On some forms of diarrhoea, especially morning diarrhoea / by T. Lauder Brunton.

29.

ON SOME FORMS OF DIARRHŒA, ESPECIALLY MORNING DIARRHŒA.

By T. LAUDER BRUNTON, M.D., D.Sc. Edin., LL.D. Hon. Aber., F.R.C.P., F.R.S.

Read before the Nottingham Medico-Chirurgical Society, October 18, 1893.

(Reprinted from the *Quarterly Medical Journal*, January 1894.)

The subject of diarrhœa is a very wide one and a very important one, for perhaps there is no other condition which gives rise to so much mortality. But the subject is so wide that I am unable to discuss anything like the whole of it to-night, and I therefore mean to restrict my remarks only to certain forms of diarrhœa. Nor do I mean even to take up the commonest and most important kinds of diarrhœa. I intend rather to take up certain forms which have not received very full notice in the text-books. More especially do I wish to direct your attention, first of all, to the form of diarrhœa called morning diarrhœa.

On looking through most of the standard text-books, I find that although its existence is mentioned in some of them, yet no special attention is directed to it. In his work on *Diseases of the Rectum*, published in 1871, Mr. Allingham[1] recognises morning diarrhœa as the earliest symptom in most cases of ulceration of the rectum, but notes that it is not always present. Lorimer[2] has made a similar observation. Chambers[3] and Annandale[4] describe cases cured by treatment of the ulcer. The existence of morning diarrhœa was recognised by Dr. Gueneau de Mussy.[5] He regarded sleep as an important factor in its causation. He did not, however, give any distinct account of the pathology of this symptom, but had observed it in cases of malaria and in cases of phthisis. In malaria he had cured it by quinine, and in phthisis by opium given just after dinner, again at bed-time, and again in the morning. Dr. Graves recommends as a mode of treatment

[1] Allingham, *Diseases of the Rectum*, 1871, chap. x. p. 152.
[2] Lorimer, *Lancet*, vol. ii. 1872, p. 804.
[3] Chambers, *Lancet*, vol. ii. 1872, p. 804.
[4] Annandale, *British Medical Journal*, December 21, 1872.
[5] Gueneau de Mussy, *Clinique Médicale*, Paris 1874, vol. ii. p. 119.

thirty minims of persesquinitrate of iron with infusion of calumba twice or thrice a day.[1]

I have not been able to come across any monograph on the subject of morning diarrhœa, excepting a thesis, *Diarrhée Matinale*, presented to the Faculty of Medicine by M. Auguste Chauvet in 1888. My own attention was first directed to the condition by the case of a patient who was sent to me in 1881, by my friend, Dr. Young, of Rome. This was a lady who had consulted him three years before for diarrhœa accompanied by intense pain. The motions sometimes amounted to as many as eight or nine, and these occurred almost exclusively during the forenoon, and chiefly between 8 and 10 a.m. The pain which accompanied the motion was sometimes so severe as to cause fainting, and the motions themselves were loose, and contained occasionally a little mucus and blood. On rectal examination Dr. Young found that there was an ulcer of an oval shape, and nearly one inch in diameter, situated on the posterior wall of the abdomen. Its edges were sharply cut, its margin slightly raised, and its surface covered with unhealthy pus, and it bled easily when touched. The treatment which was found most serviceable for this case was the local application of an ointment of calomel and opium for a day or two, followed up by an ointment of oxide of zinc and bismuth. Under this treatment the ulcer healed rapidly, but was liable to recur, and on one occasion, although it was completely healed, the diarrhœa continued. I then noticed tenderness over the sigmoid flexure, and concluded that there was probably a certain amount of ulceration present there also. This case, I think, may serve to give us an insight into the pathology of morning diarrhœa, although it is quite possible that this form of diarrhœa is not always dependent on the same cause, and there may be several modifications of it. We very frequently produce morning diarrhœa artificially by the administration either of a purgative pill over night, or by a large dose of black draught or purgative salts in the morning, or by pill and draught combined. A consideration of the *modus operandi* of these remedies may help us to understand the pathology of morning diarrhœa, and consequently lead us to a correct treatment. This is all the more necessary, because the patients who suffer from this affection are often troubled by it for years, and although it may not be dangerous

[1] *Graves' System of Clinical Medicine*, Dublin, 1843, p. 672; and Sydenham Society's edition, vol. ii. p. 258.

to life, it interferes seriously with their comfort and may interfere much with the performance of their duties. Morning diarrhœa is also troublesome to treat by drugs, for although it may be arrested by astringents, it is apt to return on the discontinuance of the remedies, and after a while the patients get tired of using them. In considering the mode of action of a black draught, and also that of a simple saline, such as Epsom salts, or one of the natural purgative waters, we have three factors, viz., (1) accelerated peristalsis; (2) diminished absorption; and (3) actual secretion of watery fluid by the intestinal wall. Many pharmacologists have denied this last factor, but the experiments of Moreau, repeated by Vulpian, and fully confirmed by Pye-Smith and myself, as well as by Hay, leave, I think, no doubt that saline purgatives produce profuse watery secretion from the intestine, as well as accelerated peristalsis and diminished absorption. The senna of the black draught and the colocynth and aloes of a purgative pill, on the other hand, produce purgation chiefly by accelerating peristalsis, so that the intestinal contents are hurried quickly along, and expelled before there has been time for the absorption of their watery constituents. The composition of the motions produced by such purgatives have been found to be almost exactly the same as that of the ordinary contents of the small intestine, so that the looseness of the motions, although it may be partly due to accelerated peristalsis of the small intestine, is chiefly due to the increased rapidity of passage through the large intestine.

If we take a purgative pill or a dose of compound liquorice powder, or a teaspoonful of extract of cascara sagrada at night, and a large draught of water, either hot or cold, next morning, we need not consider the effect of increased secretion as in the case of salines, but only that of accelerated peristalsis and of diminished absorption. During the hours of sleep the purgative probably lies in the stomach, or only proceeds some little way down the intestine, but on awaking, the movements of the alimentary canal which have been lessened during sleep, again become brisk, and being increased by the purgative, both it and the water are hurried along through the stomach and small intestine, and poured into the cæcum, which they will distend in the same way as an ordinary purgative injection does the rectum and sigmoid flexure. They will thus start increased peristaltic action in this part of the bowel, which continuing along the colon will hurry them on to the rectum, and they will then be evacuated by one or two loose motions.

According to M. Chauvet the causation of the loose motions in morning diarrhœa is much the same as that of the artificial diarrhœa which we have just been considering, but the part of the purgative is played by the contents of the stomach. He considers that in most cases the stomach is somewhat dilated, and the food, instead of being expelled through the pylorus a little at a time as it ought to be, lies in the dilated organ during the hours of sleep, and on awaking is poured out *en masse* into the small intestine, through which it quickly runs into the large intestine and on to the rectum in the same way as the purgative.

It is not always necessary for the patient to get up in order to get these phenomena occurring. A mere change of posture in bed may be sometimes sufficient. Dilatation of the stomach is, in M. Chauvet's estimation, an important factor in the causation of morning diarrhœa, for it not only allows of the food to accumulate in the viscus so that it can be poured in one large wave into the intestine, but it permits chemical changes of a fermentative or putrefactive nature to occur in it which may render it more irritating, and thus increase its likeness to a purgative purposely administered.

I can confirm his statement that dilatation of the stomach exists in these cases, inasmuch as I have found dilatation of the stomach present in some cases of morning diarrhœa, but it is by no means invariably so, and I do not think that it can be looked upon as the sole, or even the chief, factor in the causation of this complaint. In my own opinion, morning diarrhœa is usually dependent upon an irritable condition of the sigmoid flexure or even of the rectum. Sometimes I think there may be only chronic inflammation, or perhaps I ought rather to say chronic congestion, while at other times there may be actual ulceration. In the great majority of cases I find that there is tenderness on pressure over the sigmoid flexure. Sometimes one feels this hard and contracted like a rope, or even like a thick string under the finger on palpation. In order to understand the part which an irritable sigmoid flexure plays in the causation of diarrhœa, it is almost necessary that we should take a glance at its normal function.

In most healthy individuals the bowels are open only once a day, although food is taken several times in the twenty-four hours. The average sojourn of this food in the stomach we may take to be about three or four hours. In three hours more the contents

of the stomach will be passed down through the small intestine into the large one, and are still fluid as they enter it through the ileo-cæcal valve. It is in the large intestine that absorption mostly occurs, and that the fæcal masses become solid and moulded. The presence of its contents in the bowel acts as a stimulus to peristaltic movement, and it is probable that just as dilatation of the rectum causes expulsive efforts in it, so distention of any part of the bowel tends to increase the activity of its movements. In the case of the small intestine, the quickness with which its contents are propelled along the interior of the bowel varies very greatly, and Nothnagel observed that sometimes only half a minute, and at other times fifteen minutes, would be required for the intestinal contents to traverse the same length of bowel. Similar variations may also occur in the rapidity of the peristaltic movements of the large intestine. It is evident that if a quantity of fluid contents is propelled quickly down through the small intestine the cæcum will be rapidly dilated, and thus its peristalsis may be increased, and its contents passed on with much greater rapidity than usual. But this is not necessarily the case, and even with rapid action of the small intestine the large bowel may remain inactive, and then no diarrhœa will occur. Even if fluid matters should be propelled from the cæcum and transverse into the descending colon, there will still be no action of the bowels unless the sigmoid flexure participates in the peristaltic movement. Its shape, like the letter S, is admirably adapted to make it act as a trap to prevent any untimely descent of the contents of the colon into the rectum, and if it remains quiet, the intestinal contents will be retained until time for absorption has been given, even although the remainder of the intestine be in active movement. Should the sigmoid flexure, however, be irritable, and more especially should it have an ulcer upon its mucous membrane, the contents of the transverse and descending colon, when poured upon it, will be apt to excite peristaltic movements, and thus cause ejection from time to time of these contents into the rectum. There they will excite expulsive efforts, and thus the motions may be both frequent and liquid.

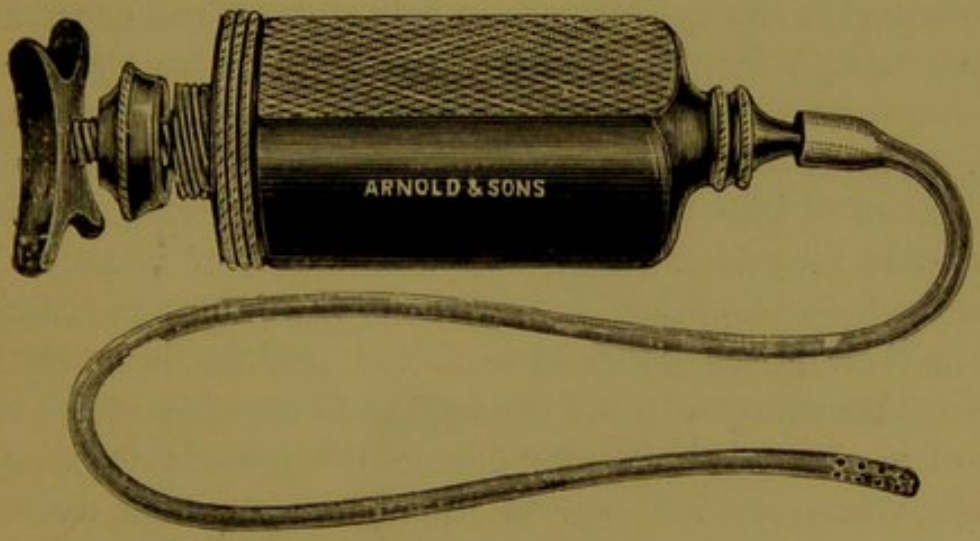
In the treatment of morning diarrhœa it is advisable to attend not to one factor only, but to all the factors that may contribute towards its causation. And, first of all, although I have denied the invariable occurrence of dilatation of the stomach in this form of diarrhœa, and thus questioned to a certain extent the correctness of the pathology given by M. Chauvet, I can quite corroborate the

utility of the dietetic treatment he recommends. This is very simple, and consists merely in entire abstinence from liquids after five, six, or seven o'clock at night, *i. e.* for twelve or fifteen hours before the attack would usually come on. If the patient finds this *régime* burdensome, he may perhaps be allowed to take a glass of wine with his dinner, but he should avoid all soups or other liquid at dinner, tea or coffee after it, and especially any aerated water either with or without spirits during the evening. By observing this dietetic rule, there will be little liquid to pass down into the large intestine when the patient rises in the morning, the peristaltic movements will thus be diminished, and the diarrhœa is either practically arrested entirely or very greatly diminished. If this limitation of drink is insufficient to check the diarrhœa, the quantity of fluid taken during the earlier part of the day should be restricted, so as to lessen the amount of water in the body generally, and thus increase the rapidity of its absorption. But in addition to this it is useful to lessen the irritability of the intestine generally by such remedies as bismuth and soda, combined with carminatives and aromatics, like spirit of chloroform and cinnamon water, both of which have no mean antiseptic powers.

In obstinate cases the most useful remedy is massage. We have all seen the effect of increased circulation in promoting healing in the case of callous ulcers of the leg. There the ulcer remains unhealed from day to day, week to week, and year to year, but if a blister be applied so as to increase the rapidity of circulation through the tissues, the ulcer takes on a healthy action and begins to heal forthwith. We cannot blister the interior of the intestines, but we can induce a healthy action in them by means of those kneading and rubbing movements which go under the name of massage.

In the case of the patient which I described at the beginning of this paper, the effect of a local application of ointment in causing healing of the rectal ulceration might be observed by ocular inspection. In order to apply ointments to the upper part of the rectum and sigmoid flexure I have had an instrument constructed by Messrs. Arnold. It is simply a modification of Allingham's ointment introducer. It is, to begin with, very much larger, and to the point is affixed a long red rubber tube which may be passed, if desired, from eight to sixteen inches or more into the bowel. By turning the screw with which the instrument is furnished, and at the same time withdrawing the tube, the ointment can be

applied to the bowel for a considerable distance. The case for which I had this instrument constructed was that of a young man, aged 19, who had been suffering from diarrhœa for nine months. He was so reduced by it that when I first saw him I thought he was in the last stage of consumption. His face was exceedingly thin; there was a bright, hectic-looking spot upon his cheeks, and his body was much emaciated. The bowels were open five or six times a day, and on examination the mucous membrane of the sigmoid flexure seemed to be partially prolapsed into the rectum, and there was also ulceration of the mucous membrane of the rectum for some distance up. I asked my colleague, Mr. Harrison Cripps, to see him, and he advised astringent injections to be used for some time. He had had diets of all kinds excepting meat diet, and so I put him upon that, allowing him fish and chicken as



much as ever he liked, along with toast. I also kept him in bed, and had him daily massaged. Under this treatment he slowly improved, laid on flesh, and the bowels became nearly regular. Even at the end of several months he had still a tendency to diarrhœa, but I then had the ointment-introducer made, and by the local application of bismuth, the bowel appeared to regain its normal condition. In other cases, however, I am bound to say that the massage and careful feeding has succeeded without the use of any ointment.

But it is not in morning diarrhœa alone that massage is of such value. It is of the greatest possible use in the treatment of that form of diarrhœa which is variously known under the name of hill diarrhœa, Ceylon sore mouth, and sprue, and to which the name psilosis has been given by my friend Dr. Thin. In regard to the

pathology of this disease, or these diseases, much remains to be done, and I do not think that we can yet assume that they are altogether identical. The usual symptoms are that the motions are always rather pale or clay-coloured and frothy. The stools may be normal in number for some days together, and then there is an attack of diarrhœa, during which the whole intestinal canal seems to be in a condition of irritation, the tongue, mouth, and œsophagus being all very tender, and shallow ulcers may be seen on the tongue and on the inside of the mouth. The best treatment and, indeed, almost the only treatment that is likely to cure such cases, is the exclusive milk diet, first introduced, I believe, by my friend Sir Joseph Fayrer. The effect of this treatment is in such cases simply marvellous. Some years ago I saw a patient who had been suffering for nearly ten years from this disease. He had tried all sorts of treatment, and when I saw him had just come back from a visit to Carlsbad, where he got harm rather than good. I put him upon a pure milk diet, and in his own language it acted like a charm, and in less than a fortnight he was free from his malady. But in some cases the milk cannot be borne, the patient takes an utter dislike to it, and cannot be induced to take it. In such cases it may be necessary to use a diet of pounded meat, pounded fowl, and pounded fish, without vegetables or bread; but just as in Weir Mitchell's cases of forced feeding in neurasthenia, massage comes in to help, and the increased appetite which follows the use of regular massage may enable the patient to take milk. But more than that, massage to the abdomen, which must, however, be very carefully used, tends to increase the absorptive power of the intestines, and thus to remove one of the conditions which keeps up the diarrhœa. In some cases it is advisable to let the patient go to bed while he is on milk diet, but in one which was under the care of Dr. Thin, the patient went about his duties on an exclusively milk diet for three months, and at the end of that time was obliged to lessen the quantity of milk he was taking, because he was growing too stout. In regard to the quantity of milk necessary to keep up a patient's strength, there exist, no doubt, great differences in different individuals. I had, however, a very useful experience while out at Hyderabad during the work of the Chloroform Commission, as I was attacked with dysentery, and for nearly a fortnight could take no solid food whatever. Even bread soaked in warm milk, and so soft that one would have said it could not possibly do any harm, brought on such pain that I was obliged

to give it up. During the whole fortnight, the daily quantity of milk that I could take was three tumblers full, each tumbler holding about nine ounces. On this quantity I was able to continue my work, though towards the end of the time I certainly became very weak and was obliged to go away for a change. The experience was to me very useful, in so far that it showed me that the quantity of milk required to maintain the body is less than I should have imagined. One must, no doubt, take into consideration very carefully the size of the individual, and my stature is considerably below the average, being 5 ft. 4 in., and my weight 10 st. 9 lbs.; nevertheless, I think we are sometimes over anxious to push the quantity of milk daily taken by patients too far, and perhaps overload the stomach to their disadvantage. Yet I must not quit this subject without mentioning that a most important factor in regard to the diet is the temperature of the body, because a single degree of rise in temperature means a great increase in the waste of the tissues, and a quantity which might be sufficient to maintain a body at ordinary temperature might be quite insufficient to supply the waste in a fever patient. The subject of typhoid fever is far too great to take up here, but it is, I think, especially in relation to this disease that the effect of temperature upon the amount of milk required is to be borne in mind. In sprue there is usually no rise in temperature, and the remarks that I have made upon not pushing the milk too far refer more especially to its treatment.

Another form of diarrhœa to which I should like to direct your attention is that in which the desire to go to the closet comes on either while taking food or immediately afterwards. I think that there can be little doubt that this is due to a condition of increased excitability of the nervous system of the intestine, so that the impulse given to the stomach causes increased peristalsis throughout the whole of the intestinal canal. In one case under my observation this condition was accompanied by pain in the hypogastrium immediately after eating, and to the hypogastric pain a motion quickly succeeded. The patient observed, however, that both these conditions only came on when he took aerated water along with his food, and when he substituted plain water, neither pain nor the motion was produced. From this case one might infer that distention of the stomach was the exciting cause of the peristalsis in the bowel. According to my experience, this condition is not very common among adults, but is very common

among children, and the treatment which I have found very satisfactory, both in children and adults, is that recommended by Dr. Sidney Ringer, namely, one or perhaps two drops of liquor arsenicalis in a little water before the meal. In place of arsenic one may give another drug which belongs to the same chemical group as arsenic, but is very much less powerful in its action, namely, bismuth, and half a drachm or a drachm of the liquor bismuthi et ammonii citratis appears to me to have an action very much resembling that of one or two drops of liquor arsenicalis in these cases.

The last form of diarrhœa which I will mention is that due to malignant disease of the lower bowel. One case of this sort which I saw several years ago impressed itself very strongly upon my memory, both on account of the extraordinarily fine personal qualities of the patient and the long continuance of the disease. When I saw him he was a man of about 67, had been in the navy all his life, and had spent most of it in cruising to all parts of the world. He had been, nevertheless, remarkably healthy, and had never suffered from malarial fever to his knowledge. For no less than eight years before I saw him he had suffered from diarrhœa, coming on several times a day, generally in the forenoon, and not interfering with his work at his bureau. When I saw him, at the beginning of August 1885, he was pale and anæmic. The bowels were open about three times a day; the motions were of a curious chocolate colour, with small lumps looking like boiled rice or tapioca mixed with them. Each motion was followed by excessive depression and weakness. As he had been put upon a very limited diet without advantage, I increased his diet, being, however, careful to avoid things that would cause irritation, and for a month or six weeks he seemed to improve rapidly, so much so that Dr. Langston (with whom I saw him) and I thought that he might go to the country. Before he could be moved, however, a change occurred, and he sank rapidly. On *post-mortem* examination the lower third of the sigmoid flexure was found to be affected with malignant disease surrounding it like a ring, about two inches in breadth. The rectum was perfectly free.

When malignant disease is situated lower down in the rectum, the stools are likely to be much more frequent and scanty, and one thing that is very likely to mislead one is the appearance of the patients, who often may look the picture of health.

In all cases of chronic diarrhœa it is advisable never to omit

an examination of the rectum, because thereby disease may be discovered in time to allow of its removal by operation, whereas, if its existence remains undetected, it may progress to such an extent that no operation for its removal is possible, and all that can be hoped for is to palliate the patient's sufferings by means of colotomy.

In cases either of malignant disease, of simple ulceration, or of stricture of the bowel, I have found the following diet table useful. It serves also for cases of gastric ulcer.

Directions for Diet.

Swallow nothing that has not been either passed through a hair-sieve, or has been so thoroughly masticated in the mouth that it is of the consistence of cream, and would readily pass completely through a hair-sieve without leaving any remainder.

To Avoid—

All Skins—Bones—Strings, and Stones.

Where these things cannot be removed the article of diet must be rejected.

Skins of Fruit, *e. g.* of grapes, peaches, apricots, gooseberries, marmalade. Reject currants, raisins, or anything containing them, *e. g.* cake.

Skins of Vegetables, *e. g.* tomatoes, potatoes. Reject peas, beans.

Skins of Fish of all kinds. Reject sardines, whitebait.

Skins of Fowl.—Fowl, game, larks, quails.

Bones of Fish, *e. g.* sardines, herrings, trout. Reject whitebait.

Strings in Fruit.—Oranges, peaches, apples, pears, bananas, tamarinds, mangoes.

Strings in Vegetables, *e. g.* asparagus, cabbage, cauliflower. Reject carrots and turnips, unless mashed and passed through a sieve.

Strings in Meat.—Stringy fibres of beef, sinews in larks, quails, fowl, and game.

Stones or Seeds of Vegetables, *e. g.* tomatoes. Avoid peas and beans unless carefully chewed.

Stones or Seeds of all kinds of Fruit.—Of grapes or raisins. Reject nuts, almonds, strawberries, raspberries, currants.

Strawberries, raspberries, or currants may be pulped either alone or with sugar or cream, and may be passed through a fine sieve. The juice thus obtained may be taken either alone or with farinaceous food.

May Have—

Milk, with soda-water or lime-water, or even alone, if sipped and eaten with rusk or biscuit, and well mixed in the mouth.

Bread, if stale; new bread to be avoided. All bread that breaks down under the finger and thumb, into crumbs, is old enough. Bread that under the finger makes a stiff dough must be avoided.

Rusk, or biscuit, or cracker, or bread-and-butter (not crust), provided it be well chewed in the mouth, so that it is of the consistence of cream before it is swallowed. Eggs in any form except hard-boiled or fried.

GENERALLY the patient may have anything (fruit, vegetables, meat, fish, or game) that has been passed through a sieve.

All kinds of corn-flour, tapioca, sago, rice, if well boiled and well chewed.

Macaroni, vermicelli, spaghetti, sassagna, Italian paste. (These may be

boiled in stock, which may be made with vegetables, if the vegetables are strained first. Essence of celery in quarter to one drop as flavouring.)

Cocoa, freely.

Tea (China), infused for short time.

Coffee, if it cause no distress.

Butter, in moderation.

Cream cheese, in small quantity, and well mixed with bread in the mouth, or grated parmesan, but must *not* have any other kind of cheese. (*No Stilton cheese.*)

Gravy from any kind of meat.

Savoury jellies (if there are no solids in them).

Sponge biscuits.

Madeira cake (*plain, no currants, no peel*).

Grated meat, tongue, &c.

Toast, if it be well masticated.

(*No hot buttered toast.*)

Yorkshire (batter) pudding, with gravy, if well masticated.

Bread or toast in soups.

Honey or golden syrup.

The syrup of jam or marmalade with the seeds or skins strained out carefully; fruit jellies, *e. g.* apple jelly, quince jelly, guava jelly, with bread or bread-and-butter, or with any kind of corn-flour or arrowroot, or macaroni, or any kind of farinaceous food allowed.

Richard Clay & Sons, Limited, London & Bungay.

24ColorCard CameraTrax.com
STAINLESS STEEL