cide, has given good results. **Collargol** by injection, gave excellent results in several severe cases (Netter). **Mineral Acids, Hydrochloric** is given in very large quantities in the so-called Swedish plan of treatment (W). **Nitric-hydrochloric acid** is given in gr. xx in saline and Subphosphate for intestinal hemorrhage, preferred over all other plans of treatment (Da C). **Tartar Emetic**, with *Opium*, when wakefulness and delirium; meningitis, is often given. It is frequently, one of the great scourges (Pulastri); it may be dangerous in the later stages (Austie, Murrell); used by the Germans when there is no cardiac weakness: gr. xx—xxv as antipyretic, every hour or every six hours (P). **Quinine**, may have efficacy in typho-malarial fever, is less effective as the typhoid element predominates, unless in purely continued fevers (B); it is absolutely, but may be used to maintain the circulation, in tonic doses, gr. 1/12—1/2 in the 24 hours (Da C). Quinine salicylate, not in antipyretic doses, has given the highest results, being superior to salol or any other antipyretic substance (Sir J. Moore). **Salolquinine** in doses of gr. xxx given in the evening shortly before the bath, so as to develop its antipyretic action when the effect of the bath is declining (Overdach).

**Antipyrine** and **Acrisphenobenzidin**, as antipyretics, but all such agents of energetic action cannot be too emphatically condemned in this disease (Sir J. Moore). Lactophenin gr. xx for adults thrice daily, reduced the temperature from 102° to 4° F. in 450 cases, where water treatment could not be obtained (Schieltz). **Thermol** is valuable as a safe antipyretic and internal antiseptic (Miller). **Phenocoll**, the Hydrochloric acid is used as an antipyretic with marked success. **Veratrum Viride** to reduce temperature (B); for delirium fever (B) is irrational and dangerous (W). **Arnica** is highly esteemed; its "picture" slows definite processes in this disease (B); small doses in asthenic conditions (B); when vital powers are greatly depressed (Wa). **Baptisia** is very useful in the early stage; the milk is required when hemorrhage and extreme typho-malarias (P, R); gr. 3 in 9 or 18 draft in the morning and evening, after the sixth hour (Tinck. Opil). (P); gr. 1/2—1/2 every 2 hours in advanced stage, with gr. 1/6 preparation, every 2 hours or more, gr. 1/8 when coma comes (W); gr. 1/8 of Morphine; of especial value when marked fever and congested lungs, as well as for the tachypnea (Da C). **Choral** is the best drug for nervous symptoms, but must not be used when the heart is weak (Da C). **Opium**, small doses at night, for insomnia with delirium; also as injection for the diarrhea (R); in one case when vital powers seemed completely depressed (W), gr. 1/20 improved (W); for spurring tenderness (poliomyelitis), give to half doses of the deodorized tincture, also gr. 1/8 in hypodermic every four hours (Da C). **Belladonna**, when contracted pupils, low, morning delirium (B); is thought to counteract the poison of typhoid (Wa). **Beta** is a most valuable antipyretic, especially in severe cases of delirium, in every 24 hours, reduced to gr. 1/8 of the Substitute with gr. 1/8 of Opium every 3 hours for the severe diarrhea (Da C). **Ergot**, for intestinal hemorrhage, hypodermically if the symptoms are urgent and severe. **Acrisphen** is often given in every 24 hours, is very efficient, hypodermically (Da C). **Sulphur** gr. xx every 2 hours, is valueless for cases with constipation, and has a beneficial action on the intestinal mucous membranes (Carstairs). **Sulphuric Acid** deserves high praise (Dewar); mg. 5—mg. every 2 hours for a week or ten days, if diarrhea present add Sulphuric Acid and Opium (Wilcox). This shows that an intestinal antiseptic is valuable (Henry); gr. xx—xxv in saline (Da C). **Eucalyptus Oil**, not Eucalyptol, mg. 5—mg. xx in whiskey, is a very efficient intestinal antiseptic, also antipyretic and abortive to the disease, gives greater relief to all the general symptoms of any other drug (Kesteven). **Cannabis** for nervous cases, especially when nervous symptoms are prominent and there is a tendency to insomina (McCormick); gr. 1/16 in 10 or 15 drops. In cases of delirium, is unequalled in extreme cases (Stengel). **Tannatin** is given to control excessive diarrhea, is very efficient, hypodermically (Moore). **Iodoform** as an intestinal disinfectant and for explosive diarrhea, gr. xxv—gr. x every 2 or 4 hours in hemorrhage, to increase the convulsions of the body (Duller). Gelatin in 10 per cent. solution, a pint in 24 hours, for the same purpose (Id). **Suprarenaline** denitrate, gr. xxv every 4 hours to constipate the vessels (Id). **Sodium Chloride** should not be withdrawn from the food (W). **Aromatic Spirit of Ammonia**, for great accumulation of mucus in the throat (Da C). **Cooper Sulphate**, gr. xx with Opium, gr. 1, for the diarrhea (Da C). **Strychnine**, is the remedy for the functional pauses (Da C). **Purgatives**, only the very mild, and they with the greatest caution (W). **Medicine**, will never abort a case of true typhoid, its natural duration is from 21 to 30 days (Jenner); medicines should not be given in pills or tablets, which are liable to irritate the intestinal lesions. **Serum Treatment**, both antitoxic and prophylactic, has been successfully employed (Chatterson). Ball in 70° F. gradually lowered by ice to 65° F., whenever the temperature reaches 105 F. (Looms); a most important agent in this disease (B); in mild cases, cold wet compresses or wet sheets, or washing with cold water, in severe cases, a plume, a swab or cold bath, 70° to 55° F., or better 93° cooled gradually to 60° F., this, the Brand method (more justly Curie’s), increased the flow of urine and its toxicity, restoring the latter to normal and sometimes to double the normal, thereby clearing the system of toxins (Aussie). **Stimulants**, Whiskey in doses of 5 oz., as indicated by the pulse, heart action and general condition (Looms); alcohol is necessary to sustain the heart (Da C). Coffee is a better stimulant than alcohol: **Strychnine** only to reinforce alcohol, when the latter proves insufficient (Looms). **Digitalis** hypodermically for impending failure of the right heart, shown by cyanosed extremities, pulmonary edema, etc. (Id). **Alcoholic stimulants** freely, with Quinine, for pyramic cases showing joint complications. **Diet** should be milk alone, with time-water, poached or prepared, during the whole course (Looms). **Milk** must be used with great caution; if the card be undisguised great evils arise; give essence of meat alone (Sir Wm. Jenner); avoid the extremes; an absolute milk diet required if intestinal symptoms are present; no solid food until health is restored fully; a scalded-milk diet exclusively may be depended on. **Adjuvants**, water as a drink freely, as much as possible; water locally by abdominal compression, steam, if often applied cold, great cleanliness, good ventilation, abstinence, and quiet. **Discharge of the bowels** by Florideformaldehyde 1 to 40 of linen and bed-dressing by Pheny 1 to 20 of the nurse’s hands by Mercarian Chloride solution 1 to 1,000. [Compare HEIMBURGER DERMATITIS, RECTAL ULCERATION, PYREXIA.].


**F.** *capsula no. 1.** Sig. One capsule every 3 or 4 hours, alternately with the tablets, after the fourth or fifth day of treatment.** All the medicines in the above cases should be given with large draughts of distilled or sterilized water.** (Woolbridge No. 1.)


**F.** *capsula no. 1.** Sig. One capsule every 3 or 4 hours, alternately with the tablets, after the fourth or fifth day of treatment.** All the medicines in the above cases should be given with large draughts of distilled or sterilized water.** (Woolbridge No. 1.)

**M.** Sig. A tablespoon in an equal quantity of water, every three or four hours. (Woolbridge No. 2.)
Typhus Fever—Ulcers and Sores.

Typhus Fever. Antipyrine for hyperpyrexia (W); Antipyrine or Quinine as antipyretic; it being more important to keep the temperature under control than to suppress it. Chloroform, in solution, is a useful febrifuge (B). Acetaminethen, a safe and efficient antipyretic. Baptisia, is said to have proved very useful (W). Belladonna, to cleanse and moisten the tongue; controls the delirium, abolishes the pulse, reduces fever by one to two degrees of Centigrade (K, P); in the early stages, relieves severity of symptoms (P); given when the pupils are constricted (B). Arnica is highly recommended for its irritant and desiccant effects (W). Poyphillin, gr. 1–2 as mild laxative at onset, when constipation, congestive headache, biliary derangement (D). Digitally, in large doses, a favorite remedy in Germany (P). Rhatany, as tonic, in advanced stages (P). Hyoscymus, for mild brain symptoms (P). Opium, fulfills many important indications; never given when pupils are contracted (W). Mineral Acids, their use recommended in all countries (W). Tar Tar Emetic, with Opium in the delirium with insomnia (K). [See under Typhus.] Chloral, to produce sleep and allay violent delirium (R, W); its use has often been followed by amelioration of the symptoms (W); is highly efficient in the wild delirium of the earlier stages (W). Serpentina, in low stage, delirium, watchfulness, tongue dry and brown, or black; combine it with Ammonium Carbonate (P), it gives occasional to extreme diaphoresis and supports the vital powers (W). Camphor, a remedy of considerable value, but contraindicated when flesh-red tongue, tender abdomen, diarrhea (W). Purgatives, mild salines may be used if required, but not narcotics (W). Alcohol as milk-punch, is useful in all stages (W); stimulants are needed sooner than in typhoid, the adynamia being more profound in typhus and appearing sooner (W). Coffee is better than alcohol for the adynamia (P). Cold Baths for hyperpyrexia, have been employed on a large scale (W). Diet, nutritious, instantly, beet-syrup, egg-syrup, nutrient emetica. Isolation, imperative, as the disease is extremely contagious (B). [Compare Delirium, Typhus Fever.]

Ulcers and Sores. Arsenic, improves ulcers of head (R); Belladonna, has a remarkable influence over various ulcerative processes (P). Chlorine, as lotion for alveolar sores, 5 to 10 grains to the S of water (Kyes); is highly efficient in ulcerated sore throat or ulceration from any cause (Brodin). Chloroform in 1 per cent. solution as an anesthetic to ulcerated sores. Mercury, Colloidal finely leached and decanted on, is highly efficient in ulcer of the conjunctiva; Colloid Ointment or Black Wash in scrofulous or tuberculous lungs, and in open scrofulous cavities. Salicylcholine, in very strong solution, as an application to syphilitic ulcers (Fox); the Urg. Hydrag. Nitrite, dilute a one-half for serpiginous ulceration; or the Iodicide, gr. x–xx–x to the S of water; in ulcerative ulcers (Kyes). Lime, as the Carbonate or Lime-water to support the discharge; the Sulphur and the thin ichthyous discharge; the Phosphate has influence on ulcerous sores (R). Opium or Morphine, with glycerin, as an application to severe fistulas or gr. x–xx or daily, locally, has a decided curative value in fistulous and indolent ulcers; not so useful in so-called irritative ulcers (K, P). Ichthyol, pure or oint. or with Lanolin, has done excellent service in ulcers of the leg; a 10 per cent. solution is very efficient in old leg ulcers (Brodin); a 5 per cent. solution applied, daily, 1 per cent. solution Mr. Blackman gave phenomenal results in cornal ulcers (Travis). Ichtharmarin in 1 and 5 per cent. dusting powders made with Talcum. Thiol, the dry form, as burning powder, has been of great benefit. Piperazin, in 1 per cent. solution, locally to granity sores, reduces the pain and reduces the inflammation. Resorcinol, in strong water or saturated solution, locally applied to tuberculous and other ulcerations of the larynx, is efficient and painless (Tewson); locally in indolent ulcer (Williams). Tannic Acid locally to check excessive secretion in chronic ulcers (W); the Glycere to exudate over discharging sores (R). Tannin is efficient in field ulcers of the leg (Von Mering). Camphor damped over indolent sores (R); gives the best results in ulcers of the leg (Schauf). Hydrogen Oxide is particularly useful in ulcers of the leg with an atomic base, also in soft ulcer and tertiary phagedena (Ravaioli). Cerium, locally, by means of a poultice, will ease pain and improve the sore (R). Chlorine, in solution as a wash for draining ulcers and indolent sores (R); the gas as a local stimulant to promote healing in old ulcers is found to be highly efficient; Chlorine water properly diluted is an excellent stimulant. To cleanse and dry the foot of the leg ulcer (W). Phenol and Salicylic Acid locally of decided importance (B); the Glycere of Phenol is a good application to field sores (R). Phenol pure, freely applied under chloroform anesthesia, is a powerful and persisting caustic to destroy the diseased surface, in tropical ulcerating phagedena (Mn). Phenolsulfonyl in 20 to 50 per cent. solution, is very effective in various ulcers and ulcerated gummatas, even in cases resisting other medication for several years (Tatarinoff). Ploric Acid in a per cent. solution locally for chronic ulcers (Maddox). Neuralgy is an excellent application for variolous ulcers (Vidal). Iodiform for variolous ulcer, dried over surface (R), prevents granulation in all ulcers, and does no good except to relieve pain (Gross). Thymol Iodide is praised; an excellent substitute for treatment of indolent sores and syphilitic ulcerative processes. Silver Nitrate, as caustic, quickly rubbed over surface (R); applied to umbilical ulcers, also ulcers of the mouth (R). Copper Sulphate, to indolent ulcers, touch with a crystal, or frequently apply a solution, gr. j to the (R). Nicrit Acid, as caustic, applied with a glass rod, Oil to protect the surrounding tissues, arrest its action by alkaline wash; 3) to Oj to a good acid lotion for washing (D); the lotion for indolent and painful ulcers (R). Potassium Chlorate, in solution as a wash to clean and stimulate fistul ulcers (R); in impalpable powder, a better application than Iodiform (B). Clinchona, powdered Black dusted over foetid, indolent, sloughing and gangrenous ulcers, promotes healing. Alcohol, locally to cover sores with thin protecting layer of congealed albumin (R). Alum, dry or in solution, applied to relaxed and abundantly-secreting sores (R). Turpentine, internally for ulceration of bowels (P). Collidion, as protective covering (P). Capsicum, a weak solution useful as a stimulant in scrofulous or fatalsores (P). Sarsaparilla, as acid (not chemical) caustic (P). Potassium Permanganate in solution as a wash for draining ulcers (R). Nicrit, the most efficient exscharotic consistent with safety (B). Zinc Sulphate, diluted, dusted over sores (R). Zinc Sulfate with Thymol Iodide, is an excellent application (R). Stearate of Tallow (Hollan); for the treatment of ulceration of the ulcers (Hale). Aesclanide in fine powder dusted on, an excellent agent for ulcers, sores, mucous patches and the like. The substance as an application to ulcers (R). Balsams of Peru and Tolu, are excellent applications (P). Charcoal freely powdered, locally to sloughing sores (R). Harmanellis is used with satisfaction as an antiseptic dressing. Nickel, locally to corroded and decaying edges of ulcers, cured an ulcer of 20 years' standing in 4 months (Vaugel); Yeast poultices (R), their value probably due to the yeast in them. Section of exposed nerve-filaments, in irrigating ulcer, by biopsy puncture, is highly efficient (Brodin). Cod-liver Oil, especially for ulcerations of the glands, or indolent ulcers with excoriated edges, and lumps. Water, is sufficient as dressing in the majority of cases. Water, applied by the continuous irrigation thesis of the affected limb, is perhaps the most efficient treatment of indolent ulcers of the leg or foot, restoring other applications; proved very successful in my Philippine experience (Weyl). Rest and support are great values (Brodin); diminished and consistent position in ulcer of legs, facilitate recovery; also daily washing to restore the lost vitality of parts; elastic stockings, and the Emmam sack bandage in chronic cases. (Compare Bacteriologie, Ulceration, Tumor; Gastro- and Urethral Ulceration; Trichina, Toners, Urethral Ulcer, Ulceration.)
Uremia—Urinary Disorders.

Uremia.

Pilocarpine, as an active diaphoretic, on the first appearance of uremic symptoms, as headache, drowsiness, convulsions; also free purgation by salines or Ecleratun (Y); a weak or feathery heart is a positive contraindication for this drug (B); it must not be used if edema of the lungs exists, as further edema and death will result (Whitla). Digitalis, the infusion internally, or a poultice of the leaves to the back and abdomen, to procure free action of the kidneys (B). Morphine, hypodermically, is most efficient in the uremic convulsions of acute paroxysmal nephritis (Loomis); is dangerous in chronic interstitial nephritis (T); when the kidneys are seriously diseased the free use of epileptics is attended by much danger, because the chief channel through which its alkaloids escape is choked up (W). Chloroform rather than morphine, for the convulsions (White). Oxygen by inhalation, 19 liters three daily, is used with success (Jacquet); is as useful in practice as it is rational in theory (Caster); used with remarkable success in a very bad case of uremic coma (Macalister). Sodium Benzoate, 15 grains 4 times daily, has been found very serviceable in threatening uremia (Whitla). Sodium Bromide with Chloral, in full doses, by the bowel, for uremic convulsions (G). Potassium Salts given in Bright's Disease increase the danger of uremia; hence Sodium salts are preferred (Id). Naphthalene, also Iodoform and Chlorocel, as intestinal disinfectants, as much of the toxic material in the blood is reabsorbed from the bowel (Bouchard). Ami'j Nitrato or Nitroglycerin, and brisk purgation, to relieve the congestion of the portal and hepatic veins of the liver, by the mouth or the rectum hypodermically deep into the muscles (painful), for uremic depressions; must be pushed to 3j or 8j in 24 hours before good results can be expected (Gallaud); being rapidly eliminated it can be given in fairly large doses without causing intoxication. Colchicum, is an excellent derivative in these cases and acts best when combined with other purgatives (B). Eserinum, gr. 3 to 4, to procure free watery evacuations cautiously (B); the combined powder of Eserinum, gr. 1 to 2, may be thrown on the tongue and washed down with a teaspoonful or two of water (Y); clinical experience has demonstrated its value in uremia (W). Quercetin (potassium Quercetin) is an excellent stimulant to the bladder (Y). Saline or Hydrazoic Cathartics, are of great importance to secure elimination by the intestinal canal and to relieve the blood-pressure (B); purgation by salines on the first appearance of uremic symptoms (B); in chronic uremia with urethral obstructions, some patients have been saved by administering the injections (Richarz); it is worthy of a wide trial and seems to offer a chance of recovery to others who might otherwise be pronounced hopeless (B). Benzoic Acid, or Sodium Benzoate, 5 grains, in hot packs, is of great value in cases of acute retention of urine (B); it reduces the frequency of micturition, and produces a sensation of bladder relief in acute forms of uremia in the robust (Y); relieves to the temples for the headache (Id). Lumbar Puncture temporarily relieves the convulsions, and may save life (Wilson). [Compare Bright's Disease, Convolvulans, Dyspepsia, Scarlet Fever.]

Urethral Stricture.

Aconite, is of great service in spasmatic stricture (P). Cocaine, locally by cautery (Smith). Buchu, in irritable urethra, spasmatic urethra, and gleet (F). Oplum, in full dose or an opiate suppository, with fomentations and a warm bath, will often suffice in spasmatic stricture (Cl). Atropine as ointment rubbed in along the canal, in cases of the urethra (W). Adrenalin Chloride 1 part with 5 of Chloroform, in normal saline solution 1:500, of which a few drops instilled into the urethra, will permit the passage of small instruments through a stricture previously impervious (Barratt). Catheterization, under an anesthetic in spasmodic stricture if other measures fail to relieve, also for gradual dilatation in organic stricture, is the safest and most generally applicable treatment (Cl). Oil, injected before dilatation (W). Thorough Division, by a dilating ureterostome, the best operation for a radical cure; 600 cases thus treated to date, without a death or permanent disability (Id). Electricity, a weak galvanic current, with negative pole to the stricture, will destroy it in 2 or 3 sittings by electrolysis, and if carefully done, is the most efficient and least painful method of treatment for radical cure.

Urethritis—Urinary Disorders.

Urethritis.

Aconite, is used to advantage in urethral fever; also for prevention of chill after passage of sound (P). Strophantus, efficient in preventing rigors after instrumental operation on the urethra, the mixture in doses of 2 minims (Fenwick). Urotropin internally, is said to effectually prevent urethral chill and fever following the use of sound or catheter. Acetanilide in mixture with gum-arabic water, 0.25 to 0.5, may be injected in urethritis (W). Lysoform as an injection, is used with success (Simon). Iodinyl in warm 0.1 per cent solution as an injection, gives great satisfaction in chronic posterior urethritis (Muehle). Iodoform in warm 0.1 solution, in 1,000, has marked secretive and antiphlogistic effects, and is a very efficient injection in chronic urethritis (Lohman). Silver Nitrate, locally, very efficient in chronic urethritis in females (W). Tannin, on bougies, once a week for 15 minutes, most efficient for urethritis in the female (W). Zinc Sulphate, cast in sticks, for introduction into the urethra (W). Myrtol, internally, in chronic inflammation of the bladder and urethra (B). Terebene internally, may be used in chronic or subacute inflammations of the granular uro-genital tract (W). Potassium Bicarbonate, with Potassium Acetate, all gr. x in a large cup of flavessed tea or a glass of Vichy water, every 4 to 6 hours, with absolute rest, and urination under hot water, sufficient for most cases of urethritis, which may arise from lilkIas, leucorrhoea in females, etc.; many cases of so-called aborted gonorrhoea were really simple urethritis (Cl). [Compare Gonorrhoea.]

Urinary Disorders.

Aconite, of great service in sub-inflammatory retention from chill (P). Tarantula and Chelidonium in a very diluted dose, and incontinence from atony (B). Strychnine, sometimes employed with marked benefit in retention or incontinence of the old (P). Cauterius, frequent or involuntary micturition, especially in women from weakness of sphincter; one or two drops twice (R). Cannabis Indica, in retention from spinal diseases (R). Diurein, a remarkably efficient diuretic in cardiac and renal disease, at 5 grains several times daily will increase the urine three and fourfold. Digitalis, holds high rank as a diuretic, Si or 8j of the infusion night and morning, or often if necessary; in sudden depression from cold or damp, or after ascensions, if greater threats in maney which from the heart would prove fatal, 3 grains, to render alkaline urine acid, and check the formation of phosphates (B); it will not do (Hutchison). Sodium Phosphate is an efficient alkali urine, especially to the posterior. Potassium Bicarbonate in full doses, will alkalinize an acid urine. Urotrpin as a urinary antiseptic, gives the best bacteriological results (Sack). Alum, in aperitifs, useful in ammonial fermentation of the urine, which it renders acid; is useful in phosphorus. Helmiot is claimed to be even more efficient than urotropin in all respects. Nitrohydrochloric Acid, a little, gr. x, and a little Phosphorus Acid, in 6-grain dose, 3 or 4 times a day, to render acid urine alkaline. Trichromatic, in 2 doses daily of its infusion or decoction, for strangury, cystitis, and many other complaints connected with the urinary apparatus. Liqueur Potassae Hydrochlorida, to neutralize acid urine, and control chronic cystitis; the Liquor Potassae Hydrochloridum, preferable to the bicarbonates, which have diuretic action, and very efficient in ammonial fermentation of the urine. Liqueur Potassae Hydrochlorida mixed with the tincture of Hyoscyamus may undergo chemical changes, but the combination materially controls
URINE

URINE—Continued.

painful and frequent recrudescence in bladder troubles (Thompson). Calcium Sulphate in daily dosage of gr. 2x-xx. is particularly efficient in phosphatic urethra. Sucha renders more difficult than any other drug in retentive or insensibility of urine from ucrunately in some cases of suppression (KX), Diet, a vegetable diet has a powerful influence to alkalize an acid urine; also fruit, milk and fish. [Compare BLADDER RECTAL, BLADDER PARANASAL OF, CSEHELUS, CYSSETH, Diurnal, Dysuria, Entericus, HESPERIA, LITHOTRISIS, OOSTHECA, URINIFER, URIDICAL STRUCTURE, URETERITIS.]

R. Sullin. Diaphresis.

Hydrarg. Chlor. Mitis...3 gr. gr. 3.

M. Ft. pil. no. 21. Sig.—One pil. as a diuretic twice daily. [See A. Clarke.]

R. Potass. Chlorid. 3.5 gr. 3.

Sodii Bicar. 1.5 gr. 3.

Syr. Osmosis...3 gr. 3.

Aqu. 20 cc. 4 x in 24 hours.

M. Sig.—3 drachms, every 2 hours, to render the urine alkaline. [Roberts.]

R. Tit. Digest. 3 gr. 3.

Spat. Albita Nitrida...3 gr. 3.

Lit Ammon. Acreta...3 gr. 3.

Ammon. 1 gr. 3.

M. Sig.—One-sixth every 2 hours, to re-establish the normal acidity. [Codrington.]

R. Potass. Bichrom. 3 gr. 3.

Acid Acreta...3 gr. 3.

Ammon. 1 gr. 3.

M. Sig.—One-sixth dose as required, as a diuretic. Each dose contains about gr. a.

Potass. Acreta. [Roberts.]

Urine, Clinical Examination.

Urine for examination should be about four ounces of that passed in the morning before breakfast, or a sample taken from all passed during the 24 hours.

Quantity. The amount passed normally during a 24 hours varies between 40 and 150 cc. in the adult, and the amount depending on the blood pressure and the condition of the renal epithelium. It is decreased below the normal during hot weather when the perspiration is increased; also in fevers and exhausting diseases. If the quantity be increased cold weather when the perspiration is less, it is increased in both, diabetes, in contracted kidney, after acute infectious diseases and hysteric or epileptic attacks, also in some other morbid conditions. It may be entirely suppressed (anuria) in cholera, acute nephritis, scarlet fever, diphtheria, severe diuresis, hysteric and shock, also by obstruction, as calculi or new growths affecting both ureters.

Composition. The average composition of normal human urine, and the amount of each ingredient voided daily, are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount (g/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>28.00</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>6.60</td>
</tr>
<tr>
<td>Hippuric Acid</td>
<td>3.61</td>
</tr>
<tr>
<td>Creatin</td>
<td>0.64</td>
</tr>
<tr>
<td>Excretion</td>
<td>80.00</td>
</tr>
<tr>
<td>Sodium Chloride</td>
<td>8.00</td>
</tr>
<tr>
<td>Phosphoric Acid</td>
<td>7.00</td>
</tr>
<tr>
<td>Sulphuric Acid</td>
<td>2.15</td>
</tr>
<tr>
<td>Lime</td>
<td>0.94</td>
</tr>
<tr>
<td>Nitrates</td>
<td>0.94</td>
</tr>
<tr>
<td>Organic Matter</td>
<td>11.00</td>
</tr>
<tr>
<td>Inorganic Matter</td>
<td>4.00</td>
</tr>
<tr>
<td>Water</td>
<td>15.00</td>
</tr>
</tbody>
</table>

Sulphates are 20 cc. 4 x in 24 hours. [Roberts.]

Oclusions in Urine. The last two figures of the specific gravity nearly represent the number of gms. of solid matter in the ounce of urine (fluid). The same two figures multiplied by 7 (Troppa), or by 2.33 (Gannier), give the number of parts of solid matter in 1000 of urine.

URINE—Continued.

Urine. Clinical Examination.

Olor should be faintly aromatic; a fragrant smell indicates contains sodium, the smell of violet points to puerperal, an ammoniacal odor indicates alkalinity from decomposition; a fetid smell points to the presence of blood. Amyluric, capitis, or any other odor, impart their characteristic odors to the urine of persons taking them.

Specific Gravity is determined by the urinometer, or by specific gravity beads of glass. The urine should be taken with a sample of the urine passed during 24 hours. That of normal urine varies from 1.015 to 1.035, and averages about 1.025, having 48 grams of solid matter to the fluid-ounce. If the sp. gr. is above 1.030, test for glucose; if below 1.020, suspect albumin.

Color. Normal urine has a pale yellow or amber color. When pale and copious, of sp. gr. 1.030 and above, it indicates the presence of glucose. Pale and copious, sp. gr. below 1.020, is seen in hysteria, convulsions, nervous diseases. Color high, urine acidity, sp. gr. above normal, —in fevers and the uric acid diathesis. Color high, urine acidity, sp. gr. below normal, —in Bright's disease. Urine is colored very yellow or greenish-yellow, by bile and by bilirubin, dark, with color of violet, by uric acid; dark, muddy, smoky, by blood and strong coffee; black, by disintegrated blood, putridity of the urine, tar, crenatia; olive-green or smoky, by pleural and by salicylic acid; brown, by ar-borescens, green, by jaundice and bilious acid; dark green, by kalmia and thyme; dark blue, by methyl blue; bluish-violet, by resorcinat; violet, by juniper; greenish-yellow, reaction acid, or reddish-purple, reaction alkaline, by santonin; blood-red, by hematocyn, magenta, by fuchsin; reddish-brown, by sulphonat. A milky color is due to fat globules and indicates chyluria, or to pus corpuscles from purulent disease of the urinary tract.

Reaction. Normal urine has a slightly acid reaction, chiefly due to acid phosphate, also to uric and hippuric acids, and free acids, as acetic and oxalic. If excessively acid, examine for crystals of uric acid. Hyperacidity occurs in fevers and in the uric and hippuric acid diathesis; it is of slight diagnostic importance.

On the other hand, if the urine be too acid, that is, if it be alkaline, that is, acid urine, it is by no means impossible to diagnose some disease of the system. The urine undergoes ammonical decomposition and becomes alkaline.

Alkalinity of the urine occurs temporarily soon after a meal, and permanently from the presence of alkaline phosphates in large quantity, as in anemia and nervous depression, or from the use of a vegetable diet, the ingestion of alkaloids (except ammonia) and alkalines of the vegetable acids, from cold bathing, in gouties, from free blood in the urine, and from fermentation of the urine in the bladder.

Test by litmus paper. If acid, the urine will turn blue litmus red, if alkaline it will not do so, and will turn red litmus blue, or yellow tumeric brown. If the reaction is alkaline, dry the test-paper by gentle heat, in order to ascertain by the permanency or otherwise of the reaction whether the alkali is fixed or volatile; in the latter case the ammoniacal condition points to decomposition in the bladder, as in cases mentioned above, also when uric and transulphates are absorbed, and in stomach disorders when hydrochloric acid is diminished.

Acetone and Diacetic Acid. For Acetone add to the urine in a test-tube a drop of an aqueous solution of Magnesia dechlorinated by sulphural acid. If Acetone is present a violet color is produced, the intensity of which is proportional to the amount of acetone. In dilute solutions the coloration does not appear until after four or five minutes. If the amount of acetone be very minute the urine may be distilled, the first portion of the distillate being examined. In this way a very minute quantity of acetone may be detected (Chemolith). Or, to 3 gr. of urine in a test-tube add enough solution of potassium hydroxide to render it alkaline. Then add a few drops of a cold, strongly protosulphated aqueous solution of Sodium Nitro-granule, and if acetone be present, a purple or violet-red color will be formed on the addition of chemically pure Acetonic Acid. Aqueon precedes the occurrence of diacetic acid in certain cases of diabetes, and is said to occur in cancer and cerebral disease. For Diacetic Acid, add to freshly voided urine a few drops of a strong aqueous solution of Chloride of Iron. If a precipitate occurs the mixture should be filtered. Heat
the filtrate to boiling, and to a small quantity again add the solution of Chloride of Iron in water, and treat as before. If a red color is produced, add Subphthalic Acid, and extract with ether by distillation. Diacetic Acid is never found in normal urine. It may occur in the acute exanthematous Diphtheria, and is one of the chief constituents of the blood, and is the form in which it is excreted by distillation. Albunen-creative is one of the chief constituents of the blood, and is one of the components of the urine. Nucleo-albumin is one of the chief constituents of the blood, and is the form in which it is excreted by distillation. The chief disadvantage of this test is that it produces the reaction with phosphates. The chief disadvantage of this test is that it produces the reaction with all four forms of albumin.

(2) Fibrin Acid Test. Place a few drops of acidified ammonia in a test-tube and add a small quantity of urine. If fibrin is present, a white deposit will form on the sides of the test-tube. If fibrin is not present, the urine will remain clear.

(3) Potassium Ferrocyanide Test. Add a small quantity of potassium ferrocyanide to a test-tube containing a small quantity of urine. If albumin is present, a blue color will appear. If albumin is not present, the urine will remain clear.

(4) Test for Pepsin. Add a small quantity of urine to a test-tube containing a small quantity of potassium ferrocyanide. If albumin is present, a blue color will appear. If albumin is not present, the urine will remain clear.

(5) Test for Albumin. Add a small quantity of urine to a test-tube containing a small quantity of potassium ferrocyanide. If albumin is present, a blue color will appear. If albumin is not present, the urine will remain clear.

Bile Pigment. Gmelin's Test as follows: Place a white plate near each other a drop or two of urine and the same quantity of sodium Nitric Acid, and by manipulation bring the two together slowly. If bile is present a play of color results in this convexity of blue, violet, yellow, brown. Miehles' Test, as follows: Put a few drops of urine in a test-tube, and let a or 3 drops of tincture of lodine trickle down along the side of the tube, held nearly horizontally, so that the fluids may mix but not mix. If bile is present, a green color will develop below the lodine layer. Other tests are Vogel's color-test, Noell's test, Pettenkofer's test, and the Silver Oxyde test. Bilirubin pigment is present in the urine in the acute stage of catarrhal jaundice, and in cases of cholelithiasis.

Chloride of Sodium in the urine should be normally from 1 to 5 per cent. The quantity is increased in intermittent fever, and is decreased during other febrile diseases, particularly in convulsions present during the stage of consolidation, in nephritis and in wasting diseases. Add to urine an equal quantity of a solution of Silver Nitrate, and filter the precipitate both the chloride and the phosphates. Then add a few drops of Nitric Acid, which dissolves the phosphates, leaving the chloride as a dense, white precipitate of silver chloride, its bulk serving to estimate the proportion of chloride present.

Cryoscope is the study of the freezing point of the urine and blood of those supposed to be suffering from renal insufficiency, and is an elaborate procedure requiring a large quantity of blood. It may be replaced by the Phlalbla Test, as follows: Phlalblan, gr. 1/4, with an equal quantity of sodium carbonate to hold it in solution, is dissolved hypodermically, the bladder being emptied immediately before the injection. If the kidneys are healthy, elimination of sugar will occur in half an hour, but if none is then found in the urine such renal disease may be suspected; while if the sugar is below 0.1 per cent renal insufficiency may be diagnosed.

Diaz-o-reaction. This reaction is obtained in certain morbid conditions, particularly typhoid fever, acute tuberculous, and measles. The reagents should be freshly prepared, and are: (1) Hydrochloric Acid 50 parts, Subphthalic Acid 5, Distilled Water 2 vol. (2) Sodium Nitrate 5 per cent solution. Fifty minutes of the first reagent and one drop of the second are placed in a test-tube, and an equal quantity of urine is added, then mixed, and after thin and Aqueous Ammonia in the proportion of about 1 the volume is increased. If a red color develops on shaking the mixture, the diazo-reaction is present. Skid, Indian, urochrome, cedram, resorcinol, quinine, digiham, crosset, impregnated by the normal individual, produce a similar reaction (fusco); and the use of preparations containing tannin, iodine, or iodides inhibit it (Burghardt).

Glucose. Urine containing glucose is usually light in color, has a high specific gravity, and froths readily when poured from one vessel to another. Before testing it should be freed from albumin. Fehling's Test, as follows: Add to the boiling urine a few drops of Fehling's alkaline cupric tartrate solution. If sugar is present a yellow, orange, red precipitate of cuprous oxide will form; 10 cc. of the solution being sufficient. One drop of dilute acid sugar (anhydrous glucose). More convenient is the cupric potassio paste, or Pay's cupric test pellets, or Wyeth's tablets for preparing Fehling's Solution. If the urine has been used by the writer for several years with entire satisfaction. Pay's Solution is a modification of Fehling's, is intended for those who prefer the apothecaries' weights and measures to the metric, and is equally efficient for qualitative and quantitative testing. To make it, dissolve 22 grains of pure Copper Sulphate in distilled water to 8 fluid-ounces; and dissolve 1250 grains of Sodium and Potassium Tartrate, also 40 grains of Sodium Hydroxide in distilled water to 8 fluid-ounces. Keep the two solutions separate in glass-stoppered bottles, in a cool, dark place. For one, mix equal volumes of the two by pouring the copper solution into the alkaline one. Of the mixed solution 200 minims correspond to 2 grains of diabetic sugar, or 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent. (15 grains of albumin, 10 cc. of 10 per cent.; or 5 cc. of 20 per cent.
are subject to fallacious results; that by Indigo-carmine, which is unreliable; the Polarization test, the Fermentation test by yeast, and the phenyl-hydrazine test.

The Polarization test, the Fermentation test by yeast, and the phenyl-hydrazine test.

**Urine.**

These Instruments are simple in arrangement, and are usually accurate enough for ordinary purposes. Barlow's uranometer is one of the most reliable and accurate.

The normal quantity of urine eliminated in 24 hours fluctuates between 300 and 600 cubic centimeters, or 14 to 26 per cent. of the urine. In cold weather it may fall to 1 liter or 1.40 grams in persons who lead sedentary lives; and it is decreased in those who have lived long in the tropics. It increases in sepsis, diabetes melitensis, dyspepsia, nephritis, and the excessive use of nutritious foods, and after the consumption of water. It is decreased in nephritis and starvation, by the use of vegetable foods by patients on colostomy, and in the use of tea or coffee, and after prolonged rest.

**Urine Acid.** Chemical qualitative tests are usually unnecessary, as uric acid may often be detected by the naked eye as small, red crystals, in a urinary sediment, or deposited on the sides of a test-tube in which urine has stood for some time; and the crystals may be recognized with a low power under the microscope. The absence of uric acid or its compounds may be determined by the *Muirside Test,* as follows: On a watch-glass or the cover of a porcelain crucible treat the sediment with a drop or two of Nitric Acid, to dissolve it, and carefully evaporate to dryness. Then add a drop of Ammonium Hydroxide, the stronger ammonium water, and if uric acid or urates are present a purple color will be produced, due to mauveine (ammonium purpureum). The quantitative test is best made by Mauro's modification of the Hopkins method, by precipitation with ammonium and hydrochloric acid, but the process is tedious and limited only to the laboratory.

The normal excretion of uric acid varies from 7 to 10 or more grains daily. When not eliminated by the kidneys it becomes stored in the body and causes the uric or lithia diathesis, the manifestations of which are often serious. Its origin is believed to be from the disintegration of leukocytes and nuclein, not from the nitrogenous elements of the food, as was formerly held. It is diminished in nephritis, diabetes, chlorosis, chronic rheumatism, and before the paroxysms of gout; and is increased in acute fevers, indigestion, leukemias, functional affections, heart and lung diseases with much dyspnea, and after attacks of gout.

**Other Deposits** are best examined with the microscope, and compared with good plates, rather than with printed descriptions. The plates in Hofmann and Ullmann on Analysis of the Urine, will answer the wants of most general practitioners, but the text follows the metric system. The urinary deposits may be classified thus:

<table>
<thead>
<tr>
<th>In Alkaline Urine Only</th>
<th>In Alkaline or Acid Urine</th>
<th>Organized Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Phosphate</td>
<td>Uric Acid</td>
<td>Mucus Torula</td>
</tr>
<tr>
<td>Ammonium Urate</td>
<td>Urate</td>
<td>Pus Stercula</td>
</tr>
<tr>
<td>Ammonium Phosphates</td>
<td>Phosphates</td>
<td>Blood Vibriosis</td>
</tr>
<tr>
<td>magnesium or triple</td>
<td>Oxalates</td>
<td>Typho-cutis Bacteria</td>
</tr>
<tr>
<td>Phosphates</td>
<td></td>
<td>Spermatozoa, etc.</td>
</tr>
</tbody>
</table>

**Necessary Apparatus.** A dozen Test-tubes. Alcohol lamp. A small porcelain dish. 2 watch-glasses. A sheet of platinum foil, 1 inch square. 4 pipettes of different sizes, to be used only for urine. A. c. graduate. Uronometer (Spillb's). Uronometer. Lithun paper, blue and red. Reagents mentioned in this article. Grape-sugar, for use in testing the Fenest's solution. A centrifuge apparatus is convenient but not essential. Oliver's test-pipes or test-pellets, with a color scale, specific gravity scales, test-tubes, pipettes, and directions for use, are sold under the name Physicians' Pocket Reagents Case, and are useful for the examination of urine at the bedside.

A test includes the tests which a physician will ordinarily employ in the examination of urine. For complete instruction concerning quantitative uroanalysis the reader is referred to one of the numerous manuals on the subject, among which may be mentioned Da Costa's Medical Diagnostics, Tynan on the Practical Examination of Urine, and Sir Henry Thompson's Clinical Lectures on Diseases of the Urinary Organs, Lecture xxiv.