purposes of complementary feeding (allaying anxiety) will be fully achieved. There have been disputes on this question, and many cases have been cited in which an adequate intake was immediately secured and the mother's anxiety was allayed. But no cases have yet come to my notice in which the proportion of human milk in the diet was the highest possible or in which a return to full breast-feeding was practicable without a sacrifice of weight gain.

Conclusion

Finally, brief mention must be made of three conditions which may worry either the doctor or the mother—namely, failure to establish lactation, vomiting, and constipation.

Non-lactation is often diagnosed too soon. It is important at all times to give sips of sterile water (with or without sugar) to allay the baby's thirst, as this interferes with its rest more than hunger does. But artificial feeds should not be given until the eighth day or until the baby has lost 15% of its birth weight, whichever is the earlier; and they should not exceed 1 oz. per lb. (60 ml. per kg.) of body weight a day until the fourteenth day. If by that time the milk is still not coming in in effective quantities it may be doubted whether lactation can be established.

Vomiting is a constant cause of complaint. Few mothers (strange though it seems) expect milk to be curdled in the stomach, so that the curds in the vomit alarm them. Vomiting should be judged in relation to test feeds and weight gains. If it seems that the baby's progress is affected by the vomiting, and there is no infection, then belladonna, 5 minims (0.3 ml.) of the tincture in water, or atropine methonitrate, 2 to 5 drops, should be given before the feeds. Even when the infant's progress is not affected, this treatment may be necessary to quieten the mother. If the vomiting continues in significant quantity, a stomach wash-out should be given to determine whether there is mucous gastritis; if large quantities of mucus are found the treatment should be repeated daily until the condition remits. The only cases of vomiting needing weaning are those which follow on puerperal sepsis.

Constipation is usually a false report. What is nearly always meant is that the motions are infrequent, but the stools are normal in themselves and passed without strain. The condition demands no treatment whatever. In the rare cases in which the stool is hard and difficult to pass (and pyloric stenosis has been excluded) a mild laxative should be given, such as mist. magnes. hydrox., B.P., $\frac{1}{2}$ to 1 drachm (1.7 to 3.5 ml.), or syrup of senna, 15 to 30 minims (0.9 to 1.8 ml.).

The number of points at which prevention is not only better than cure but also much simpler is worth stressing. Regular supervision will always lead to greater success than can be secured by interventions to deal with difficulties.

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Next Refresher Course Article.—"Pyelitis in Children," by Professor A. V. Neale.

The Treatment of Accidental Poisoning.—In the paragraph on the treatment of aspirin poisoning in this Refresher Course article (May 30, p. 1214), the use of "intravenous sodium lactate (70%)" is advised. In order to obviate any possibility of misunderstanding, it should be stated that the sodium lactate is to be given in *isotonic solution*. The 70% refers to the strength in which the lactate is usually purchased.

Refresher Course Book.—The first collection of articles of this series (fully revised) are available as a book containing 55 chapters, price 25s. Copies may be obtained either direct from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, or from your bookseller.

LINGUA MEDICA

A STUDY IN MEDICAL SEMANTICS*

BY

FFRANGCON ROBERTS, M.D.

Socrates: He who first gave names gave them according to his conception of the things which they signified, and if his conception was erroneous . . . shall we not be deceived by him?—PLATO, *Cratylus*.

The meaning of anything is usually another name for the same thing.—CHARLES CHAPLIN, *Limelight*.

The language of medicine has more than utility value. It enshrines the ideas about disease which were held by primitive societies, the gradual evolution of medical knowledge in 2,500 years, and the geographical course which this knowledge has taken. It illustrates the mental processes by which men in all ages have found names for natural phenomena, incidentally giving us glimpses of their domestic, agricultural, and military background, and it explains why medical concepts, however modern, are still most accurately expressed in the language of Hippocrates.

Sources

The principal sources of medical words are five: Saxon, Graeco-Roman, Romance, Arabic, and Modern German.

Saxon

This source comprises our native Anglo-Saxon, together with Scandinavian, Teutonic, and other languages of North-west Europe. The words which it furnishes are all short, and express simple ideas—*head, hand, ache*. Their derivation is of no interest except to students of these languages.

Graeco-Roman

This is, of course, the most prolific source. The Greek component derives from early Greek, Minoan, Egyptian, and Asiatic sources, and first appears in organized form in the writings of Hippocrates (b. *circa* 460 B.C.). On the decline of Greece proper the words were taken over by the Greeks in Alexandria and later by the Romans. The Romans were in the habit of employing Greeks as their physicians, among them Galen (A.D. 131–200), but they also practised medicine themselves either as professionals or as amateurs. The head of a household, at any rate in the provinces, would dispense medicines to the members of his villa. But whether Greek or Roman, professional or amateur, they were bilingual, and used Greek and Latin words according to convenience. This explains the double nomenclature of the present day: *nephros, ren*; *orchis, testis*; *encephalon, cerebrum*. Andrews (1947) maintains that Latin words were completely suppressed except for a few such as *anus, penis*, which might be used in vulgar jokes. This is manifestly incorrect, as the writings of Celsus and others abundantly show.

Romance

Romance words are those which, though of classical derivation, arose in Italy, France, or Spain. From Italy we have *belladonna* (beautiful woman, from the effect of the drug on the eyes), *malaria* (bad air), and

* In this article the following abbreviations are used: Ar., Arabic; E., Modern English; M.E., Middle English; F., Modern French; O.F., Old French; G., Greek; L., Latin; Lit., Literally; Pop., Popular.

influenza. From France come *goitre*, *tic douloureux*, *grand mal*, *petit mal*, *chancre*, *trocar*, and many others. From Spain, *mosquito* and *quarantine*.

Arabian

During the long eclipse of Western culture in the Middle Ages (A.D. 476–1453) science was pursued to a high level by the Moslems, whose empire extended from Arabia, through Egypt and the north coast of Africa, to Spain. To them we owe algebra and our arithmetical notation. They translated the Greek and Latin medical texts, the use of which was proscribed by the Christian Church. At the Renaissance the Humanists, experiencing great difficulty with the Arabian translations, and finding a new pride in their long-neglected heritage, sought the original sources. Consequently few Arabian words survive. Most of these are names of chemical substances: *sugar*, *syrup*, *alcohol*, *alkali*, *elixir*, *naphtha*, *senna*. Of medical words there seem to be only four:

Nucha, neck.

Mater (dura and pia), from the Arabic word for *mother*. The Arabians were, and still are, in the habit of using flowery language, with a special preference for family relationships. *Mater* therefore means either mother of membranes or, more probably, mother or protector of the brain.

Cephalic (vein), from Ar. *alkifal*, outer.

Basilic (vein), from Ar. *basilik*, inner.

The *Oxford English Dictionary*, however, derives *cephalic* from the belief that this vein influenced the head, and *basilic* from the fact that this was the chief, therefore royal, vein used for bleeding (G. *basileus*, king). With all due respect I think the Arabian origin the more probable.

Modern German

For reasons given below these are very few—*magenstrasse*, *magenblase*, the hybrid *kernicterus*, and some psychiatric terms.

Corruption

In their migration across Europe many words have become corrupted. In some—for example, *shingles*, from *cingulum*, belt—the phonetic resemblance is obvious. In others, the process is more gradual. L. *botellus*, pudding or sausage, late pop. L. small intestine, O.F. *boel*, M.E. *buel* or *bouel*, E. *bowel*. G. *plege*, a blow, L. *plaga*, O.F. *plage*, M.E. *plage*, E. *plague*. *Hydropsie*, *dropsy*. Cf. pop. *polio*, *flu*.

The Construction of Modern Words

In constructing modern words classical words are invariably used, never the Saxon. For this there are several reasons. First, Saxon words go no further than primitive folk-medicine. In the classics, on the other hand, we have an elaborate verbal system invented for much more advanced concepts. Moreover, until the eighteenth century Latin was the universal language of scholarship. Secondly, by using classical words medicine allies itself with other sciences. *Proto-*, first, is used in physics and medicine; *cortex* and *medulla* are used in botany and medicine.

Thirdly, in English, minor parts of speech—pronouns, prepositions, and auxiliary verbs—play an essential part. By their use main words can be kept small, a fact which contributes to the richness of our language in poetry and literature.

"... he fell from off the seat backward by the side of the gate, and his neck brake, and he died; for he was an old man and heavy." (I Samuel, iv. 18.)

By reason of its simplicity and directness this passage might serve as a model for a medical witness at an inquest.

In describing more complicated matters, however, it is essential to eliminate minor parts of speech and to use portmanteau words. Take *agranulocytosis*—a, neg. or alpha privative; *granulum*, granule; *kutos*, cell or vessel; *sis*, a state of; a state of deficiency of the kind of cells which have granules. One word of 15 letters does for 12 words having a total of 51 letters.

Fourthly, we can express recognized diseases. *Acromegaly*, lit. large ends. To say "a man with large hands and feet" might mean anything, since many normal men are so built.

It is fortunate for us that this country stood in the stream of classical culture. The Germans, who, living too far north, were outside this stream, had to build up their medical language on their native Teutonic foundations. Hence the clumsiness of their vocabulary, which is full of such words as *zwölffingerdarmgeschwür*, twelfth-finger-intestine ulcer for duodenal ulcer, and *wormfortsatzentzündung*, wormlike projection burning, for appendicitis. International communication now compels the Germans to abandon such words for the classical.

When there is the choice of a Greek or a Latin word the rule is to use the Latin only in adjectival forms and with prefixes (apart from hyphenated words such as *cerebrospinal*), and to use the Greek when two nouns or a noun and a verb are joined. *Renal*, *suprarenal*, but *nephropexy*; *testicular*, but *orchidectomy*. (I exclude names of pharmaceutical preparations. With the erudition of commerce I cannot keep pace.) This practice is in the best classical tradition, since the Romans did not adopt the Greek habit of joining major parts of speech together.

Hybrid Forms

Medicine is riddled with hybrid Greek-Roman words. For instance, the G. *-itis* is suffixed to words of both languages. Despite the pundits there is no objection to hybrids (though this *Journal* might get rid of its *addressograph*). Ordinary speech would, in fact, be very difficult without them. In *On the Art of Writing*, by the late Sir Arthur Quiller-Couch, Professor of English Literature, Cambridge University, there occurs this unfortunate passage:

"I was waiting, the other day, in a doctor's anteroom, and picked up one of those books—it was a work on pathology—so thoughtfully left lying in such places; to persuade us, no doubt, to bear the ills we have rather than fly to others capable of being illustrated. I found myself engaged in following the antics of certain bacilli generically described as 'Antibodies.' I do not accuse the author (who seemed to be a learned man) of having invented this abominable term: apparently it passed current among physiologists, and he had accepted it for honest coin. I found it, later on, in Webster's invaluable dictionary: Etymology, 'body' (yours or mine, 'anti,' up against it: compound, 'antibody,' a noxious microbe.

"Now I do not doubt the creature thus named to be a poisonous little wretch. Those who know him may even agree that no word is too bad for him. But I am not thinking of *him*. I am thinking of *us*: and I say that for our own self-respect, whilst we retain any sense of intellectual pedigree, 'antibody' is no word to throw even at a bacillus. The man who eats peas with his knife can at least claim a historical throwback to the days when forks had but two prongs and the spoons had been removed with the soup. But 'antibody' has no such derivation. It is, in fact, a barbarism, and a mongrel at that. The man who uses it debases the currency of learning."

This is severe enough. But read the first sentence again. The censorious professor himself uses the word "anteroom"—a mongrel if ever there was one, half Latin, half Teutonic.

The Persistence of Obsolete Ideas

As everyone knows, the humoral theory, which dominated medicine from Greek times to the middle of the nineteenth century, is indelibly imprinted in our speech—in *sanguine*, *phlegmatic*, *choleric*, *melancholic*, and in *humour* itself. From the Greek age we also have *hysteria*, *hypochondria*, *phrenic* (frenzy), *spleen* (or ill-temper); the boiling out of the humours in *eczema* (G. *zein*, boil), and the

secretion of *pituita* (mucus) from the brain through the base of the skull into the nose. The arteries, being empty at death, were believed to carry air, hence their name (G. *aer*, air, *tereo*, carry).

Derivation by Association or Transfer

Innumerable names are derived from resemblances to animals, plants, parts of buildings, musical instruments, articles of adornment, tools, and weapons. Of greater interest are words derived by association or transfer. Several types can be recognized:

1. *Transfer from the Thing or Animal Used.*—*Histos*, loom. In *histology* the meaning is transferred to the material made from the loom. *Vaccination*, from *vacca*, cow. *Graft*, from G. *graphein*, write, through O.F. *graffe*, F. *greffe*, and M.E. *grift*. The Gauls were taught horticultural grafting by the Romans, who used slips shaped like pencils. In *inoculate* we have a similar idea, the bud to be grafted being the "eye" (oculus)—cf. the eye of a potato.

2. *Transfer to an Attribute.*—*Anopheles*, harmful (insect). *Jejunum*, empty. *Trachea*, rough; originally *arteria trachea*, rough air-vessel—cf. pop. *whites* for leucorrhoea.

3. *Association Through a Common Characteristic.*—*Anthrax*, coal, and *carbunculus*, little coal, the common idea being burning. John of Trevisa (1535), translating the great thirteenth-century encyclopaedia, *De Proprietatibus Rerum*, by Bartholomeus Anglicus, a work probably used by Shakespeare, has: "Anthrax is a postume whyche cometh of ful wood matere and venomous. It is callyd also 'carbunculus,' for it brennyth like a coal." *Alopecia*, from *alopex*, fox, the common idea being manginess. Trevisa, from the same source, has: "By that euylly callyd Allopicina nourysshynge of heer is corrupte and fayllyth, and the foreparty of the heed is bare, such men fare as foxes."

4. *Indirect Association.*—*Quinsy*, from G. *kuon*, dog, *anchein*, throttle, through O.F. *sqinancie* and F. *esquinancie*. The idea was no doubt derived from the self-strangulation of a dog straining at the leash. At first it was applied to any obstruction of the throat. *Carotid*, from G. *karos*, sleep, from the Greek practice of producing unconsciousness by compressing these arteries—cf. F. *garrotter*. *Pupil* (of the eye) from *pupilla*, little girl or doll; so-called from the small image of oneself seen in another's eye. *Oestrus*, gadfly, a modern example. In some animals sexual excitement resembles excitement caused by a sting. *Idio-*, in *idiopathic*, *idiosyncrasy*, of course means peculiar to itself. In Greek times *idiotes* meant a private person, private in the sense that he kept himself to himself and took no part in civic affairs. Hence by easy gradations through *non-expert*, *layman*, *ignoramus*, *foolish*, to *idiot*.

Change in Meaning

Change in meaning takes various forms:

1. *Simple Change.*—*Asphyxia*, lit. no pulse. It retained this meaning until the eighteenth century. *Atheroma*, from G. *athere*, porridge, originally meant sebaceous cyst, from the consistency of the contents. The somewhat similar appearance of the aorta led in the middle of the nineteenth century to its present meaning.

2. *From the General to the Special.*—It has always been customary, when the true nature of a disease is unknown, to name it from its main characteristic. *Pyrexia of unknown origin* is a modern example. *Typhus*, from G. *typhos*, mist, figuratively expresses the stuporous mental state in fevers. *Eclampsia*—ek, from *lampas*, light—was first applied to any illness arising suddenly like a flash of light. *Herpes*, creeping, was applied to all spreading skin infections.

3. *From the Special to the General.*—*Nausea*—G. *naus*, ship—at first meant sea-sickness, but had acquired its modern meaning by the time of Hippocrates. *Thele*, nipple, has acquired a wide application in *epithelium*, *endothelium*.

4. *Complete Reversal.*—*Nyctalopia* was used by the ancients for day-blindness as well as night-blindness.

Phlegmatic, cold, indifferent, comes from G. *phlegma*, burning, inflammation. The contradiction is more apparent than real. Catarrh, which was regarded as the typical form of inflammation, results in the secretion of *pituita*, mucus, which Hippocrates, in *The Nature of Man*, describes as the coldest of the humours. It is a remarkable fact that, although we use several Greek words meaning heat, we do not use *psuchros*, or any other Greek word meaning cold. Those interested in the medical aspects of Polar and Himalayan exploration have not yet learnt to call themselves psychologists. *Symposium*, in Greek times, meant a drinking-party (for men only). High thinking was, however, far from being neglected. In fact, the purest gems of philosophy, including Plato's *Symposium*, arose in those enjoyable gatherings. The Greeks got more inspiration from their wine-cups than we get from our tea-cups.

Words of Obscure Origin

The search for origins is sometimes rendered difficult because the ancients, like ourselves, used a word in widely different meanings. In M.E., *reins* meant feelings as well as kidneys. In the former sense it appears several times in the Bible. "God trieth the hearts and reins" (Psalms vii. 9), "My reins shall rejoice" (Prov. xxiii. 16).

Amnion meant lamb and also bowl for receiving the blood of sacrificial animals. Its first application to a foetal membrane appears in the writings of that flamboyant philosopher Empedocles (504–443 B.C.), but there is no reason to suppose that he derived this use from either of its other meanings, capable though he was of supersonic flights of imagination.

Astragalos had no less than eight meanings. Both in the *Iliad* and the *Odyssey* it is used for the first or second cervical vertebra. Hippocrates gives it its modern meaning. It was also used for knuckle-bones and for any other bones used as dice in gambling.

Thymus—G. *thumos*, thyme—originally meant any warty excrescence, from the supposed resemblance to a bunch of thyme. Galen was the first to apply it to the gland. English butchers sometimes call it sweetbread of the neck to distinguish it from the pancreas, but although thyme suggests sweetness the idea that this is the connexion is too far-fetched.

Cataract, in addition to its present meaning, also meant something which impedes a cataract—namely, a sluice-gate. Ambroise Paré (1550) has *cataracte ou coulisse* (portcullis).

Misnomers

Medicine teems with verbal inaccuracies. We must remember, however, that much of medical jargon is incorporated in popular speech, and therefore partakes of the general sloppiness. Take, for instance, the word *catch*. Who does the catching and who gets caught? We say, "It catches me in the neck" and, "I caught pneumonia" (cf. F. *la grippe*, influenza). The truth is of course, that only the bacteriologists can catch the pneumococcus; the rest of us can no more catch one than we can catch a train. Then there is our incorrigible habit of blaming the environment for raining *attacks* and *strokes* upon our unoffending persons. We have an attack of indigestion when it is almost certainly our own fault. So we have *impetigo*, from L. *impetere*, attack; *epilepsy*, from G. *lepis*, attack; *plague* and *hemiplegia* from G. *plege*, blow.

Prefixes are very often used as arbitrary means of making distinctions, regardless of their true meaning; *ortho-*, *meta-*, and *para-* in organic chemistry; *epilepsy*, attack upon, and *catalepsy*, attack down; *analysis*, loosening up, and *catalysis*, loosening down. (We say *break up* when we might as well say *break down*). Verbs, too, are used with no strict regard to their meaning; *syndrome*, running together, and *symptom*, falling together.

But, this said, there remain some words which should be suppressed. The worst offender is *haemophilia*, love of blood. Almost as bad is *parenchyma*, beside-in-juice.

Ecchymosis should be *echaemosis*, since it is blood that is poured out. *Lithotomy* should be *lithectomy*, since the stone is cut out. Unwarranted liberties are taken in the use of *-sis* (*-osis*, *-asis*). The meaning of this ending should be restricted to a *state of*, to distinguish it from *-itis*, inflammation. It can indicate an attribute, as in *cyanosis* (G. *kuanos*, blue), the presence of an abnormal constituent as in *anthracosis*, a non-inflammatory disease as in *sarcoidosis*, or a condition associated with disease as in *acidosis*. *Diverticulosis* should mean merely that diverticula are present; *diverticulitis*, that they are inflamed. In *leucocytosis* the prefix *hyper-* is understood by ellipsis. *Nephrosis*, a state of kidneys, is nonsense. *Neurosis* is no better, but can perhaps be sanctioned by the popular expression "state of nerves." *Aponeurosis*, a ridiculous word, perpetuates the inability of the Greeks to distinguish between nerves and tendons.

The Plural

In forming the plural we should be guided by general sanction rather than by strict adherence to etymology or consistency (cf. *gladioli*, *antirrhinums*). Since we are writing English, we may regard the classical words which we use as naturalized into English. Moreover, we cannot expect people who know little of the classics to appreciate the difference between feminine Latin nouns ending in *a* and Greek neuter nouns ending in *a*. *Stigmata* is usual, but *cnemata* is pedantic. *Empyemas* is, I think, preferable to *empyemata*. In Latin nouns of the fourth declension—for example, *sinus*—which are the same in the singular and plural, the English plural avoids confusion. Incidentally, *sino-auricular* should be *sinu-auricular*.

American Usage

American usage differs from ours in the following ways: (1) Reversal of *r* and *e*; *fiber* for *fibre*. Our usage is better. (2) Suppression of *u* after *o* in such words as *color* for *colour*, *humor* for *humour*. This is more correct, but our forms are too firmly established to be changed. (3) Suppression of the final *al* after *ic*; *physiologic* for *physiological*. This again is more correct, since *al* is redundant, but the position is complicated by the conversion of many adjectives ending in *ic* into nouns: *logic*, *economics*. Note that *economic* and *economical* have different meanings. (4) The use of *e* instead of the ligatures *æ* and *œ* (wrongly called diphthongs). The ligature is a clumsy device and causes great difficulty to typists. Moreover, *æ* fails to represent the original sound *oi*. The G. *oisophagos* was represented better by the Early English *ysophagus*. *Fetus* is better Latin than *fœtus*. I think the ligatures should be abolished. We get on quite well without them in *economy* (*oikos*, house, *nomos*, law) and similar words. In holding this opinion I find myself in the good company of Fowler.

Conclusion

"The Man of Science," said Sir James Barrie, "appears to be the only person who has something to say just now—and the only man who does not know how to say it." This stricture, if justified, should be directed not against the language, but against its misuse. The function of a language is to express men's thoughts elegantly, accurately, and unambiguously. To achieve this end a language must be supple, adaptable, free from pedantry, and prepared to welcome immigrants. For science it must, in addition, be able to cope with the housing problem created by a rapidly expanding verbal population. Despite occasional lapses and the inevitable inclusion of technical jargon, we have forged in *Lingua Medica* an instrument of remarkable efficiency. It is up to us to keep it untarnished.

For the elucidation of several obscure and disputed points I have had the great advantage of consulting Dr. W. H. S. Jones, whose knowledge of Greek medical literature is encyclopaedic. I thank him most warmly.

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AMERICAN MEDICAL ASSOCIATION

ANNUAL MEETING IN NEW YORK

The 102nd Annual Meeting of the American Medical Association was held in New York City from June 1 to 5. There were over 16,000 members present, and another 16,000 guests. At the opening session the retiring president, Dr. LOUIS H. BAUER, discussed the medico-political situation in the U.S.A. and described some of the work done for the medical profession by the A.M.A. Touching on the subject of professional ethics, Dr. Bauer said that unethical procedures must be completely stamped out. The president-elect, Dr. E. J. McCORMICK (Toledo), in his address to the House of Delegates made suggestions towards solving some of the outstanding professional problems. "We must," he said, "be conscious of our twin roles as physicians and statesmen." Another speaker was Mrs. O. C. HOBBY, Secretary of Health, Education, and Welfare in President Eisenhower's cabinet. She stated that any Government programme of compulsory medical care would be undemocratic and uneconomic. The Government's role would be to protect public health, foster research, care for those unable to pay, and rehabilitate the disabled.

Dr. ALFRED BLALOCK, of Baltimore, well known for his contributions to the surgery of the heart, was awarded the American Medical Association's Distinguished Service Award for achievement in medicine. The award carries a gold medal and citation.

The Scientific Sections

More than 400 papers were read at the scientific sections and 21 medical films were shown. Colour television programmes, presented on screens 5 ft. by 6 ft., featured, on a closed circuit, clinical and surgical demonstrations of sinusitis, peptic ulcer, mitral stenosis, cancer of the cervix, essential hypertension, and breast tumour. A few of the papers which were read are reported below.

Cancer of the Digestive Tract

Improved methods for the early detection of cancer of the digestive tract, which is responsible for 41% of the cancer deaths in the United States each year, were demonstrated as one of the 260 scientific exhibits by a University of Chicago research team. The new method, it was asserted, has led to the diagnosis of cancer of the digestive tract with an accuracy of 90%. The technique is based on the Papanicolaou method for the early diagnosis of cancer through the recovery and identification of exfoliated cancer cells. The method, developed by Professor George N. Papanicolaou, of the Cornell University Medical College, has so far been applied most successfully in the detection of incipient cancers of the uterus and the cervix. Its application to the detection of early cancers of the digestive tract and other internal organs has proved difficult because of the difficulty of recovering exfoliated cells. The Chicago investigators believe they have succeeded in developing improved methods for the recovery of incipient cancer cells, if present, from the oesophagus, stomach, and colon, thus promising to extend the Papanicolaou technique to the early detection of the disease in those organs. A special device consisting of a balloon covered with an abrasive net, like a coarse hair-net, is inflated inside the stomach. The stomach is then washed with chymotrypsin, a natural digestive substance that dissolves the mucus in the organ's lining and frees any cells, cancerous or otherwise, that are embedded in it. This makes it possible for the abrasive surface of the balloon to gather the loosened cells for examination by the Papanicolaou method. Studies are now under way, it was learned, to determine whether a chymotrypsin "bath" may not be used by itself, without the balloon, as a satisfactory method for screening patients for possible stomach cancer. Preliminary findings were described as "encouraging." Similar methods for irrigating