clotted milk between pH 7.0 and 5.0. It becomes more marked toward the isoelectric point of casein for in more acid media the clot is less stable in dispersion. The greater attraction between the coalesced particles squeezes out the liquid between them, the rate of such contraction increasing with the concentration. The properties of milk curd will be considered in a forthcoming study.

The coagulation of skimmed milk below pH 5.0 was determined with pepsin (Table 4). The clotting time assumes a minimum at about pH 4.8 but increases with rise in pH. The clotting duration appears greatest at about pH 2.7. With increased CH however the rate of coagulation becomes increasingly faster. On the acid side of the isoelectric point of casein the clot was granular and no syneresis was observed. While clotting time diminishes at pH values below the broad maximum 2.5-3.0, clotting is inhibited below pH 2.0 (Fig. 2). Clotting time studies at higher temperatures indicate steeper gradients broadening at lower temperatures.

SUMMARY

Rennet clotting of milk is accompanied by no change in the hydrogen ion concentration but pepsin clotting shows an asymptotic diminution in the hydrogen ions due to their adsorption by paracasein. Milk coagulates spontaneously at various pH zones, insoluble casein salts being formed between pH 2.0 and 3.0, isoelectric casein at pH 4.7 and calcium caseinate at about pH 6.5. Optimum rennet coagulation is at about pH 6.0 coinciding with complete conversion of casein to paracasein. At about pH 5.3 acid precipitation is initiated and rennin activity practically ceases. The rennet zone is broad and the acid zone narrow; the optimum of the former is pH 6.2 and that of the latter is at pH 4.7. The rate of clotting with pepsin diminishes in more acid ranges until 2.7 when it increases again. At alkaline pH no clotting takes place.

REFERENCES


SIDELIGHTS ON PROCTOLOGY*

A n examination of the written records of the past tends to induce a healthy attitude of humility in a medical man of any field. It is immediately found that fundamental medical methods and surgical procedures do not germinate spontaneously but are slowly evolved with the turn of the centuries, and that in the words of the prophet “All knowledge is but a remembrance and all discovery but a forgetting.” Nowhere is this more evident than in proctology, where a lively interest existed on the part of the most ancient practitioners. Hundreds of years before Christ, the Egyptians recorded their findings in proctologic examinations; Hippocrates, born on the Island of Cos in 460 BC, left descriptions of fistulas and hemorrhoids and instructions concerning their treatment which would not be out of place in a text book of today; Aurelius Cornelius Celsus writing his “De Medicina” during the region of “Tiberius,” in the island of Cos in 460 BC, left descriptions of fistulas and hemorrhoids and instructions concerning their treatment which would not be out of place in a text book of today; Aurelius Cornelius Celsus writing his “De Medicina” during the region of “Tiberius,” in England, it was a Cavalier, a loyal follower of Bonnie Prince Charlie in his exile and “Surgeon in Ordinary to His Person” when he became Charles III, who was to lead the English surgeon into the promised land. This Richard Wiseman, like his great contemporary in the medical field, Sydenham, was primarily a soldier, like Sydenham he was a forerunner of modern methods and manners of thought. After completing his seven years of apprenticeship, he had served in the armies of Holland, of Spain, of Charles the 1st of England and later in those of his son. With the Restoration of the Monarchy, he became the first consulting surgeon of his time and at the age of 48, Master of the Company of Barber-Surgeons. His Surgical Treatises, which described his experiences in the diagnosis and treatment of a wide range of lesions including diseases of the anus, demonstrated that he was a man far ahead of his time and in England elevated surgeons from the tonsorial status to that of a respected profession. In France, the surgeon was in even greater disrepute, the itinerant and quack being often more highly respected. Late in the 17th century however an event occurred which has been said to have been more important to the prestige and consequent advance of surgery than all the teaching of the French master surgeon, Pare’. On November 18th,
1687, Louis 14th, the Sun King, was operated upon by his Surgeon in Chief Monsieur Felix de Tassy.

The royal patient had been afflicted with fistula for a year, during which courtiers and quacks extolled various remedies. The King sponsored a massive experiment, in which the most promising of these infallible remedies were applied to various of his subjects similarly afflicted. No one was cured after a year's trial and consequently permission was granted to the surgeon to incise the royal flesh. A curved and guarded scalpel was used, now known as the royal bistoury; the operation resulted in a complete cure; the surgeon, his eight assistants and the boy who carried the hot water received altogether a fee of $73,000, a standard not exceeded until Mr. Lockhart-Mummery journeyed to far-off India to cure a Maharajah. The complaint became extremely fashionable in the Court and throughout France. It is said that Louis the 14th influenced medicine in three curious ways, his attack of typhoid fever gave immense vogue to the use of antimony, his anal fistula brought about the rehabilitation of French surgery, and the fact that his mistress was attended by Clement the royal accoucheur did much to further the cause of male midwifery.

From these beginnings has the art and science of surgery reached its present eminence and as surgeons we exult in its continued progress.

Proctology as a specialty was a product of the nineteenth century and it is good to feel that our craft is actuated by the same idealism and scientific honesty which motivates our confreres in the wider field. The constant flux in proctologic opinion, with increasing clarity of insight is apparent to one who peruses the pages of medical literature covering the diseases of the ano-rectum. It may interest you as it did me, to take a short journey, by way of contrast, through the Transactions of this Society and contemporaneous literature of 1913, a year I have selected because it marked my own passage through the first portals of medical study.

Dr. Joseph Matthews, the first physician in the world to limit his work to this field, was for the second time President of this body, succeeding Dr. Louis J. Hirschman. The problem of the proper bounds of the specialty was one of evident concern and the opinion was offered from the floor of this Society that while urologic and gynecologic lesions could well be disregarded by the proctologist, the structural uniformity of the intestinal tract, its exposure to the same agents of disease and the interdependence of all intestinal diseases rendered as logical the inclusion of the entire tract.

Dr. Jerome Lynch proposed a plan for blocking the abdominal sympathetic nerves which foreshadowed the work of Finsterer and Kappis; Dr. Dwight Murray offered a fourth report on the subject of pruritus ani, based on an enthusiastic belief in the relief to be obtained from the use of his streptococcic vaccine, while Dr. Hanes, acid and castor oil undiscovered, advocated surgical drainage and cauterization. Fistula enjoyed the same diversity of treatment afforded four hundred years before Christ when Hippocrates discussed the comparative merits of the scalpel, the ascharotic and the seton. Dr. Robins of Virginia and Dr. Riggs of South Dakota, called attention to the facility with which a flap of rectal mucosa could be slid down to cover the internal opening and suggest that all fistulae arise from thrombotic internal hemorrhoids. Mr. Mummery advocated incision but not excision of the fistulous tract.

Dr. Harvey Stone of Baltimore, entered a spirited defense of the Whitehead operation, although his records indicated that 37 out of 185 cases complained of "weakness of control of the bowel." Another author advocated electrolysis as a painless, safe method of treating all cases of internal hemorrhoids.

Several cases of rupture of the intestine from introduction of the new sigmoidoscope were reported and it was suggested that introduction under anesthesia presented perils as did the use of too vigorous inflations, made unnecessary by use of the position Dr. Hanes had suggested.

Amoebic dysentery was a fruitful subject for discussion, as the exponents of appendicostomy or cecostomy (Dr. Jelks, Dr. Beach, Dr. Gant), were now hearing of the new specific, emetin, just discovered by Major Leonard Rogers of Calcutta, which had been found to have marvelous effect in the type of dysentery in which the parasites were demonstrated but not in the "bacillary" type.

The "Irritable Colon" of 1937 presented the same complexity of syndrome and multiplicity of treatment a quarter of a century ago under the names "myasthenia gastro-intestinalis," "membranous enteritis" and "colica mucosa."

Pilonidal sinus was discussed as an interesting anomaly by Dr. Krouse, who disagreed with the current opinion that the presence of hair was due to broken hair from the exterior being pushed into the sinus through its entire length and stitched the lining membrane to the skin, in another the tract was laid open and curetted, in a third the tract was excised on a probe and the parts approximated.

Dr. Dan Jones was already sounding the warning that rectal cancers came to surgery too late, and Dr. Jelks still hale and hearty in 1937, in 1913 gave a vigorous exhortation under the title "Crude and Careless Diagnostic Methods" which ended more or less as follows:"

And now that life's end is near approached, our retrospective brings to mind the following verses:

"Life is an experiment, whose proof is real
That which you think, you live and feel;
Think, feel, reap and learn to grow,
For life is worth just how much you know."

The Oath of Hippocrates prescribes that the pupil shall cherish and support the Master who taught him the Art and regard as brothers the sons of his preceptor. In the confines of this small group are gathered all my preceptors as well as former fellow neophites in the art and science of our specialty and I should be ungrateful indeed if I failed to feel for this association an enduring affection as well as an honest admiration because of its thirty-eight years of service to the medical profession and to humanity.

These annual gatherings are to me refreshing opportunities for scientific rehabilitation and pleasant fellowship, the Society is to be especially congratulated upon the unusually large group of wives and daughters who grace the occasion. To these charming women who share so bravely our sorrows and rejoice