

to have occurred, and in seventeen (17) there was some necrosis—a mortality of .010 per cent.

Of cuneiform osteotomies, in seventeen suppuration is reported, and five died—a mortality of .96 per cent.

Taking the whole number of operations, there was a mortality of .0132 per cent. There have, no doubt, been other fatal cases, but no record has been made of the fact, nor do these figures probably give a fair representation of the number of operations that have been performed.

Deformities of other bones have been corrected by an osteotomy, but the number of the operations are few. Muralt¹ and Schoepff² have divided the humerus for the correction of deformity of this bone after fracture. Walton³ operated upon two cases of ankylosis of the elbow joint in a straight line by dividing the humerus. Barwell⁴ mentions another case. Mears⁵ made a section of the humerus near the joint in a case of old dislocation. Gardeil and Guterbock,⁶ and Hill⁷ have divided the radius for vicious union after fracture. In all of these cases a good result was obtained.

Taking into consideration the many accidents, the want of experience as to the class of cases suitable for an osteotomy, the faulty methods in operating, and wound management, the results have been excellent. If the earlier operations were left out, the mortality would be reduced to almost zero.

¹ "Campenon," *loc. cit.* ² "Campenon," *loc. cit.*

³ "Lancet," April 3, 1880, p. 226.

⁴ "Treatise on Disease of Joints," 2d ed., p. 565.

⁵ "Trans. Am. Surg. Assoc.," vol. i, 1881-'83, p. 115.

⁶ "Campenon," *loc. cit.* ⁷ "Lancet," 1872, vol. ii, p. 153.

BIBLIOGRAPHY.

GENU VALGUM.

- Albert, E. Wiener Med. Presse, 1875, page 368, 415, and 473.
 Alexander. Liverpool Med. Chir. Jour., 1881, page 191.
 Annandale. Edinb. Med. Jour., July, 1875, page 18.
 Arnison. Med. Press and Circ., 1882, N. S., vol. xxxiv, page 350.
 Baker. Brit. Med. Jour., Nov. 16, 1878, page 727.
 Baker, A. E. A Clin. Lect. on Genu Valgum. Brit. Med. Jour., July 5, 1879, page 1.
 Bande, E. Du genu valgum. Thesis Lille, 1880, No. 20.
 Barwell, R. Brit. Med. Jour., Oct. 18, 1879, page 607.
 ——— Brit. Med. Jour., 1878, vol. i, page 747.
 Beauer. Orthopædic Surgery, 1868, page 192.
 Bradley, S. M. Med. Press and Circ., 1878, vol. xxvi, page 428.
 ——— Brit. Med. Jour., Sept. 7, 1878, page 368.
 Broadhurst, B. E. Lancet, Dec. 13, 1880, page 770.
 ——— Brit. Med. Jour., Oct. 18, 1879, page 609.
 ——— Brit. Med. Jour., June 14, 1879, page 897.
 Bœckel, J. Nouveaux faits d'osteotomie. Rev. de chirg., June, 1882, pages 463 and 470.
 Bœckel, J. Genou valgus: osteotomie cuneiform du tibia. Gaz. méd. de Strasb., 1884, 4 s., vol. xiii, page 3.
 ——— Bull. gén. de thérap., 1880, vol. xcix, page 117.
 Bœckel, M. E. Gaz. hebd. de Paris, 1882, 2 s., vol. xix, page 559.
 Bradford, E. H. Bost. Med. and Surg. Jour., Oct. 7, 1880, page 349; 1882, vol. cvii, page 611.
 ——— N. Y. Med. Jour., Jan., 1881, page 25.
 Bull, W. T. N. Y. Med. Jour., Jan. 26, 1884, page 102.

- Bridson, C. K. N. Y. Med. Record, 1880, vol. xvii, page 578.
 Burns, P. Die supracondyläre Osteotomie des Femur bei Genu valgum. Centralblt. für Chirg., 1880, page 545.
 Bryant, T. Lancet, March 27, 1880, page 487.
 Callender, G. W. St. Barthol. Hospt. Rep., vol. xiv, page 189.
 ——— Brit. Med. Jour., Feb. 23, 1878, page 260.
 Cabot, A. T. Bost. Med. and Surg. Jour., 1882, vol. cvi, page 155.
 Campenon, V. Du redressement des membres par l'osteotomie. Paris, 1883.
 Caron. Bull. et men. de la soc. de chirg., Paris, N. S., 1882, vol. viii, page 753.
 Craven. Brit. Med. Jour., 1882, vol. ii, page 1119.
 Chiene, J. The Treatment of Knock-knee. Edinb. Med. Jour., April, 1879, page 878.
 ——— Brit. Med. Jour., Oct. 13, 1877, page 529.
 ——— Edinb. Med. Jour., Sept., 1877, page 260.
 Chiari. Wiener med. Wochen., vol. xxviii, 1878, page 992.
 Davy, R. Lancet, Dec. 4, 1880, page 897.
 Dubourg, G. Osteotomie linéaire des femurs pour genu valgum double : enfant de 4 ans. Bull. et men. de la soc. de chirg. de Paris, 1883, N. S., vol. ix, page 923.
 Dunlap. Glas. Med. Jour., Oct., 1879, page 308.
 ——— Brit. Med. Jour., June 21, 1879, page 936.
 De Santi, L. Du genu valgum chez l'adolescent. Thèse de Paris, 1876, No. 469.
 ——— Arch. gen. de med., 7, s. viii, 1879, p. 712.
 Fabius. De Behandlung van het genu valgum. Thesis Leiden, 1880.
 Fowler. Annals Anat. and Surg., 1879, vol. i, page 53.
 Gerster. N. Y. Med. Jour., Feb. 23, 1884, page 227.
 Gould, P. Brit. Med. Jour., Jan. 21, 1882, page 87.
 Gussenbauer, C. Die Methoden der Künstlichen Knochentrennung und ihre Verwendung in Orthopädie. Arch. für klin. Chirg., 1875, vol. xviii, pages 1 and 374.
 Haward, W. St. George's Hospt. Rep., vol. x, 1879, page 466.
 Hofmohl. Ueber Osteoklase Osteotomie und Osteoektomie bei rhachitischen Knochenverkrümmungen der Kender. Wiener Med. Presse, 1880, No. 42, page 1329; No. 43, page 1360; No. 45, page 1433; and No. 47, page 1499.

- Hofmohl. Wiener Med. Presse, 1882, vol. xxii, page 1575.
 Holmes. St. George's Hospt. Rep., 1879, vol. x, page 239.
 Howes. Med. Times and Gaz., Nov. 16, 1878, page 586.
 ——— Guy's Hosp. Rep., 1875, page 531.
 Jones, T. Brit. Med. Jour., Oct. 18, 1879, page 613.
 Kärstrom. Hygiera Stockholm, 1882, vol. xlv.
 Kolaczek. Lon. Med. Record, June 15, 1878, page 269, and Berl. klin. Wochen., 1878, Nos. 19 and 21.
 Korbitz. Ueber die supracondyläre Osteotomie der Femur zur Heilung des Genu Valgum. Thesis Berlin, 1882.
 Küstner, O. Arch. für klin. Chirg., 1880, vol. xxv, page 601.
 Kilgariff, M. J. Med. Press and Circ., Feb. 26, 1879, page 159.
 Langton, J. Lancet, March 29, 1884, page 564.
 Larrivé. Lyon méd., 1879, vol. xxxi, page 400.
 Lecene. Contribution a l'étude de la pathologie du genu valgum. Thesis, 1879.
 Lister, J. Med. Times and Gaz., Nov. 1, 1879, page 502.
 Little, W. J., and E. Muirhead. Medical and Surgical Aspect of In-Knee, London, 1882.
 Littlewood. Lancet, 1879, vol. ii, page 910.
 Marsh, H. Brit. Med. Jour., April 5, 1884, page 665.
 Margary, E. Osteotomia sue varie applicazione nella sura della deformita con relativa statistica personale, Turin, 1882.
 McGill. Lancet, May 17, 1884, page 891.
 ——— Brit. Med. Jour., Nov. 25, 1882, page 1043.
 Macewen, W. Osteotomy, London, 1880.
 ——— On Antiseptic Osteotomy for Genu Valgum and Varum, and other Osseous Deformities. Lancet, Dec. 28, 1878, page 911.
 ——— Brit. Med. Jour., March 2, 1878, page 306.
 ——— Brit. Med. Jour., Oct. 18, 1879, page 607.
 ——— Brit. Med. Jour., April 24, 1880, page 627.
 Mason. Lancet, July 31, 1880, page 172.
 MacCormac, W. Antiseptic Surgery, London, 1880, page 11.
 Marchand et Terrillon. Du genu valgum. Rev. mens. de méd. et de chirg., vol. i, 1877, page 692.
 Mayer. Lancet, 1853, vol. i, page 557.
 Mikulicz, J. Die seitlichen Verkrümmungen am Knie und

- deren Heilungsmethoden. Arch. für klin. Chirg., 1879, vol. xxiii, page 671.
- Morris, H. Trans. Path. Soc., London, 1881, vol. xxxii, page 160.
- Ogston, A. Edinb. Med. Jour., April, 1877, page 782.
- Page. Med. Press and Circ., 1882, vol. xxxiv, page 350.
- Parker. Brit. Med. Jour., 1878, vol. ii, page 727.
- Med. Times and Gaz., Nov. 16, 1878, page 586.
- Med. Times and Gaz., Dec. 29, 1883, page 738.
- Peyre, A. De la deviation en dedans du genou (Genu Valgum) pathologie et traitement, Paris, 1879, No. 236.
- Podrazki. Wiener med. Wochen., 1880, vol. xxx, page 841.
- Pradignac, P. Étude sus l'osteotomie sou indications ses results. Thesis Paris, 1880, No. 269.
- Rabagliati, A. Brit. Med. Jour., Nov. 24, 1883, page 1006.
- Renton, J. C. Lancet, Sept. 16, 1879, page 353.
- Reeves, H. A. On Osteotomy, with special reference to its Value in Genu Valgum and Extrorsum. Trans. Clin. Soc., Lond., vol. xii, 1879, page 32.
- Brit. Med. Jour., 1878, vol. ii, page 728.
- Knock-Knee and its Treatment, with special reference to Extra Articular Osteotomy. Brit. Med. Jour., Sept. 21, 1878, page 431.
- Brit. Med. Jour., May 25, 1878, page 758.
- Brit. Med. Jour., Dec. 10, 1881, page 935.
- Brit. Med. Jour., June 28, 1884, page 1252.
- Richardson. Med. Press and Circ., 1879, xxvii, page 322.
- Riedinger. Arch. für klin. Chirg., vol. xxiii, 1879, page 288.
- Shaffer, N. M. A Lecture on Knock-Knee and Bow-Legs. Am. Jour. Obstet., 1881, vol. xiv, page 755.
- Swan, R. L. Dublin Med. Jour., Dec., 1880, page 465.
- Saint Germain, L. A. Osteotomie cuneiform et lineaire dans les deviations rachitique du membre inferieur. Rev. mens. de mal. de l'enfant, 1883, vol. i, page 572.
- Schede, M. Berlin klin. Wochen., Sept. 3, 1877, page 532.
- Berlin klin. Wochen., 1876, No. 52, page 745.
- Stirling. St. George's Hospt. Rep., 1879, vol. x, page 239.
- Schmitz, A. Eine Modification der Ogston'schen Operation des Genu valgum. Centralblt. für Chirg., 1879, No. 16, page 257.
- Szumann. Inaug. Diss., Breslau.

- Thiersch, C. Arch. für klin. Chirg., 1879, vol. xxiii, page 296 ; and Glas. Med. Jour., 1879, page 335.
- Thorens. Rev. Scien. med., France, etc., vol. xvii, No. ii, 1881, page 733.
- Thomas, W. On Various Methods in use for correcting Deformities of the Long Bones. Birmingham Med. Rev., June, 1882, vol. xi, page 251.
- Taylor, H. S. Brit. Med. Jour., April 7, 1877, page 429.
- Vergne, H. Traitement du genu en dedans par le redressement brusque. Thèse de Paris, 1875, No. 350.
- Von Hein. Berlin klin. Wochen., Oct. 1, 1877, page 592.
- Vance, A. M. Med. News, vol. xl, 1882, page 624.
- Warden. Brit. Med. Jour., Feb. 14, 1882, page 160.
- Wahl, E. Deutsch. Zeit. für Chirg., 1873, vol. iii, page 144.
- Weil, C. Centralblt. für Chirg., 1880, No. 19, page 318.
- Whitson, J. Brit. Med. Jour., April 22, 1882, page 577.
- Wright, G. A. Abstract of some of the Med. and Surg. Cases treated at the General Hospital for Sick Children, Manchester, 1881-'82.
- Yeats. Brit. Med. Jour., April 17, 1880, page 592.
- Zeissl, M. Wiener Med. Presse, 1880, No. 6, page 176.

HIP JOINT.

- Adams, W. Brit. Med. Jour., Dec. 24, 1870, page 673.
- Lancet, Oct. 14, 1876, page 535.
- Brit. Med. Jour., Sept. 29, 1877, page 461.
- On Subcutaneous Osteotomy. Brit. Med. Jour., Oct. 18, 1879, page 604.
- A New Operation for Bony Ankylosis of the Hip Joint, with Malposition of Limb by Subcutaneous Division of the Neck of the Thigh-Bone, London, 1871.
- Trans. Med. Chir. Soc., vol. lx, p. 1.
- Annandale, T. Edinb. Med. Jour., May, 1878, page 1034.
- Baker, M. Brit. Med. Jour., Sept. 21, 1878, page 438.
- Barton, J. R. North Am. Med. and Surg. Jour., 1827, vol. iii, page 279.
- Am. Jour. Med. Sci., 1837, vol. xxi, page 333.
- Barwell, R. Brit. Med. Jour., May 29, 1880, page 812.
- Lancet, 1880, vol. i, page 837.
- A Treatise on Disease of Joints, 2d ed., 1881, page 564.

- Bœckel, J. *Rev. de Chirg.*, June 10, 1882, page 480.
 Broadhurst, B. E. *On Ankylosis*, 1881, page 89.
 ——— *Brit. Med. Jour.*, Feb. 3, 1877, page 135.
 ——— *Lancet*, 1862, vol. i, page 326.
 ——— *Cases of Subcutaneous Section of the Neck of the Thigh-Bone.* *Trans. Clin. Soc., Lond.*, vol. x, 1877, page 91.
 Broome, G. A. *Trans. Med. Assoc. of Missouri*, 1877, page 34.
 Borchers. *N. Y. Med. Record*, May 19, 1883, page 541.
 Bull, W. T. *N. Y. Med. Jour.*, Jan. 26, 1884, page 103.
 Bryant, T. *Lancet*, Nov. 10, 1877, page 686.
 ——— *Lancet*, Nov. 17, 1877, page 724.
 ——— *Lancet*, Dec. 22, 1877, page 917.
 Berend. *Gaz. hebd.*, 1862, page 284.
 Billroth, Th. *Chirurgische klinik Wien.*, 1871-'76, page 543.
 Cameron. *Glas. Med. Jour.*, 1879, vol. xii, page 305.
 Carmalt, W. H. *N. Y. Med. Jour.*, June 7, 1884, page 646.
 Clèmot. *Gaz. méd. de Paris*, 1836, page 347.
 Conner, P. S. *Cin. Lancet and Clinic*, July 6, 1878, page 1.
 Croft. *Trans. Clin. Soc., London*, 1877, vol. x, page 94; and
 Brit. Med. Jour., Feb. 3, 1877, page 135.
 Davy, R. *Lancet*, Nov. 15, 1879, page 732.
 Devecchi, P. *The Western Lancet*, Sept. and Nov., 1881,
 pages 289 and 385.
 Fagan, J. *Dub. Med. Jour.*, Dec., 1879, page 444.
 Gant, F. J. *Lancet*, Dec. 21, 1872, page 881.
 ——— *Brit. Med. Jour.*, July 1, 1876, page 28.
 ——— *Brit. Med. Jour.*, Oct. 18, 1879, page 606.
 Goldie, R. W. *Brit. Med. Jour.*, 1883, vol. i, page 155.
 Golding-Bird, C. H. *Guy's Hospit. Rep., N. S.*, vol. xxii, 1877,
 page 275.
 Hamilton, J. W. *Ohio Med. Recorder*, Aug., 1877, page 97.
 Hodges, H. L. *Med. and Surg. Reporter (Phila.)*, May 4, 1878,
 page 341.
 Holmes, T. *Lancet*, Oct. 14, 1876, page 536.
 Hutchison, J. C. *Proc. Med. Soc., Kings County*, 1878, page
 259.
 ——— *Am. Jour. Med. Scien.*, 1883, vol. clxx, page 409.
 Hutchinson, J. *Brit. Med. Jour.*, March 4, 1882, page 298.
 Jordan, F. *Brit. Med. Jour.*, Dec. 24, 1870, page 676.
 Keetley, C. B. *Brit. Med. Jour.*, Feb. 9, 1884, page 261.

- Lund, E. *Brit. Med. Jour.*, Jan. 29, 1876, page 128.
 Macewen, W. *Glas. Med. Jour.*, Oct., 1879, page 305.
 Maisonneuve. *Gaz. méd. de Paris*, 1847, page 935.
 ——— *Gaz. de Hôp.*, 1849, page 64.
 Marsh, H. *Brit. Med. Jour.*, April 5, 1884, page 665.
 Maunder, C. F. *Brit. Med. Jour.*, Nov. 4, 1876, page 605.
 ——— *Lancet*, July 11, 1874, page 65.
 ——— *Lancet*, March 25, 1876, page 476.
 ——— *Lancet*, Oct. 28, 1876, page 609.
 ——— *Trans. Clin. Soc., London*, vol. ix, 1876, page 160.
 ——— *Brit. Med. Jour.*, May 20, 1876, page 644.
 ——— *Brit. Med. Jour.*, Dec. 8, 1877, page 804.
 Moore, E. M. *Trans. Am. Surg. Assoc.*, vol. i, 1880-'83, p. 111.
 Morton. *Phila. Med. Times*, 1881, vol. xii, page 219.
 Norton, A. T. *Lancet*, 1879, vol. i, page 264.
 Novari, G. F. *Arch. Ortopedia*, Jan., 1884, page 46.
 Porter. *Bost. Med. and Surg. Jour.*, April 18, 1878, page 505.
 Post, A. G. *Annals of Anat. and Surg.*, Jan., 1883, page 30.
 Parker, R. W. *Brit. Med. Jour.*, Oct. 18, 1879, page 611.
 Rosmanit, J. *Zur operativen Behandlung der schiveren Formen von Contracturen und Anchylosen im Hüftgelenk.*
 Arch. für klin. Chirg., 1882, vol. xxviii, page 1.
 Rawdon, H. G. *Liverpool Med. Chir. Jour.*, 1881, page 187.
 ——— *Liverpool Med. Chir. Jour.*, Jan., 1882, page 23.
 Rodgers, J. K. *N. Y. Jour. Med. and Surg.*, 1840, vol. ii,
 page 238.
 Sands, H. B. *N. Y. Med. Jour.*, 1873, vol. xviii, page 609.
 Sayre, L. A. *N. Y. Med. Jour.*, Jan., 1869, page 337.
 Shaffer, N. M. *Annals Anat. and Surg.*, Dec., 1883, page 243.
 Servais. *Rev. de chirg.*, Dec., 1881, page 1043; and *Bull.*
 Acad. roy. de med. de Belgique, 1881, vol. xv, page 465.
 Smith, Stephen. *N. Y. Med. Record*, June 2, 1883, page 589.
 Stokes. *Brit. Med. Jour.*, April 8, 1882, page 505.
 Van Der Veer. *Annals Anat. and Surg.*, Oct., 1883, page 161.
 Volkmann, R. *Centralbl. für Chirurg*, 1874.
 ——— *Centralbl. für Chirurg*, 1880, No. 5, page 64.
 Wharton, H. R. *Am. Jour. Med. Scien.*, 1883, No. clxxi,
 page 101.
 ——— *Med. Times (Phila.)*, Oct. 20, 1883, page 427.
 Walter, A. G. *Arch. Clin. Surg. (N. Y.)*, 1876, page 60.

TIBIAL CURVES.

- Alexander. *Liverpool Med. Chir. Jour.*, 1881, page 191.
 Brainard. *Chicago Med. Jour.*, 1859, vol. ii, page 5.
 Bœckel, J. *Gaz. Med. de Strasb.*, 1879, 3 s., vol. viii, page 42, 53, 65, 82, 94, 108.
 Chavasse, T. F. *Brit. Med. Jour.*, July 30, 1881, page 158.
 Gibney, V. S. *Maryland Med. Jour.*, 1879, vol. v, page 15.
 Guerin. *Bull. de l'Académie Méd.*, April, 1876.
 Haward. *St. George's Hosp. Rep.*, 1877-78, vol. ix, page 133.
 Jones, T. *Brit. Med. Jour.*, Oct. 18, 1879, page 613.
 Marsh, H. *Med. Chir. Trans.*, vol. lxxviii, 1874.
 Pean. Redressement des os des jambes chez une dolescent. *Paris méd.*, 1879, 2 s., vol. v, page 17.
 Ruess, L. J. M. De l'Osteotomie dans corbure rachitique des os Thèse de Paris, 1878, No. 90.
 Whitson, J. *Brit. Med. Jour.*, April 22, 1882, page 577.

OSTEOCLASIS.

- Aysaquer, P. Du redressement des courbures rachitique des membres infereurs chez les enfants par osteoclasie. Thèse de Paris, 1879, No. 82.
 Berry W. *Med. Press and Circ.*, Sept. 12, 1883, page 219.
 Berthet L. Appareils pour les redressement articulaires. *Rev. mens. de mal de l'enfants*, Paris, 1884 vol. ii, page 29.
 ——— *Jour. gén. de therap.*, Jan. 15, 1880, page 40.
 Brachini A. *Sperimentali Firenze*, 1882, page 42.
 Bradford, E. H. *Bost. Med. and Surg. Jour.*, 1881, vol. cv, page 444.
 Braye. Du genu valgum et de son redressement par l'appareil. Collin, Thèse de Paris, 1880, No. 472.
 Cabot, A. T. *Bost. Med. and Surg. Jour.*, 1879, vol. ci, page 217.
 Delore, X. Du mecanisme du genou en dedans et de son traitement par le decollement des épiphyses, Lyon, 1874.
 Delarue, V. Du redressement du genu valgum par l'osteoclasie. Thèse de Paris, No. 184, 1884.
 De Sante. *Arch. gen. de méd.*, 1879, vol. i, page 719.
 Farabeuf. *Gaz. des Hôpt.*, 1879, page 1198 ; 1880, page 13.
 Fifield. *Med. News (Philadelphia)*, 1883, vol. xlvii, page 414.

- Gillette. Genu valgum : osteoclasie (Collin). *Bull. et men. de la soc. de chir.*, Paris, 1883, N. S., vol. ix, page 920.
 Guers, A. Traitement du genu en dedans chez l'adolescent par un nouvel appareil. Thèse Lyon, 1881, No. 83.
 Guillon, G. Appareil pour le redressement d'un femur vicieusement consolidi. In *his. œuvres cher et méd.*, Paris, 1879, page 137.
 Horand, M. *Lyon méd.*, Jan. 6, 1884, page 16.
 Lévêque. *Union méd. et scient. du nord est Reims*, 1883, vii, page 157.
 Le Dentu. *Bull. et men. de la soc. de chirg.*, Paris, 1880, N. S., vol. vi, page 419.
 Ménard, V. Redressement brusque du genu valgum. *Rev. de chirg.*, 1881, page 727.
 Mollière. *Lyon méd.*, Dec. 23, 1883, page 549.
 Nepveu. *Arch. gén. de méd.*, 1875, vol. ii, page 332.
 Parker, R. *Med. Times and Gaz.*, 1883, vol. ii, page 738.
 Polaillon. Genu valgum opéré par l'osteoclasie (Collin). *Bull. et men. de la soc. de chirg.*, Paris, 1883, N. S., vol. ix, page 885.
 Porter. *Bost. Med. and Surg. Jour.*, April 14, 1879, page 217.
 Ribera, J. *Rev. de enferno de niños*. Madrid, 1883, vol. i, page 211.
 Robin V. *Lyon méd.*, 1883, vol. xliii, page 44.
 ——— *Lyon méd.*, 1882, vol. xxxix, pages 449, 487.
 Taylor C. F. *N. Y. Med. Record*, April 21, 1877, page 241.
 Terrillon. Nouvel appareil pour le redressement des position vicieuse de la cuisse sur le bassin. *Bull. gén. de therap.*, 1882, vol. cii, page 241.
 Vallin. Redressement manuel dans les deviation rachitique du membres infereur. *Rev. mens. de mal. de l'enfant*, 1884, vol. ii, page 19.