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FOR SKIN INFECTIONS

TRAUMATIC WOUNDS

FOR BURNS

20th CENTURY ANTISEPSIS

SURGERY

LOKOL 17

A 30% SULFATHIAZOLE PASTE
IN A GREASELESS
WATER MISCIBLE BASE



FRANK W. HORNER LIMITED
MONTREAL CANADA



The
Nova Scotia Medical Bulletin

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The External Ear

H. W. SCHWARTZ, M.D.

"Life is short, the Art long, opportunity fleeting, experience treacherous and judgment difficult."—*Hippocrates*.

The external ear is formed of the outer ear proper and the external auditory canal at the inner end of which is the ear drum.

Grasp your own ear and look at that of your neighbour and you will feel and see that this part of the external ear is a crinkled, irregularly shaped structure with its greater measurement in the verticle its surface bent in and out in different directions so that its lateral surface, is essentially concave while its mesial surface, turned towards the skull, is convex. If you crumple it between your fingers it will, when released, spring back into its original shape no matter how ridiculous that may be. This quality is due to the fact that the form giving stuff is composed of fibro-elastic cartilage. This cartilage is continued in front and below to form in part by a mesial prolongation the external auditory canal.

We seldom think of muscles in connection with our ears. The anatomist describes six intrinsic muscles of the stripped variety as being possessed by this cartilage. Thanks to evolutionary processes they are now but rudimentary and their flapping ability, physiologically speaking, has come to an end.

You will notice that the skin of the ear is closely adherent to the cartilage. You can make a pretense of picking it up between the fingers at the back of the ear but not over the concave or lateral surface where skin and perichondrium, although histologically and developmentally distinct, are one from a practical standpoint. The small amount and density of the subcutaneous tissue localizes and limits the absorption of a traumatic exudate. Aspiration of this exudate is, therefore, necessary to prevent organization with the accompanying external deformity. The soft and most dependant portion, to which civilized and uncivilized attach ornaments, is called the lobule and is composed of fatty connective tissue covered with skin.

Every elevation and depression has a name but there is no necessity to burden the mind with such anatomical detail only of use if you wish to describe with exactness the site and extent of some particular defect and should such an occasion arise the text-book of anatomy is always near at hand. It is an interesting observation that the two ears are never just alike, although more nearly so than the ears of one person and another, and the suggestion has been made that ear casts would be more accurate identification than finger prints. The period of most rapid growth of the auricle is before the end of the first year and from then to age fifteen when maturity is reached the growth is very gradual. In infants up to the age of one year the entire external auditory canal is cartilaginous and is attached to the os tympanum a narrow incomplete circle of bone in which the ear drum is set. At this early stage the ear drum lies in a horizontal plane so that it and the roof of the canal are almost continuous. As the child grows the drum becomes less horizontal and comes to assume the adult position with which you are all familiar. Bone is deposited

on the outer surface of the tympanic ring transforming the incomplete circle into a trough which forms the anterior wall, the floor and the greater part of the posterior bony meatal wall. The roof or superior wall, which makes a canal of the trough, is formed by the squamous portion of the temporal bone as it in turn expands and grows laterally carrying the root of the zygoma and the petrous portion completes the undertaking by filling in the upper part of the posterior wall as it expands into the mastoid process. In short, all three elements that go to form the temporal bone take part in the formation of the bony part of the external auditory meatus. These changes take place rather rapidly so that by the beginning of the second year a short canal is developed usually by the end of the third and almost always by the end of the fourth a bony canal of adult size is completed. It is clothed by a blind sac like continuation of the external skin which is closely adherent to the subjacent perichondrium and periosteum, becoming in fact inseparately united with the latter, and covers the outer surface of the ear drum as an especially thin layer. Although the petrous element plays the least part anatomically it is the most important clinically. That posterior-superior arc of the canal so formed corresponds to the lateral and inferior walls of the mastoid antrum. Consequently a part of the superior and posterior wall of the external auditory meatus is covered on one side with the membrane lining the antrum and on the other side by the skin of the canal. Skin and mucous membrane are connected by blood vessels which perforate the bony plate. Supposing there is inflammation within the antrum. Under such circumstances the veins of the mucous membrane may become involved by a thrombo phlebitis and carry infection from the mucous membrane to the skin of the canal. As skin and periosteum are pretty much the same thing in this situation we have a periostitis and the associated swelling which is close to the drum is referred to as sagging of the posterior-superior wall of the canal and is of course evidence of deep seated inflammation within the mastoid.¹

The skin covering the cartilaginous part has stiff hairs and both sebaceous and ceruminous glands and as a consequence is subject to many of the ills the skin is heir to with an extra measure of pain in the presence of deep seated inflammation owing to the density of the tissues.

In the adult the canal proper measures about an inch (24 mm.) and is somewhat constricted at the junction of the outer cartilaginous third with the bony inner two-thirds. This narrowing has a practical bearing on the removal of foreign bodies from the ear. You will probably not remember that the general direction of the cartilaginous meatus is backwards, upwards and medially; that of the bony part slightly downwards, forwards and medially but you will remember to lift the adult auricle upwards and backwards to straighten the canal when introducing a speculum or when irrigating.

The story books tell us that the nerves that supply the external canal are the auricular branch of the vagus (Arnold's nerve) and the auriculo-temporal from the trigeminus. You will not examine many ears before you will be able to satisfy yourself of the truth of the former because of the tickling cough provoked when the canal is touched by speculum or cotton wound applicator. Based on a series of clinical observations (supported by histological studies in a few instances) of patients who had pain in the region of the external auditory meatus and the outer or concave surface of the auricle soon followed by a herpetic eruption of varying extent but limited to this area together with seventh nerve paralysis, J. Ramsay Hunt² concluded that the

geniculate rather than the Gasserian ganglion was the source of the sensory nerve supply of this cutaneous area whether it arrived by way of the auriculo-temporal or directly in the seventh nerve itself. In other words the seventh nerve is a mixed nerve just like the fifth and both their ganglia are of the spinal route type and the acute specific inflammatory disturbance in either will give rise to true herpes zoster or shingles. Thus is the anatomist helped by clinical observation or stimulated to defend his own pronouncements and to investigate anew. Should the stars so arrange matters that you have a case of this kind who at the same time dies from other causes and an autopsy is permitted by the next of kin please secure the temporal bone, place it in a suitable preservative* and send it to me without delay for histological study. It is by taking advantage of the rare opportunity that the more difficult points can be settled.

Many young men on graduation have the impression that research is something that can only be carried on in laboratories well equipped with test tubes, microscopes, and guinea-pigs. This is a most erroneous notion and I pray that you dismiss such nonsense from your minds and realize the possibilities of clinical investigation and meditation. William Harvey, the discoverer of the circulation of the blood, was a clinician not a physiologist. The first detailed study of the action of the gastric juices was made on the stomach of Alexis St. Martin by William Beaumont, a surgeon. Sir James MacKenzie was a small town general practitioner when he made his amazing studies of the physiology of the heart muscle. The central nervous system has been a rich field for clinico-anatomical investigation as witness the contributions of Pierre Paul Broca, a surgeon, who carried out the famous researches on the localization of cerebral function and whose name will ever be associated with discovering the seat of articulate speech; Sir Henry Head was engaged in general practice when he made his clinico-pathological studies which added so much to the knowledge of nerve distribution and his classical observations on sensation and regeneration after dividing his own left radial and external cutaneous nerves. Oto-laryngology would be in a sorry plight if the original work of clinicians were eliminated from its physiology and anatomy. Who has written the most authoritative book on the comparative anatomy, development and physiology of the larynx? An anatomist or physiologist? Neither one but by a laryngologist, Mr. V. E. Negus, F.R.C.S. Who has written the one and only book of the physiology of the nose? Dr. Arthur W. Proetz, a laryngologist. The outstanding work on the development of the human eye comes, not from an anatomist, but from an ophthalmologist, Miss Ida Mann, F.R.C.S.

The students of Dalhousie are very fortunate in receiving instruction from such clinically minded teachers of anatomy as Dr. Mainland and Dr. Saunders. Thanks to men of this type anatomy has had breathed into it the breath of life and has become a living subject and is able to march forward side by side with physiology and biochemistry.

I am not aware of the blood supply of the external ear to be of clinical importance but the lymphatic gland arrangements are because of the confusion that may arise when inflamed and their secondary involvement in the presence

For the preservation of wet specimens

Formalin	2%
Glycerine	4%
Alcohol	6%
Water	88%

of cancer. They form three groups; the parotid in front, the external jugular below and the posterior auricular more or less overlying the mastoid area.

The removal of wax will be the commonest ear condition for which you will be consulted. Armed with a suitable ear syringe of moderate capacity (50 cc.), a warm solution of baking soda, a receptacle for the return flow and lifting the adult auricle upwards and backwards you will be "all set." This simple undertaking may be made a trifling inconvenience or a painful and much to be dreaded operation, depending largely on whether the doctor remembers that the external auditory meatus is excessively sensitive and that the tip of a metal syringe is exceedingly hard. If the wax does not come away after a reasonable number of syringefuls prescribe an alkaline solution, such as soda bicarb., soda bibor. of each ten grains, glycerine a drachm and water to make an ounce, to fill the canal and retain for half hour periods by virtue of the position of the head, not with cotton wool! Rely on the syringe and leave the curette in the cabinet. If on removal of the wax a perforated drum is revealed, dehydrate with alcohol and dry carefully because of the danger of starting the ear to "run" again.

Foreign bodies, dead and alive, find their way into the external meatus. Some children seem to have a mania for putting objects of one kind or another in either the nose or the ear, pebbles, beads, buttons, beans and peas. Again rely on syringing. Leave forceps and hooks to the otologist. ". . . unskilful attempts at removal have frequently destroyed the usefulness of the organ and have been the direct cause of not a few deaths."³ Unless you have perfect co-operation, which you will seldom or never have with children, always use a general anaesthetic. Chloroform is my favourite for short undertakings—neat, tidy and safe—that is safe if administered properly by which I mean by the drop method with plenty of air—not the splash and rest technique. With this drug you do not have to worry about the kitchen stove or the oil lamp. Make a mask a part of your equipment which never leaves your bag. A burn following the use of a towel or handkerchief is little short of malpractice. Insects and flies occasionally wend their way into the ear and give rise to most distressing and alarming sensations as they come in contact with the drum membrane. Treatment consists of drowning the invader in water, oil or alcohol and then removing by syringing. Smooth non-sprouting bodies may remain for a long period without doing any harm. I removed a pearl bead that had been in the ear for twenty years without provoking any discomfort.

All injuries of the auricle should be taken seriously because of the deformity that may result should infection find entrance and give rise to a perichondritis and necrosis of the cartilage. It is usually the outer aspect that is involved when the trauma is due to a blow such as may be received in boxing or other sport. You will recall that skin and perichondrium in this region are practically one. The effusion of blood does not separate skin from perichondrium but the perichondrium from the cartilage. The condition must be handled with the strictest surgical technique. If seen early aspiration alone may suffice. The puncture is sealed with collodion, vaseline is first smeared over all the outer surface and then filled with plaster of paris. The ear is then carefully supported and covered so as to avoid any untoward result from external pressure that may accidentally occur, e.g. during sleep.

If seen too late for successful aspiration then the skin should be incised widely and the clot delivered, the skin replaced and carefully stitched and a mould poured from plaster of paris or formed with dental modeling material to lend support and uniform pressure in so irregular a concavity. Tears should be repaired, and if received in a street accident, anti-tetanic serum should be given.⁴

Eczema is a diagnosis like that of chronic rheumatism that cannot be made without a twinge of conscience, the patient believes you know all about it when as a matter of fact few names cover up so much ignorance. What I wish to convey to you by the expression eczema is a state of the skin of the ear characterized on the one hand by swelling, pain, reddening and weeping and on the other by dryness, scaldiness and itching. The underlying cause of such widely differing manifestations may vary from hypersensitivity to food e.g. milk and eggs in children, to an unsuspected diabetes: from gout to hypothyroidism. Treatment is based on the result of constitutional investigation along with local applications of one kind or another. Ointments and solutions containing crude coal tar are of unquestionable value. All ointments, and quite a number are recommended in the books, have to be removed (this is accomplished by using liquid petrolatum or olive oil) and reapplied at least once a day to begin with and less often as improvement takes place.

Furuncles are abscesses or boils which occur in the skin of the outer third or cartilaginous portion of the external auditory meatus. They are due to infection of the hair follicles, ceruminous or subaceous glands by staphylococci and are characterized by a tendency to come in crops. Between pain and loss of sleep the patient may become quite exhausted. In former times it was the practice to open the abscess at what was deemed the proper time and then to pack the tender and swollen canal with some supposedly curative remedy. No sooner would one furuncle recover than another would develop and this unhappy state continued until Nature finally overcame the infection and the good intentions of the medical attendant. To-day I never meddle with the abscess but rely wholly on heat, moist heat preferred, and supplement its pain relieving properties by pain relieving remedies internally. Just as soon as the abscess ruptures I resort to non specific protein therapy. Whole milk is always available and if not pasteurized all the better⁵ because the shock producing properties of milk probably depend in large part on its bacterial count. Place a cup of milk in a deep vessel and boil for four minutes commencing to time when it begins to "rise". Cool and inject intramuscularly 5 to 10 cc. Typhoid-para-typhoid vaccine using thirty to a hundred million intravenously or the proprietary preparations aolan or onnadin, dispensed in ampoules, intramuscularly may also be used.

On general principles, iron and vitamin B, iron in the form of its sulphate, three grains three times a day, and the vitamin as found in the yeast-cake is prescribed. This may not sound very fancy but you will find it a very good combination and agreeable to the wallet in these hard times. It is on the rarest occasion that a second abscess develops and then resort is made to a suitable vaccine or sulphadiazine if seen very early.

Pain, posterior auricular swelling with picture book displacement of the auricle, and particularly if there is discharge from the meatus, may suggest acute mastoiditis. The swollen, tender meatus, the fact that movement of the auricle is very painful and that pressure over the mastoid area is painless,

provided that care is taken not to disturb the auricle, should help in making a correct diagnosis.

Although **cancer** of the external ear is rare and even large clinics have relatively few cases nevertheless your attention should be directed to the seriousness of ulceration which does not heal promptly with gentle cleansing and soothing protection. Malignancy should then be suspected. Don't irritate with chemicals. Don't prescribe a salve for home use. Don't tinker with irradiation. The basic treatment is free and wide excision supplemented by irradiation. Once ulceration has extended beyond the auricle the condition is hopeless.⁶

O. G., aged 61, was referred to me on February 4, 1939, and he gave a history of having noticed along about the last of September a small sore about the size of a "head of a nail" at the entrance to his ear and which he credited to the sting of a bee. However it refused to heal in spite of home remedies to begin with and later of the attention of his family physician. A painful and offensive ulcerating sore measuring a half inch or more in diameter and involving the floor of the external auditory meatus and encroaching upon the concha was present when Dr. S. R. Johnston and I saw him on his admittance to hospital. No glands could be felt and we were of the opinion that removal of the ear would prove successful. Biopsy proved the growth to be an epithelioma. On February 9th the ear was removed right up to the drum. No excision of a part could have been more thoroughgoing. Six months later he returned with a palpable node at the angle of the jaw. The glands were given the maximum of irradiation but matters went from bad to worse and he died the following February. Roughly, six months from the time the lesion was noticed until its seriousness was recognized; six months of comfort and apparent freedom; six months for the lymphatic involvement to finally destroy.

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Relief of Pain in Cases of Cancer in the Pelvis

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THE relief of pain for patients suffering from advanced malignancy of one of the pelvic organs always presents a difficult problem for those of us in general practice. Because we are fighting a losing battle in which the symptoms inevitably become worse and the pain in particular becomes more severe it is essential to plan carefully to meet the problem as it unfolds.

The varying degrees of fortitude with which patients will bear pain requires some other criterion than the complaints of the patient to govern the dosage of sedatives to be given. "If a cancer patient can get five or six hours sleep and can take his food during the day he is not suffering intolerable pain." (Wild of London). While such a standard may not always be strictly adhered to it serves as a useful guide.

Undoubtedly the most useful of the milder sedatives are the coal tar derivatives, e.g., acetanalid gr. 3 and acetyl salicylic acid gr. 5-10. Aminopyrine is another useful analgesic.

Analgesics should be combined with sedatives such as bromide or phenobarbital to allay the nervous irritability which is so common when the analgesic is wearing off. As the duration of action of phenobarbital is longer than that of most analgesics of the coal tar type care must be taken to prevent cumulative action of the sedative when the two are taken together.

As the pain becomes more severe and more difficult to control codeine is added in increasing doses to the analgesics already being employed.

But the pain will become increasingly severe and these milder analgesics lose their effectiveness. It becomes necessary to introduce measures which require judgment in their use.

1. Stronger analgesics such as morphia.

2. Chordotomy

3. Subarachnoid injection of alcohol

In most cases morphia must be used. There is, generally, no other way of dealing with the pain and discomfort from which patients suffer. Its use can be restricted to reasonable doses and the nervous irritability at the time it is wearing off can be combatted by combining nembutal with the morphia.

While the doses of morphia and nembutal remain small and are required chiefly at night to gain rest, the problem may still answer to sedatives and analgesics. However, as more of the sensory nerves become involved in the growth and as larger doses of sedatives are required with their decreasing effectiveness, nausea, and drowsiness, some other means of relieving pain is desirable. Of these chordotomy requires a neurosurgeon, but subarachnoid injection of alcohol is within the capabilities of all.

By means of subarachnoid injection of 95% alcohol the posterior sensory roots are blocked. There is not any great degree of disturbance of motor func-

tion because the motor fibres are less susceptible to the effects of alcohol than the sensory fibres.

Technique

The patient is placed on the side opposite to that one which has the more pain. The back is arched as much as possible and the legs flexed on the body. The shoulders are kept low and a pad or pillow placed under the pelvis to raise the sacral and lumbar vertebrae. The body is then turned ventrally 45 degrees. In this way the posterior roots are uppermost and the motor roots in a plane out of reach of the alcohol. The patient is held in position by an assistant. The lower spine is painted with weak iodine solution. A wheal is raised in the skin with local anaesthetic and a spinal needle introduced into the spinal canal through the fourth interspace.

Using a tuberculin syringe for accuracy 0.75 cc of 95% alcohol is injected drop by drop into the subarachnoid space. Two minutes should elapse from start to finish of the injection.

Care should be taken not to withdraw any spinal fluid into the syringe as it is necessary for the alcohol to rise and surround the posterior roots, which will not occur readily if diluted with spinal fluid in the syringe. Five days later the opposite side is treated, using the same technique.

Obviously there is nothing new in the foregoing paragraphs but it is often helpful to compare our different methods of dealing with difficult and unsatisfactory cases.

My personal experience with the subarachnoid injection of alcohol is limited to six cases. Three were carcinoma of the cervix uteri, one was a carcinoma of the rectum with a colostomy, and two were carcinoma of the prostate with supra pubic catheters. All were treated in their homes in the terminal stages of the disease. Only one lived in town, the others varied from five to twelve miles from town.

As the milder analgesics became ineffective and the patient became more and more confined to bed there was everything to be gained and nothing to lose by employing an agent which would relieve the pain even at the risk of damage to the cord itself.

In all cases I employed the above technique the patient being in his or her own bed. All complained of a hot, numbing sensation over the buttock involved and a sense of inability to move the limb, both sensations passing off within 24 hours.

Five of six cases received marked benefit. They could move about whereas before they maintained a posture of greatest comfort more or less continuously. More convincing evidence was the sharp reduction in the amount of analgesic and sedative required, to keep the patients comfortable.

The sixth case was one of carcinoma of the prostate in a man who had previously had a leg amputated for senile gangrene.

The effect of the treatment may last from three to six weeks and can be repeated as it is no more painful than an ordinary lumbar puncture.

The general malaise and discomfort inherent in the toxic absorption from a carcinoma continue but the severity of the pain is greatly lessened and it is my belief that no advanced case of malignancy should be deprived of the benefits of subarachnoid injection of alcohol.

Editor's Column

The Editors have been dangerously near the edge of the precipice on many occasions but were always saved in the nick of time. This time, however, our prayers went unanswered and the fifteenth of the month arrived and not a single article arrived; consequently the Editor in-chief has to contribute the one and only—which he hopes will save the day and give you a chance to gird up your loins and with renewed determination set to work to finish that article or complete that case report that you purposed in your heart to do long ago.

H. W. S.

Case Report

Trichiniasis

This case report is that of a female age 24, married 3 years, with one child 18 months. She has had no previous serious illness or operation.

On January 4, 1943, she became ill with diarrhoea and pains in her abdomen lasting one day. During the next 5 days she suffered from cramp like pains in her abdomen which were moderately severe but without diarrhoea or vomiting. On January 10 she developed pain in the back of her neck and back and was confined to bed.

She was seen first on January 11, one week after the onset. Her only complaints were of pain in the back of her neck and in the lumbar sacral region—no pain in the abdomen or elsewhere.

Physical Examination:

1. Normal appearing, well nourished, girl of stated age. Does not appear ill.
2. Head and neck—pain on moving neck, no spasticity, otherwise negative.
3. Chest and heart negative. Pulse 90, Temperature 102, B.P. 96/68.
4. Abdomen—negative.
5. Extremities—no abnormality.
6. C.N.S.—Negative.

Two days later she was seen again. The symptoms had not changed but temperature was now 104 and pulse 120. Nothing new was discovered on physical examination except the presence of a peculiar symmetrical rash on the inside of the thighs and lower abdomen and some oedema of the eyelids. The rash consisted of fine rose red spots, not larger than the head of a pin, were numerous, and disappeared on pressure.

A urine examination was negative. It was evident that the patient was suffering from some serious disturbance although she felt remarkably well and wanted to get up. She was transferred to hospital on the following day, January 14.

An examination of blood, spinal fluid and urine was done.

1. Urine is negative
2. Blood (a) Icterus Index—8
(b) Culture—Direct Broth Culture proved sterile.
(c) Blood films

The Red Cells show some achromia, anisocytosis with microcytes predominating and some polychromatophilia. No nucleated red cells are seen.

The White Cells Leucocyte count 11,000. No abnormal varieties detected.

Differential Schilling Count (200 cells counted)

Myelocytes.....	0.0%
Juveniles.....	5.5%
Band Forms.....	10.5%

Remarks: There is a fairly marked hypochromic microcytic or secondary anaemia with a definite relative eosinophilia and shift to the left of the Schilling Count present.

3. Spinal Fluid

Kolmer Wasserman positive. Fluid otherwise normal.

On January 16 the patient was feeling well. The pain in her neck and back had disappeared. The rash had spread to chest and arms but had faded out to an almost indiscernible shade of brown. Temperature 104. An X-Ray of the chest was done and the blood examined by Widal reaction. The Radiologist reported "slight infiltration present in both apices particularly on the right. The appearance suggest early tuberculosis." The Widal reaction was negative including *B. proteus* X 19.

On January 17 the patient became prostrated, complaining of lack of strength, dizziness on raising her head, and a tired feeling in her legs. Fever and tachycardia unchanged. The oedema of the eyelids still present. A diagnosis of trichiniasis was made. On January 18 a second blood examination and a skin antigen test were carried out to confirm the diagnosis. The leucocyte count was now 14,000 and the eosinophiles had risen to 45%. The skin test became positive in 12 hours and marked in 24 hours.

On January 19 the patient's condition was much the same with more marked pain in the calves and points of tenderness in the thighs and she now had signs of bronchitis.

The clinical course, diarrhoea, pain in abdomen, high fever, later prostration and pain in muscles of the legs, accompanied throughout with oedema of the eyelids, and the blood findings, with the positive skin reactions sustain the diagnosis.

The source of the infection was traced to the eating of one half of a small raw sausage ten days previous to the onset of her symptoms.

The patient's progress has followed an uneventful course toward complete recovery.

The laboratory reports are from the laboratories of Dr. Ralph Smith and Dr. D. J. MacKenzie.

PETER HEBB

Dartmouth, N.S.

Abstracts of Current Literature

SULFADIAZINE. Editorial. *Ann. Int. Med.*, 1942, 17:1029.

Domagk nearly eight years ago published his initial report on the striking effects of the brick-red dye protosil in experimental hemolytic streptococcal infections in mice. Shortly afterwards it was found that a simple chemical compound, sulfanilamide, or para-animo-benzene-sulfonamide, was the active constituent of protosil. These discoveries marked the dawn of a new era in the chemotherapy of bacterial infections. Consequently a great amount of experimental work has been carried out and the annals of medical literature has been virtually flooded with articles on the effects of the various sulfonamides in the treatment of infectious diseases. Many new compounds have been synthesized, tested out in the laboratory, and then administered to patients. Sulfanilamide, neoprotosil, sulfapyridine, sulfathiazole, and finally sulfadiazine have been successively added to our therapeutic armamentarium. With such a variety of drugs to choose from the chief problem that confronts the physician is the selection of the most effective drug for the treatment of a given infection.

Sulfanilamide was found to be highly active against infections due to the beta hemolytic streptococcus, meningococcus, gonococcus and Welch bacillus, but relatively ineffective against pneumococcal infections. Unfortunately this drug gave rise to a number of toxic manifestations in many patients. Of the more serious toxic effects was acute hemolytic anemia (3% of all patients during first week of therapy), and fatal granulocytopenia which was encountered occasionally in patients who had taken the drug for over two weeks. Hepatitis, peripheral neuritis, and psychosis were other infrequent but serious toxic effects. Drug fever and dermatitis were by no means rare. Cyanosis, due either to methemoglobinemia or to a colored by-product of sulfanilamide, was found to be more alarming to the family than to the physician since it was rarely of serious importance. Acidosis with a fall in the carbon dioxide combining power of the blood was frequently a disturbing feature until it was discovered that this complication could be counteracted by the administration of sodium bicarbonate with each dose of sulfanilamide. Because of these multiple toxic and unpleasant side-effects, sulfanilamide has largely been replaced to-day by the less toxic sulfadiazine as the drug of choice for the treatment of hemolytic streptococcal, meningococcal, and Welch bacillary infections. Sulfanilamide still maintains a definite though limited position among the sulfonamide drugs. In therapeutic doses sulfanilamide has not caused renal damage (gross hematuria or anuria) such as occurs in a small but significant proportion of patients treated with sulfapyridine, sulfathiazole, or sulfadiazine. Therefore sulfanilamide is still the drug of choice for the treatment of patients with hemolytic streptococcal infections complicated by hemorrhagic nephritis or other serious renal disorders. Furthermore, powdered sulfanilamide, because of its greater solubility and diffusibility, has been found superior to its three more modern derivatives for local implantation in the treatment of traumatic wounds or infections in the peritoneal cavity.

Sulfapyridine was first employed extensively in the treatment of pneumococcal pneumonia in the winter of 1938-1939. The results were dramatic and

the case fatality rate in lobar pneumonia was reduced by nearly two-thirds. Here at last was a drug that proved to be highly effective against the pneumococcus. Unfortunately, however, several difficulties arose in connection with the administration of sulfapyridine. Because of its low solubility, absorption from the gastrointestinal tract was often slow and many hours were required to obtain an effective blood level of the drug. This obstacle was surmounted by the administration of an initial intravenous injection of 4.0 grams of the relatively soluble sodium salt of sulfapyridine, followed by the oral administration of 1.0 gram of sulfapyridine every four hours as a maintenance dose. The worst feature of sulfapyridine therapy was the extremely high incidence of nausea and vomiting (of central origin) following the administration of the drug either orally or intravenously. At times dehydration from severe vomiting necessitated the intravenous administration of saline and glucose. Patients were frequently heard to say that they would prefer to take their chances with the disease rather than the cure. It became obvious that, although sulfapyridine was an extremely potent anti-pneumococcal agent, it was a long way from an ideal solution of the pneumonia problem.

In 1939 sulfathiazole succeeded sulfapyridine as the drug of choice for the treatment of pneumococcal infections. This compound was more soluble than sulfapyridine and hence more readily absorbed. The incidence of nausea and vomiting from sulfathiazole was much lower than that from sulfapyridine. Sulfathiazole is more rapidly excreted than sulfapyridine and it is, therefore, difficult to maintain an effective blood level of the drug. Furthermore, sulfathiazole has subsequently proved to be the most toxic of the four sulfonamide compounds in general use to-day, giving rise to a higher incidence of serious toxic effects such as drug fever, dermatitis, hepatitis, granulocytopenia, hemolytic anemia, and renal complications. Rich has very recently demonstrated periarteritis nodosa-like lesions in the tissues of patients who have been treated with sulfathiazole. Evidences of renal damage in the form of gross hematuria as a result of the precipitation of drug crystals in the kidneys or oliguria due to direct toxic damage to the renal tubules have been noted in a large enough proportion of patients treated with sulfapyridine or sulfathiazole to necessitate careful observation of the urine and fluid balance in all patients receiving these drugs.

Finally in 1940 sulfadiazine was introduced in the hope that it would surpass sulfathiazole as an anti-pneumococcal agent. Two years later we find that sulfadiazine has stood the test of time as the drug of choice for the treatment of pneumococcal lobar pneumonia. Sulfadiazine is fairly well absorbed from the intestinal tract. It is less rapidly conjugated and more slowly excreted than sulfathiazole, and is just as effective. Most important of all, sulfadiazine is far less toxic than sulfapyridine or sulfathiazole. In a recent review of cases treated with one or another of the four drugs, Long found the incidence of serious toxic effects such as drug fever, dermatitis, acute hemolytic anemia, granulocytopenia, renal complications, hepatitis, peripheral neuritis, and psychosis to be as follows: sulfathiazole 18.6 per cent, sulfapyridine 15.9 per cent, sulfanilamide 11.9 per cent, and sulfadiazine 6.5 per cent. Thus sulfadiazine is only about one-third as toxic as sulfathiazole. Acute hemolytic anemia from sulfadiazine must be extremely rare.

Very recently Finland and his associates advocated sulfadiazine as the drug of choice for the treatment of hemolytic streptococcal, pneumococcal,

meningococcal, and Friedlander bacillary infections. They recommend sulfadiazine in all acute pulmonary infections and acute meningitides; also in gonococcal or staphylococcal infections where prolonged therapy is desirable. This report is in general accord with the attitude of other authorities in the field, notably Long, Dowling, Flippin, Trevett, and Wood. The reasons for this viewpoint are twofold: (1) equal or superior efficacy of sulfadiazine in the treatment of the infections mentioned, and (2) low toxicity. Sulfadiazine is not the ultimate answer to the problem of chemotherapy for bacterial infections, but it is by far the best of the sulfonamide compounds available at the present time. Its shortcomings are apparent: (1) low solubility with relatively low absorption, a difficulty which may be circumvented, as in the case of sulfapyridine or sulfathiazole, by an initial intravenous injection of the sodium salt of sulfadiazine; (2) toxicity, in particular drug fever, dermatitis, and renal damage; and (3) cost (the price of sulfadiazine is still considerably higher than that of any of the other three compounds). These disadvantages are more than outweighed by the special merits of the drug. Patients receiving sulfadiazine rarely complain of unpleasant symptoms such as headache, dizziness, malaise, nausea or vomiting. The valency of the drug is much wider than that of any one of its predecessors. True, sulfathiazole and sulfapyridine are still regarded as being superior to sulfadiazine for treatment of acute gonococcal infections and certain infections of the urinary tract. Yet sulfadiazine already gives promise of supplanting the other sulfonamides as the drug of choice in many of these genito-urinary infections. Further investigation is necessary before final conclusions can be drawn.

All in all, sulfadiazine stands out as the most effective and least toxic of the sulfonamides available to the physician to-day. At the moment it is the king of the sulfonamides.

CARDIAC EFFICIENCY AND PROGNOSIS FOLLOWING RECOVERY FROM ACUTE CORONARY OCCLUSION. Master, A. M., Dack, S., and Jaffe, H., Jour. Am. Med. Association, 1942, Vol. 16-1271.

The authors studied the cardiac efficiency by various function tests performed serially on 202 patients, who were observed for two to eight years following recovery from acute coronary occlusion. The results were evaluated from a prognostic point of view.

Recovery from acute coronary occlusion was found to be good or completed in over one-third of the patients; i.e., they had no symptoms of diminished cardiac reserve or routine activity. One-half were able to return to work, usually full time, and cardiac reserve, as measured by function tests, was normal or only slightly abnormal.

A persistent reduction in vital capacity was rare in the good recovery group but common in those whose recovery was poor. However, the vital capacity not infrequently was normal in the presence of severe angina pectoris. A reduction below 2,000 c.c. was generally found only among patients who were in congestive heart failure.

The two step exercise tolerance test, a simple non-strenuous test of cardiac function, became normal in 18 per cent and remained distinctly abnormal in two-thirds of the patients. Return to normal usually occurred one or two

years after the attack and was associated with a good clinical recovery and decreased incidence of subsequent attacks.

The teleoroentgenogram revealed definite cardiac enlargement in half the patients, and the majority of these were hypertensive. As a rule chronic coronary sclerosis or coronary occlusion did not produce cardiac enlargement unless hypertension or heart failure was present. Although a severe degree of coronary disease may exist without cardiac enlargement, clinical recovery was more complete and subsequent attacks were less common when the heart size was normal, emphasizing the relation between heart size and cardiac function. Cardiac enlargement was always permanent.

A systolic expansion of the left ventricle, pathognomonic of previous infarction, was observed fluoroscopically or roentgenkymographically in nearly three-fifths of the patients, and localized absence or diminution of pulsation in 25 per cent. With few exceptions these abnormalities were permanent. Although an abnormal ventricular pulsation did not preclude a good recovery from the attack, it was almost universal in those whose recovery was poor. Not infrequently it was the only remaining sign of previous infarction, being observed in the majority of patients whose electrocardiogram returned to normal. The patients with normal pulsations usually recovered completely and rarely sustained another attack.

The electrocardiogram returned to normal or almost normal in 21 per cent of the patients, usually within one year after the attack. The great majority of these made a good recovery, as well as those whose T waves became normal although the Q waves persisted. However, the persistence of the findings characteristic of previous infarction, which was observed in almost two-thirds of the patients, was not necessarily a bad prognostic sign. The location of the infarct, i.e., whether anterior or posterior, did not affect the clinical course. However, when infarction of both surfaces had occurred the prognosis was worse.

The electrocardiogram after the standard two step exercise test revealed signs of coronary insufficiency (depression of RS-T or inversion of T wave) in 5 of 18 patients whose control record was normal and in 24 of 39 patients with abnormal electrocardiograms. A negative test was associated with a good recovery and good cardiac function.

The presence of a normal two step exercise tolerance test, normal ventricular pulsation or a normal electrocardiogram following coronary occlusion, was usually accompanied by complete clinical recovery. Not only were significant angina pectoris and dyspnea uncommon when the foregoing tests became normal but a subsequent attack of either coronary occlusion or heart failure was rare. In those whose recovery was poor there was nearly always objective evidence of disability.

THE ROLE OF SURGERY AND IRRADIATION IN CANCER OF THE BREAST. Adair, F. E., Jour. Am. Med. Association, 1943, 121:553.

The author compiled a study of five year end results in 3,535 cases in which an attempt was made to evaluate surgery alone, preoperative irradiation, post-operative irradiation and irradiation alone in the cure of operable breast cancer which revealed that the cases treated by surgery alone represented a highly selected group and do not well represent a cross section of the accom-

plishments of treatment by this method. His study shows that the preferable method of treating operable breast cancer is immediate radical mastectomy combined with post-operative irradiation. In this series so treated, of those with no axillary involvement, 76.8 per cent obtained a five year survival; of those with axillary involvement, 41.8 per cent had a five year survival. This represents a higher salvage than is usually reported; the explanation is usually to be found in the following: 1. Patients with breast cancer come to the surgeon earlier than previously.

2. A partial selection of operable material takes place, which gives a higher cure rate for the operable cases but a lower cure rate for the total breast cancer material. Since the base of operability was broadened in 1933, the cure rate of operable cases will, in all probability, diminish; nevertheless the author anticipates that the over all cure rate for the total material will continue to increase.

3. Modern irradiation by the divided dose method has definitely increased the salvage. The grade 3 and grade 4 cancers involving the axilla represented cases with an especially grave prognosis. Irradiation, carefully applied has greatly improved the opportunity for the cure of the grade 3 and grade 4 cancers, and it is in this group of highly malignant cancers that irradiation is most needed and of most value.

The poorest end results obtained in this study were in those unselected cases given irradiation only, namely 24 per cent.

E. DAVID SHERMAN, M.D.

Sydney, N. S.

The Country Doctor

Before the break of dawn the phone bell rings—
Just to be sure that he will come that day
To see someone who has felt "mean" for weeks—
"Yes any time will do—during the day."
The sky begins to show a lighter shade
Of gray—again he hears the shrill phone bell
This time 'tis someone "thro' the mail
Wants pills he's sure the Drugstore does not sell."
Again and yet again the phone bell rings,
More detail upon detail piling high.
The mail does not go out for several hours—
To sleep again he turns with gentle sigh.
At last the light of day really appears,
The sun from rest once more lights up the sky.
He must arise from perhaps three hours sleep
To visit homes where those in illness lie.
He must be bright and patient, he must smile
To cheer the sad—to put strength in the weak—
To comfort those whose road is hard, to help
Those without Faith, a stronger Friend to seek.
He must bend all his thoughts to solve somehow
A problem, dark to those who on him call.
He must forget his home, his friends, his books,
To others he must give his time, his mind, his all.
And when he leaves the home of one in need,
Must seek some way to send help without harm.
Then when he enters the next house, must seem
As fresh as if from rest, and just as calm.
He must take no offence when anxious friends
Ask questions, cast "quack" treatments at his head—
Must answer gently, and must not offend,
But must protect the patient, ill in bed.
And when a case beyond his skill has gone,
To where we know all worldly sufferings cease,
He must not show his weariness and hurt,
Must do his best, and always seem at peace,
Through winter storms and summer blazing sun
Through rain and tempest, with or without rest,
The Country Doctor goes about his rounds,
He does this year by year—a gruelling test.
To those who serve us now in time of war,
Let us remember to give thanks this day.
Their road is hard, their pleasures few,
And yet they keep on their accustomed way.
From eight to ten or twelve hours some men work,
Others from rise to setting of the sun,
But well we know that "like the women's work"
The Country Doctor's Work "is never done."

ANON

Correspondence

184 College Street
Toronto 2, Jan. 26th
1943

TO SECRETARIES OF DIVISIONS

Dear Doctor:

Re—Surgical Instruments for Doctors of Great Britain

You will be interested in the following copy of a letter received by the Canadian Red Cross Society from Professor F. R. Fraser of the Ministry of Health of Great Britain:

Ministry of Health
Whitehall, London, S.W.I.
8th October, 1942

From Professor F. R. Fraser

Dear Colonel Scott:

The gift of surgical instruments forwarded from the Doctors of Canada and the Canadian Medical Association has now been examined and the instruments classified, and I should like to express on behalf of the Minister of Health his most grateful thanks, and to ask you to convey to the donors our very sincere appreciation of their generosity.

As you know, we had to expand the hospital service in this country very greatly and quickly at the beginning of the war so as to be ready for civilian casualties resulting from air attack, and the equipment had perforce to be on an emergency basis. The instruments which you have now placed at our disposal will help to make just that difference to the equipment of the hospitals which counts for so much.

I am

Yours sincerely

(Signed) Francis R. Fraser

Director-General

Emergency Medical Service

Yours sincerely

T. C. Routley

General Secretary

February 15, 1943

Editor
Nova Scotia Medical Bulletin
Barrington St.
Halifax, Canada

Dear Doctor:

Will you please publish a notice in your next issue to the effect that the \$500 Research Prize annually offered by the American Urological Association will not be awarded this year.

The Government has again discouraged the holding of medical conventions, except those primarily of military interest—and at these there is to be a ban on social events. Under the circumstances, plans for the June meeting of the American Urological Association in St. Louis have been cancelled.

Yours very truly

MILEY B. WESSON, M.D.

Chairman, Committee on Research
American Urological Association

Resolution passed at the Meeting of the Council of the Ontario Medical Association, January 27, 1943

Whereas the General Council of the Canadian Medical Association of which this Division is a part, met in Ottawa on January 18 and 19, 1943, and received and discussed draft proposals for health insurance, as presented by representatives of the Department of Pensions and National Health, and

Whereas the General Council was assured that the draft proposals made provision for provincial autonomy in the administration of health insurance; and

Whereas the Ontario Division has officially adopted and here and now again sets down what it believes to be the essential features insofar as the administration of health insurance in this Province is concerned, Viz:—

Compulsory Health Insurance in Ontario shall be under the full control and direction of an autonomous non-political Commission or public Corporation answerable to the Lieutenant-Governor-in-Council through the Minister of Health.

The Commissioners shall be appointed by the Lieutenant-Governor-in-Council on nomination of the interested groups in such numbers from these respective groups as are proportionate to their duties and responsibilities under the Act.

The Commission shall engage:

(1) A Director of Health Insurance who shall be a Doctor of Medicine, regularly qualified, duly licensed and in good standing in the Province and having practised medicine for at least ten years, and

(2) A Chief Medical Officer, and

(3) A Chief Administrative Officer

These officers shall be responsible to the Commission for the detailed administration of the Act.

Therefore be it Resolved that this Council requests the Committee of Seven to make such representations to the Dominion Drafting Committee as will assure that the administrative clauses in the draft proposals shall place no barrier to the adoption of such plan of Provincial administration, and further

Be it Resolved that copies of this resolution be forwarded to each Division of the Canadian Medical Association for consideration and with the suggestion that, if desired, similar representations be made to the Committee of Seven.