every sixth hour. The latter would, undoubtedly, be too large to begin with in any case, and I think much too large for a weak subject. My patient was a powerfully-built fellow; and although the first injection produced rather alarming symptoms, he showed no sign of distress, when the dose was afterwards raised to $\frac{3}{4}$ gr., and he took in all 45 grains of the drug.

Dr. E. Goutermann (*Berliner klin. Wochen.*, Oct. 29th, 1883) reports a case in which curare had the most desirable effect in a very severe case of acute traumatic tetanus. He is of opinion that large doses must be used if we are to derive the full benefit of the curare treatment; and he mentions a case treated by Dr. de Grousilliers which ended fatally, although curare was used; but the fact that the doses were infinitesimal ($\cdot 01$ gr.) is sufficient to show that the unfavourable result was not owing to the inactivity of the drug but to its insufficient supply.

Dr. Kræg (*Langenbeck's Archiv. für. klin. Chir.*, 1883, p. 338) notes four cases in which death occurred, notwithstanding the copious display of curare. The cases, however, were exceptionally severe, and it is doubtful whether the result is or is not due in part to curarisation, since the dose (1 gr. in the hour) seems very large.

ART. IX.—*Leamington as a Winter Health Resort.* By FRANCIS WILLIAM SMITH, M.D., Author of "the Saline Waters of Leamington."

IT is impossible to exaggerate the importance of embracing the favourable opportunities which present themselves to individuals and communities. "Opportunity makes the thief," and opportunity makes the merchant.

"There is a tide in the affairs of men
Which, taken at the flood, leads on to fortune."

There can be no question that the present is Leamington's golden opportunity. English spas are rising in public favour. Many physicians in London and the provinces, instead of exposing their patients to the annoyance and fatigue of foreign travel, are very prudently recommending them to use our own mineral springs, and it cannot be too often repeated that there is now no need for invalids to run the risks and undergo the inconveniences and discomforts of a journey to the Continent in order to drink mineral waters. We have as good saline springs in Leamington as there are anywhere.

In our "temple of health," those who are sick may rest assured of finding relief and often a cure in many of "the ills that flesh is heir to," and it will be well if patients, who are wearied and worried with the rush to Baden-Baden, Homburg, and Kissingen, and the fleeing and flaying experienced at these places, would take this to heart.

Leamington, like most places, has a history. True it is that it cannot boast of the antiquity of some health resorts, nor, like Royat and Dax and half a dozen other Continental spas, claim that Julius Cæsar was cured of his rheumatism by frequenting its baths and drinking its waters; but still, it would appear that the healing virtues of our mineral waters have been known and appreciated in the immediate neighbourhood, and even throughout the midland counties, for hundreds of years. As far back as 1586 mention is made of the saline springs of Leamington by Camden, and from that time to this they seem to have had "their ups and their downs." Who is there that has not heard of the great Dr. Jephson, who reigned supreme here for half a century, and attracted thousands from all parts of England, Scotland, and Ireland, nobles and commoners, gentle and simple, by his magic power! The caprice of fashion, and possibly the facilities afforded for travel by steamboats and railways, have drawn people away to the Continent, but we have every reason to believe that there is now a backward wave in our favour.

Royal Leamington Spa, including Milverton and Lillington, with a joint population approaching 30,000 inhabitants, is situated nearly in the middle of "leafy" Warwickshire. The borough stands at 190 feet above the sea-level, and its situation is of great natural beauty. It is often pronounced the prettiest and cleanest town in England, and by this appellation it is well known in the United States. The greater part of the town is built upon a regular plan, with wide and open streets, which in many instances are bordered with chestnut and lime trees, and these impart to the place the aspect of a German spa.

Hygienically considered, Leamington stands well, and for the number of its population ranks as one of the healthiest towns in England. It is blessed with an abundant supply of pure water, derived from an artesian well, of which it is said by Dr. Tidy that "as a dietetic water it is in every way of excellent quality, and for wholesomeness leaves nothing to be desired." The borough has a pattern system of drainage. The sewage matter is pumped up to a

farm, situated some miles from the town, and is considered a model of its kind. The sewers have numerous ventilators and are frequently flushed, thus insuring a healthy sanitary condition of the houses. All these matters of detail help to make Leamington a high-class health resort; and when I say that the death-rate from all causes for the last three years averaged only 15·24 per 1,000, and that from zymotic diseases during the same period 1·1, I think it will bear favourable comparison with other inland watering-places of equal population. The climate and temperature of Leamington may be described as equable, and not subject to great extremes. The annexed tables of comparison will give the reader an excellent idea of its general meteorological bearings. The former embraces a period of ten years, from 1874 to 1883; the latter covers an equal space of time, but not the same years:—

METEOROLOGICAL TABLE.

Places				Inches	Rainy Days	Observers
Leamington	-	-	-	30·2	176	Jones, Whish, Field, Barnitt.
Great Malvern	-	-	-	32·1	168	Sandoe, Palmer, Mann.
Cheltenham	-	-	-	32·3	172	Mackgill, Landsboro, Kay, Humphries, Kynaston, Tyrer.
Harrogate	-	-	-	33·5	161	Coupland.
Tunbridge Wells	-	-	-	34·0	158	Miller, Townhend, Winton, Brentnall, Buchanan, Siemens, Royal Meteor. Soc.
Bath	-	-	-	35·3	180	Barter, Russell, Stokes.
Clifton	-	-	-	39·1	177	Burder.
Ilkley	-	-	-	39·9	200	Dymond, Hainsworth, Call, Scales, Richardson.
Matlock Bath	-	-	-	41·2	176	Chadwick.
Buxton	-	-	-	53·4	196	Sykes.
Average	-	-	-	37·1	176	

							Deg. Fahr.
Buxton	-	-	-	-	-	-	45·2
Leamington	-	-	-	-	-	-	48·0
Cheltenham	-	-	-	-	-	-	48·3
Clifton	-	-	-	-	-	-	48·7
Torquay	-	-	-	-	-	-	49·8
Bath	-	-	-	-	-	-	50·3
Bournemouth	-	-	-	-	-	-	50·3
Llandudno	-	-	-	-	-	-	50·5

Loudon says:—"Leamington, from being situated at a distance from the coast, and in the midst of a level country, is exposed neither to sudden gusts of wind nor to frequent rains, which a mountainous neighbourhood so constantly attracts. The temperature is more equal than that of the greater part of the inland watering-places in the country. The highly cultivated state of the soil around the town, entirely free from morasses, with the numerously scattered woods and rivulets, contributes to its being one of the most salubrious spots in the inland counties."

The climate of England is well known to vary and to be uncertain, no matter in what part people live. That of Leamington will seem, from the foregoing tables and quotation, to be one which well admits of its being a place of permanent residence. The fact that it has become so speaks for itself. And certainly, so far as taking a course of the saline waters goes, this may be begun and carried on at any time of the year, which cannot be done in the more northern spas of Scotland and England, or in nine-tenths of the Continental ones.

Dr. Hermann Weber, who is the greatest living authority on mineral spas, observes: "We can see no reason why Leamington should not again become a much frequented and useful watering place, the more so as in many instances it may be resorted to *in early autumn or even winter*, on account of its great mildness of climate compared with Continental spas." Although in the spring, summer, and early autumn, patients look for most benefit because they can bathe without the same risks of taking cold, still, there is no doubt but that more come to Leamington in the winter now than formerly, for "courses" of the mineral water and for the baths. It is seldom they cannot find three or four days in a week genial enough to bathe in, and in this respect it is more like Bath than any other British watering-place.

I have quite recently had an analysis made of all the mineral waters at present in use at the Royal Spa, but as all are saline and more or less alike, I think my object will be gained by giving that of two—namely, the Pump Room and the Chalybeate Wells.

The following is an analysis of the *Pump Room Well*, by Dr. Meymott Tidy, M.B., F.I.C., F.C.S., Professor of Chemistry, Medical Jurisprudence, and Public Health, the London Hospital, and Analyst for the City of London, made March 20th, 1885:—

					Grains per pint.
Sodium	-	-	-	-	36·35
Magnesium	-	-	-	-	2·33
Calcium	-	-	-	-	7·52
Chlorine	-	-	-	-	56·15
Sulphuric Acid	-	-	-	-	25·05
Peroxide of Iron	-	-	-	-	·25
Silica	-	-	-	-	·14

 127·79

Chalybeate, the Public Fount.—Analysis by Professor Brazier, made April 25, 1885. Chief gas is carbonic, with small quantities of oxygen and nitrogen. Alkalinity expressed as carbonate of calcium is equivalent to 1·12 per pint:—

					Grains per pint.
Sodium	-	-	-	-	32·67
Magnesium	-	-	-	-	1·53
Calcium	-	-	-	-	5·18
Chlorine	-	-	-	-	45·12
Sulphuric Acid	-	-	-	-	25·74
Carbonate of Iron	-	-	-	-	1·01
Carbonate of Calcium	-	-	-	-	·67
Carbonate of Magnesium	-	-	-	-	·03
Silica	-	-	-	-	trace.

 111·95

By combination, the following salts are distributed in these wells in varying proportion:—

Chloride of Sodium.	
Sulphate of Sodium.	
Sulphate of Magnesium.	
Sulphate of Calcium.	
Chloride of Calcium.	
Carbonate of Calcium.	
Carbonate of Iron.	
Chloride of Magnesium.	
Carbonate of Magnesium.	
Bromide of Sodium.	} Traces.
Chloride of Potassium.	
Carbonate of Sodium.	
Lithium.	

We have, in these waters, mineral salts which we can recommend as powerful remedies in the cure of certain diseases. They are such that we can, with a certain amount of nicety, explain their action. This is most important in mineral waters. They have a fixed strength, and we are thus enabled to prescribe them with accuracy. This cannot, I fear, be said of all mineral waters. It will be observed, on looking at the analysis, that the bases of the salts seem to tend in one direction so far as the diseases go for the relief of which they are indicated. The chief bases—sodium, calcium, and magnesium—are all alkalisers of the blood, and as such are most useful in gout, rheumatism, gravel, and in a disordered state of digestion arising from excess of acidity.

Taken warm at the source, in the early morning, in quantity from ten to twenty ounces, succeeded by a gentle walk, and it may be a cup of tea or breakfast—the effect upon most people is a smart liquid purge, with a feeling of relief of weight from the abdominal cavity. When taken in less quantity, and it may be diluted with drinking water, the action is more of a diuretic kind. The “all-round” action, therefore, of Leamington salines is purgative and diuretic; they are alkalisers and general blood-purifiers. In dealing with a few of the diseases in which I find them most beneficial, I will, in as few words as this short paper will allow, run over the principal heads and modes of action in each. Take irritative dyspepsia, where there are fermentations of acids in the stomach, with constipation, eructations of gases from the same organ, palpitation of the heart, and other disturbances—the Leamington salines remove matters from the alimentary canal that are a source of irritation; they prevent an accumulation of such matters as produce disturbances in other organs; and they likewise neutralise the ferments of indigestion, and remove excesses by purgation and diuresis. In congestion of the kidneys they are most valuable. Independently of the “communications” anatomically, by which the kidneys may be relieved by purgation through the portal circulation, there is a much more important physiological relation between the two excretory organs (bowels and kidneys); for if the Leamington salines fail to purge, or purge but in part, they pass on to the kidneys, and act as powerful diuretics. They are chiefly alkaline in their influence on the blood and urine, but are also independently active as specific renal stimulants. In congestion of the liver a course of the Leamington salines relieves the engorged portal circulation, which lies at the circumference and between the lobules

of the liver. At the same time, doubtless, some of the salts are absorbed into the blood, and excreted by the kidneys, which they powerfully stimulate, and thus open up the urinary discharge, which is the second great channel of relief to the liver. In gout which has become chronic, Leamington salines are most beneficial. The excesses of urates and uric acid in the blood are eliminated from the system by a well-directed course of the mineral waters. In this way gout is relieved, and in many cases for the time cured, by the uric acid being alkalisied by the sodium, magnesium, and calcium salts, and by the channel of excesses being diverted through the bowels and kidneys. In the same way chronic cases of rheumatism are relieved and cured when ordinary remedies have failed. Themselves alkalisers of the blood, they act upon the plasma indirectly by combining with the rheumatic acid, and carry it out of the system by virtue of their diuretic influence.

Sciatica, when mixed up with the gouty or rheumatic diathesis, is frequently cured by these mineral waters—so too eczema, psoriasis, and many other skin diseases. In cases also of anæmia I have seen most marvellous benefit derived by their use and the addition of iron to the chalybeate water. Space will not allow me to reason out the *modus operandi* of the Leamington salines in this disease, and the reader is referred to my work upon the subject; nor can I now explain how hæmorrhoids, pelvic congestions, struma, climacteric disorders, paralysis of some kinds, and degeneration of tissues and vessels, all more or less find antidotes in these salines. But such is the case. The baths of various kinds, which may be had at the Royal Pump Rooms, materially assist the internal administration of the waters. These are of various kinds—douche, saline, vapour, Turkish, &c., &c., and are in operation all the year round. The Corporation are at present applying to Parliament for powers to borrow £20,000, which it is purposed to spend in additions and improvements, from time to time, so as to make the bathing establishment second to none in the kingdom.

But time and space request me to stop, so all that I wish to press, in addition, is the following table, showing the comparative composition of the Leamington waters with those of similar saline and carbonated saline waters in some of the popular German and French spas (expressed in grains per pint) :—

TABLE.

SPA	SOURCE	Sodium Chloride	Magnesium Chloride	Calcium Chloride	Sodium Sulphate	Calcium Sulphate	Magnesium Sulphate	Calcium Carbonate	Magnesium Carbonate	Iron Peroxide	TOTAL	
LEAMINGTON	- Pump Rooms -	84.8	.49	—	—	20.65	7.44	.78	.04	.08	114.3	{ With traces of bromide of sodium, chloride of potassium, carbonate of sodium and lithium.
	- Grove's Well -	92.01	1.02	1.85	—	21.87	11.52	1.53	—	.25	129.96	
	- Aylesford Well -	68.63	—	—	12.82	17.58	7.20	.39	.15	.05	106.82	
MARIENBAD	- Public Fount -	74.35	—	—	10.63	17.61	7.65	.67	.03	1.01	111.95	
TARASP	- Kreuzbrunnen (Bohemia) -	16.32	—	—	47.55	—	—	4.98	4.16	.33	85.13	
	- Great Spring (Lower Engadine) -	36.70	—	—	20.67	3.77	—	22.36	9.60	.25	141.55	{ With bicarbonate of sodium in varying proportions.
FRANZENSBAD	- Salzquelle (Bohemia) -	11.25	—	—	22.50	—	—	2.86	—	.02	47.88	
ELSNER	- Marienbrunnen (Saxony) -	17.87	—	—	28.25	—	—	1.37	—	.43	55.06	
ROHITSCH	- (Styria) -	—	—	—	18.75	—	—	13.75	11.25	.07	51.32	
BADEN	- Ragozci (Bavaria) -	2.48	2.01	—	2.65	7.06	5.62	1.62	—	—	17.46	
KISSINGEN	- Pandur -	55.88	2.91	—	—	3.73	5.73	10.17	—	.30	81.54	{ With small quantity of chloride of lithium.
	- Maxbrunnen -	52.98	2.02	—	—	2.87	5.73	9.73	—	.25	76.04	
HOMBURG	- Elisabethenbrunnen (Nassau) -	21.90	.63	—	—	1.32	2.27	5.77	—	—	33.31	
	- Kaiserbrunnen -	94.6	7.0	6.6	—	.12	—	14.5	.25	.22	126.49	{ With chloride of potassium.
WIESBADEN	- (Nassau) -	68.8	4.0	5.25	—	.12	—	8.8	.37	.22	89.86	
SODEN	- (Nassau). Milchbrunnen Warmbrunnen -	65.61	1.85	4.5	—	.86	—	4.01	—	.05	78.30	
	- Wilhelmbrunnen -	22.1	—	—	—	.24	—	3.41	1.71	.20	29.32	
	- Soolbrunnen -	32.66	—	—	—	.31	—	5.58	3.28	.37	44.1	{ With chloride of potassium.
	- Wilhelmbrunnen -	130.1	—	—	—	1.22	—	10.47	1.60	.37	147.4	
ARNSTADT	- Soolbrunnen -	143.0	—	—	—	.95	.90	10.78	.36	.75	161.97	
	- Bourbon Lancy (Saône-et-Loire) -	32.62	.62	—	1.90	4.05	—	1.25	.05	—	41.42	
BOURBONNE-LES-BAINS	- (Haute-Marne) -	11.37	3.5	.43	2.18	.17	—	.52	1.31	.17	19.82	
SAIUNS-MOULIERS	- (Savoie) -	50.75	3.5	—	5.6	7.70	—	.87	—	.02	66.72	
BRIDES-LES-BAINS	- (Savoie) -	99.02	—	—	9.02	12.18	6.58	8.79	—	—	132.48	
	- (Savoie) -	10.69	—	—	—	20.56	6.12	2.84	—	.14	49.73	

In conclusion, I think it will not be out of place to let the profession know, in the interests of patients, that in Leamington will be found every kind of accommodation suited to the sufferers' wants—spacious and comfortable hotels, lodging-houses, sunny, well appointed, and clean—to say nothing of noiseless and easy bath-chairs and all manner of invalid appliances. For those who are well enough to enjoy out-of-door exercise, there is all through the winter months the noble sport of fox-hunting, which they may follow to their hearts' content. Leamington has for many years been the rendezvous of "mighty hunters." The country around, too, is fertile, undulating, and wooded, and abounds with objects of the greatest historical interest, for within easy access are Shakspeare's birthplace, home, and final resting-place at Stratford-on-Avon; Warwick Castle, one of England's noblest piles; Kenilworth Castle, a stately ruin associated with royal gatherings, silent gondolas, splendid tournaments, gorgeous banquets, and burly Roundheads; and other places of equal historical interest, such as Edgehill, Stoneleigh, and Coventry with its three church spires.

AFFECTIONS OF THE EYE ACCOMPANYING MUMPS.

THE implication, either concomitantly or by a process of metastasis, of other and distant organs during an attack of mumps, is a well-known peculiarity of that disease. The method of this transference is one of the many questions pertaining to that obscure disease that yet remain to be solved by the general pathologist. The testicle in man, and the mammary gland in women, have been recognised from the earliest history of medicine as the objects of this metastasis of disease from the parotid glands; and within late years the ear has been discovered to stand in a similar unfortunate relation. That another important organ of sense was in danger from this usually mild and innocent affection, is now pointed out by Dr. Swan M. Burnett in the January number of the *International (American) Journal of the Medical Sciences*. From a study of the cases reported up to the present time, he finds that the principal parts of the eye to suffer from a metastasis of the mumps to that organ are the lid, conjunctiva, and optic nerve, and also in his case the third pair of nerves. The disease may be unilateral and of varying degrees of intensity. The prognosis of the affection seems to be, in the main, good. This, however, suggests the possibility that some of those atrophies of the optic nerve, especially when unilateral, which are accidentally discovered, and the origin of which cannot be traced to any of the hitherto recognised causes, may be due to a metastasis of mumps in childhood.