: p. 131.

2. Kraepelin, Emil: Psychiatrie, Leipzig, Johann Barth 2: 831, 1904.