On this date he looked quite well. He was a thin but wiry man, of a rather neurotic temperament. The pulse and temperature were normal. Nothing abnormal could be found in the chest or abdomen. The tongue was clean but of a rather brighter red than normal. The bowels were regular, the urine neutral, quite clear, and contained neither albumen nor sugar. On the previous day he had had pain and swelling in the right ankle. The joint now appeared quite natural, but over the right tibia there were a few small red spots not unlike erythema nodosum. There was a slight scattered macular rash over the abdomen. With the exception of some labial herpes there were no sores of any description anywhere on the body. No sign of disease could be found in the ears, nose, or throat. He wore a plate of artificial teeth, but had some of his own, which were carious in places, and round some of them the gums were retracted and spongy. He was thought to be suffering from rheumatism, and was ordered 15-grain doses of sodium salicylate every four hours. Two days later he had a further attack which was quite as violent as its predecessors.

On April 21st he was seen during an attack. There was acute pain in the left knee-joint, but at the time of examination no swelling; the spleen was just palpable; there was no heart murmur. The regularity of the attacks suggested malaria so strongly that he was put upon quinine in increasing doses (up to 5 grains four-hourly).

On April 4th he had another attack, during which he was seen by both of us. The temperature was 103.2°, pulse 120, blood pressure 140 mm. The face was flushed and the remains of the herpes were visible; there was just a suspicion of exophthalmos and some tremor of the lips. There was profuse perspiration, with the onset of which the pain had vanished. There was definite swelling, with fluctuation on each side of the left ligamentum patellae; when seen an hour earlier there was no swelling. On various parts of the body there were patches of erythema, the largest on the left forearm being about the size of a shilling. The only abnormality found in the lungs or heart was a soft systolic murmur accompanying the first sound at the apex, heard only over an area the size of the chest-piece of the stethoscope. The spleen was enlarged, easily palpable, but not tender. There was no other abnormality in the abdomen, and the urine was as before.

Blood smears were examined; there was evidently a leucocytosis and a slight eosinophilia (6 per cent.). A diagnosis of septicaemia was made, and a suspicion roused as to there being some infective endocarditis, but it was suggested that the teeth might be at the root of the matter. Treatment consisted of absolute rest in bed, a liberal diet between the attacks, and sodium sulphocarbonate, 5-grain doses. He was ordered to leave out his denture, and to rinse his mouth with permanganate lotion.

Punctually to time, on April 27th, another but slighter attack supervened, the pain and swelling being in the left heel. There was no systolic murmur in this or any succeeding attack. The attacks then became more frequent, there being ten in sixteen days, but they were slighter. The joint pains were less severe, but the erythema was more marked. On May 3rd one of the lower incisors began to ache; on May 4th there was gingivitis round these teeth, and on May 5th, together with a molar stump, they were extracted. The gums healed very rapidly, but the attacks continued. On May 11th 10 c.cm. of blood were taken from a vein in the hope of obtaining a micro-organism from which a vaccine could be prepared, but the culture fluid remained sterile. On May 27th this was repeated with the same result. The faeces were carefully examined, as the periodicity suggested some protozoal parasite. Nothing was found, nor was there any evidence of intestinal catarrh or ulceration. On May 29th the upper incisors, aching and showing gingivitis, were extracted. There was some pus in one of the sockets, but the gums healed well. There was no further attack for four days. After this there seemed to be some slow improvement. The gums round the remaining teeth became affected, and the latter were removed at intervals. There was pus around the neck of most of the teeth extracted. The root appeared as if covered with a fine velvety pile of a reddish yellow colour. Some of them were loose.

After the extraction of the last tooth he had no further attack, and began to gain ground very rapidly. After ten days he was sent to the seaside, and fourteen days later was able to return to work, and at the time of writing is in good health and attending to business in his usual manner.

The diagnosis of this case gave rise to great difficulty. The quartan periodicity of the attacks make it necessary to exclude malaria. The fact that the patient had never been abroad, the absence of parasites from the blood (after quinine had been withdrawn for a month), and the failure of quinine to prevent the attacks are quite sufficient to exclude malaria. Naturally, infective endocarditis was feared; indeed, a senior consultant, who saw the case, gave a fairly confident diagnosis of this disease and a very bad prognosis. The negative result of the blood cultures and the non-appearance of definite signs of organic cardiac disease rendered this diagnosis impossible. Was the case one of the erythemata nearly allied to Henoch's purpura? There was erythema combined with joint symptoms, but there were never any visceral symptoms and the skin lesions were never purpuric.

When we had failed to obtain a micro-organism from the blood and had excluded all other sources of infection, in what was evidently an infective process, we felt it to be our duty to remove the only source of infection we could find, namely, the teeth. The mouth did not appear to be any more septic than in the case of many more people who have apparently perfect health, but the result of the extraction seems to be very strong evidence that we were dealing with a case of oral sepsis of rather unusual character. We found out subsequently that a few weeks before the commencement of the illness the patient had his denture readjusted, and afterwards found it to be uncomfortably tight, in spite of which he continued to wear it. The quartan occurrence of the attacks cannot be explained. It suggests infection by some protozoon with a definite life-cycle. We much regret that we omitted to have the extracted roots examined with this in view. If it can be accepted that oral sepsis was the cause of the symptoms in this case, then it becomes of great interest in view of the recent attempts to show that various "rheumatic affections" are really the results of oral sepsis,¹ a view which our experience shows has much to support it.

We have to thank Professor Beattie for kind assistance in making one of the blood examinations. We publish this case in considerable detail because the scientific value of all evidence for the case of "oral sepsis" depends largely on the exclusion of all other causes of infection.

REFERENCE.

¹ Wirgman, *Clinical Journal*, May 26th, 1909.

A CASE OF APPARENTLY ACUTE SIMPLE FEBRILE ERYTHEMA

ASSOCIATED WITH THE OCCURRENCE OF TWO
SUBSEQUENT CASES OF SMALL-POX.

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The following case raises several points of considerable practical importance:

On Thursday, March 18th, 1909, S. C., a girl, aged 16, living in domestic service in Bristol, complained of a slight sore throat and some headache; she was well enough to "go out" on Sunday, March 21st, as usual, but apparently got worse later, and Dr. Myles was called in to see her on March 25th. He found that she then had a temperature of 102° F.; the tongue was furred, the throat and palate injected, and she complained of pain in the back. She also presented a profuse, soft, papular rash, distributed somewhat generally over the body, most marked on the front and outer side of the upper arm, and on the thighs, less profuse on the trunk, very few papules on face and forehead, and none on the wrists.

The papules were flat and of a dark copper colour; some quite large patches of slightly raised areas occurred, especially on the upper arm, covering the area of a shilling or half a crown. On palpation the papules and raised areas were softish, and gave the impression of being quite superficial, with the exception of a few on the forearm, which felt more rounded, somewhat deeper in the skin, and more resistant. The eruption on the palate and tonsils was distinctly not papular.

The left arm showed two small scars of primary vaccination.

Although the case presented the appearances of a papular erythema accompanied by fever, and not any characteristic appearances of modified or minimal small-pox, she was admitted, as a precautionary measure, to an isolation ward in the city hospitals on March 26th for observation, under the care of Dr. Pauli. On admission the appearances presented were practically unaltered, though the papules showed no signs of development and had become less prominent; the temperature on March 26th ranged from 100.4° F. at 10 a.m. to 102.6° F. at 6 p.m.

On March 27th Dr. Pauli noted that the patient presented in the situations named a deep-coloured or dusky erythematous rash, but the raised condition of the skin had subsided, and no papules could be distinguished. The tongue presented the dirty brown appearance often associated with gastric disturbance. On this day the temperature fell rapidly and evenly from 101.8° F. at 2 a.m. to 99.6° F. at 10 a.m., and to 99.0° F. at 6 p.m.

Under simple treatment the tongue very quickly cleaned; the temperature fell to normal by the morning of March 28th and continued normal; at no time was there the slightest indication of vesiculation over any of the spots or patches, nor did the most careful examination disclose the presence of a single papule which suggested even the most modified or abortive form of the true small-pox papule; the erythema faded quickly, leaving discoloured patches of skin, over which a slight branny desquamation occurred.

The disease was considered to be an acute febrile erythema, which, as pointed out by Dr. Ricketts,¹ is not necessarily symptomatic of any acute specific fever.

As nothing remained but the discoloration under the skin, and the patient appeared to be quite well, she was discharged on April 1st, after a week's stay in hospital, and returned to her home in Somerset, where she remained until April 14th, when she returned to service in Bristol.

On April 21st her brother, a miner, fell ill with semiconfluent small-pox, from which he recovered, and on April 23rd her father fell ill with haemorrhagic small-pox, which proved fatal. Allowing the usual twelve days for incubation, these attacks were both contracted on or about April 9th to 11th, at which time the girl was at home.

There was no small-pox in the town where they lived, but scattered cases had occurred in the immediately adjoining parts of Gloucestershire during March and April, and had been carried thence as far as Yeovil. The brother had ceased work the day before Good Friday (April 8th), and on Easter Monday attended the sports at Wells. In Bristol, too, cases of small-pox had occurred at intervals since the beginning of January, and a contact of a Bristol case (a drover) was due to pass through their home on or about April 11th.

When at home the girl was seen by Dr. Costobadie, who informs me that there was then slight desquamation about the forearms and on the legs below the knees, but no evidence of any sore or abrasions of the skin.

On April 24th, after her return to Bristol, Dr. Myles again examined the patient. She was then apparently in good health, and on examining her skin he found the discoloration persisting over the spots and patches where the rash had been, and in places, particularly over the deltoids, there was a brownish mottling; three of the discolorations on the forearms appeared to be slightly depressed. On May 1st the discolorations over the deltoids had faded considerably, and that over the forearms had disappeared, leaving no trace. A test revaccination performed on this day gave no result.

Upon returning to service this girl slept with a fellow-servant vaccinated in infancy but not revaccinated; this fellow-servant remained perfectly well, and on May 3rd was revaccinated, and took in two places quite successfully. The rest of the master's family, who were revaccinated in March, also remained in perfect health.

It is important to determine whether, as suggested by the time-coincidence of the attacks of this patient's brother and father, her febrile erythema was a manifestation of the small-pox poison in her system; if so, it is quite unique in our experience.

The opportunities of infection in the city were at the time very slight, and at the date when she should have contracted the infection there were no known cases at large; furthermore, she enjoyed few opportunities of visiting friends, and those whom she knew and visited were not ill and did not live in an infected district.

The onset of her illness was not so sudden and definite as the onset of small-pox, however modified, usually is; neither were the course of the temperature nor the appearance, distribution, and development of the rash at all characteristic of modified, minimal, or abortive small-pox, of which very numerous examples have fallen under our observation at the city hospitals during the past quarter of a century. A fine branny desquamation is in no sense suggestive of any known form of small-pox.

On the other hand, the type of small-pox introduced into Bristol and the neighbourhood, apparently from the Sea of Azov, during the winter of 1908-9, has presented many features not only of malignancy, but of eccentricity. No less than 6 cases out of 35 occurring within the city have assumed a fatal haemorrhagic type sooner or later, the incubation stage has been in some cases prolonged to fifteen or sixteen days, the usual interval between sickening and development of the papular eruption has been unduly prolonged, and in three instances the disease has apparently made an unsuccessful attempt to break down the resistance afforded by recent revaccination in the case of nurses, who, however, suffered no harm beyond a two or three days' fever, followed by no eruption, and ending in speedy convalescence.

One of these nurses, returning to duty in the wards of a general hospital into which small-pox had been inadvertently introduced, appears, however, to have herself been in the condition of an "acute carrier," and to have infected a patient in the wards, who subsequently developed a fatal haemorrhagic attack.

The dull colour of the immature papular rash in S. C. its failure to form a true papule, and the subsequent dull and persistent staining suggest what is almost a contradiction in terms—a benignant haemorrhagic attack. If this is possible, as it may be in the case of a singularly searching and virulent infection acting upon a highly

resistant individual, the experience is worth recording for the guidance of others.

REFERENCE.

¹ *The Diagnosis of Small-pox.* By T. F. Ricketts, M.D., B.Sc. M.R.C.P. Cassell and Co., Limited. 1908.

FACIAL WRINKLES AND CHARACTER EXPRESSION,

WITH SPECIAL REFERENCE TO THE
NASO-BUCCAL ANGLES.*

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FACIAL wrinkles may be defined structurally as persistent infoldings of the skin following the lines of greatest resistance to the mobile play of the features. They presumably mark the sites where in the adult the skin is more closely bound to the underlying structures than elsewhere. Since the subcutaneous tissues are from various causes most resilient in early life, and the frequent emotional brain-storms of babes are short lived and inco-ordinate in their action, the resultant facial contortions leave as a rule no permanent record of their movements on the surface of the skin. It is not till later in life that the concerted use of certain groups of facial muscles tend gradually to impress the features with individuality, and

Diagram of the chief facial wrinkles. *a*, Frontal; *b*, glabellar; *c*, *c'*, orbicular and maxillary branches of the tarsal; *x*, palpebral; *d*, alar; *e*, sardonic; *f*, masseteric; *g*, mental; *z* shows the position of the naso-buccal angle on the right of diagram. N.B.—Any one of the above wrinkles may be absent from a face, or it may be represented by two or more secondary wrinkles.

in this delineation the chief wrinkles take an active part. They usually become deeper as time goes on, and acquire a persistence, due to their fibrous substrata probably, and to the part they play as *points d'appui* to the neighbouring muscles. If we consider with Professor Metchnikoff that senility is a chronic disease characterized by an increased proliferation of large connective tissue cells, the deepening of the facial furrows in advancing age may be ascribed to the increase of the subcutaneous fibrous tissue by the macrophagic cells at the expense of the surrounding muscular elements. This, however, is as it may be.

The eight or nine chief wrinkles on either side of the mid-vertical map out the face apparently into zones or areas of co-ordinated muscular action. Some of these motor zones roughly correspond in shape and position to the "tender skin" areas of Head (see diagram). The relationship which both Dana¹ and Head² have shown to exist between some forms of visceral disease and disturbances of sensation in certain cutaneous areas suggests the existence of a similar linkage between the internal economy and these superficial motor zones; and it offers a plausible explanation why we aptly portray by facial expression the deep-seated malaise of a dietetic indiscretion.

* Read at a meeting of the Brighton Division of the British Medical Association.