The Ingenieus Reflexious relating to Medical Springs Numb. 52, Considered. The palpable Indications of some Healing Springs remarked; With an account of some such Springs in England, which do confirm the Indications; and of others Obiter; By Dr. J. Beale to the Publisher: Which Discourses were in N.56. omitted for want of sufficient room, not without injury to the Author, who had designed these Communications for another prop. specifying by manifest observations, how Terrestrial steames may be the Generative Cause, both of Minerals and Metals, and of all the Peculiarities of Springs: And should have immediately followed p. 1134.

N pursuance of what I offered (Numb. 56.) concerning Mineral Strings, I proceed to the Ingenious Reflexions made Numb. 52 on the Breviate of Dr. Witties Defence, which is in your Tract 51; With no Intention at all to affront the worthy Authors modest Suggestions; but to represent matter of Fact, and manifest Observations, which may chance to satisfy some of his Inquiries; And to

give more Light to my forementioned Arguments.

We agree that some Medical Springs do loose part of their Vertue by the precipitation of a Mineral Sediment. But, whether these Waters do not loose some of their Vertue (and perhaps the more excellently healing property) by a separation of finer and Invisible Spirits from the water, either by avolation out of the sealed Vessels, or otherwise; This is now a part of my present Question. And I would here have a regard to other Healing Springs, than are apparently Mineral. And thus far I would advance my former inquiry; Whether the various Compressions, Strainings, and Colisions, together with the changes of Heat and Cold, with other unknown Steames, may not so far alter the Contexture, and the minutest Particles of some waters, as to render them effectually Sanative, whilst they retain the force of their effervescence; and soon after to leave them impotent.

We fee, what a smoak y vapour ascends from the purest Fountaines in Winter, and in the cool Mornings of the Hot Summer: And, though we dare not call these Waters hot, or more than

than relatively tepid, yet the Water being less cold whilst it is falient, folong it may be enlarged in Bulk, and hold no longer in the same Quantity. And Heat and Cold, and, if there be any other Ætherial Concomitants, (tho but as tenuious as Magnetismes,)may pass through Sealed Vessels: Some perhaps more eafilv through some kinds of Vessels than through others; as Light, and the thinnest Flames of Fire: Though Air be commonly the Fuel and Bellowes, and sometimes the Vehicle, yet they pass through Glass, where Air cannot pass; But they pass not through some sorts of Earthen Vessels. And (to insist no longer on words than a swift glaunce upon the By) we use to call them turgid Spirits and rough Spirits, which are sometimes nothing else but a Heat or Cold encentred in the minute Particles of the Liquor; or those Particles broken into sharper Figures; Or that some Air, which hath a far more vigorous Spring than water, is encentred, compressed, and active in or among the parts of Liquor; Or that some part of the Liquor is refined into a more Spiritual and Invisible substance. And that some of these cases, or the like, may fall out in subterranean Streams, and other Liquors, I can demonstrate Experimentally. then the effect may be this, that the Air, or other Spirits, may be divided in the sealed Vessel from the Water, Or the servid and tumultuous Spirits may flacken their Springs, or expire; and so the water may grow Languid and ineffectual, either without the falling down of any sediment, or together with it. That these cases do sometimes come to pass,I shall now endeavour to prove.

1. Though the particles of water are so minute, that we cannot discern them with our Eyes, yet by a duller Organ of Sense, even by Feeling, we may distinguish the acute and vigorous particles of Healing Waters, from the Languid and hurtful particles of Common waters. The Healing waters will intermingle with their asperity's such an agreable titillation, as will invite us to rub in, or presse on the cleansings and tersive water; And will, all along, recompence the pain of searching the wound by their active frictions, with such speedy reparations, and such indusgent degrees of sanation, as mitigates the Torment with store and variety of pleasures. Other Common waters, even those of some of the purest and most Chrystalline Fountains, are almost poy-

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fonous, encreasing Teters and tormenting Ulcers, with an inward and sullen painfulness. This dextrous water, by a most favourable Chirurgery, searches to the bottom of Old and cancerous Ulcers; sweeps or shaves away the Rootes of Teters and Cancers; and appealeth the unnatural rage: And some of these Healing waters are benigne, whether we apply them outwardly, or trust them inwardly for the relief of our Entrals and Vitals. And by these remarkable Indications, and the Effects I have seen succeeding, I have been confirmed of the real vertue of some of the social described by Holy-Wells of oldest reputation in England; and have discovered other Healing-Springs, whose Vertues were not much known, or noted before.

2. And we call in the Testimony of the Gust (which is another of the less spiritual Senses) to prove the asperous, and yet appealing Particles in some Liquors. Ligen, a Gentleman of a curious palate, and Musical, esteems the Queen-Pine to be incomparably the most delicious fruit in the world, and thus describes it: When we first bite it, it is so violently sharpe, as one would think, it would fetch all the skin off the Mouth; but before the tongue can make a second trial upon the palate, as perfectly cures that vigorous sharpeness: And between those extreams of sharpe and sweet tyes the relish and flavour of all fruits that are excellent: And those tasts will change and flow so fast upon the palate, as Phansy can hardly keep way with them; and this at least to the tenth examination; for so long the Echo lasts. Thus he: And he seems to have in his thoughts an expert Lutenist, when he briskly sweetens Discords into the liveliest Harmony. I dare not take the boldness here to think on the warbling of a Lute. But, to impress the Advertisement concerning the difference of these waters, I abide the longer on the Description: And I durst not say it, if I had not felt my self oftimes, and also heard it acknowledged by them that received wonderful benefit from those kind Springs. Therefore I persist thus far in the Parallel; As the Iuyco of the delicious fruit playes upon the Organs of Tast, so doth the right Healing water upon the Ulcers: At first touch it seems to tear the flesh off deeper, but immediately changes the begining of a deep pain into a deeper pleasure: And after many affaults, and quick flidings, the jugofities of the wounds

or of the Liquor, or of both, are by their dauncing vibrations smooth'd into a delightful accord. But let us accept of Vulgarities for the most evident Instruction in like cases: When Wine, Cider, or Ale is well both'd, we feel how austere'y it invades the roof of our mouths and our throats at first, and how speedily it repayes with a gratifying satisfaction: Yet, neither Minerals nor their Salts, nor other Ingredients are presumed to enter into the bottels, whilst these liquors acquire this liveliness. This separation of parts, and the enlargement of the Spirits, or some alteration of the consistence of the Liquor, may give the improvement here: And some such causes may exalt the vigor of those Springs, whilst they are briskly running, and working their way through the Veins of gravel, sand, and healing Bolus's; Or perhaps rather from subterrranean steames, which do also impregnate the healing Bolus's with their best Vertues.

3. Our Eyes also may be, in some sense, good witnesses of peculiar figures in the particles of those Spring waters, which are They seem to scoure the Eyes, as it were. proper for the Eyes. with sharpe, but very fine Gravel. And by this indication I have tryed and found the Springs which are extraordinary for the Eyes and perhaps to cleanse Optick Glasses. About 30, years agoe, in a very hot and droughty Summer, there was an Epidemical distemper of mens Eyes and Eyelids; I found it so ac London and Westminster, and almost in every House where I came, as I travell'd westward on both sides Seavern: Ver-juyce, of the juyce of Crabs, was found the best remedy; and where they knew it not, I gave notice of it; and all that tryed it, confessed that it was not a very unpleasing application. Their eyes had a fretting itch; and Ver-juice proved more agreable than Vinegar, or White-wine, or any other liquor, or mixture, Some such tickling pleasure, but yet more delicate and tender, there is in some Spring-waters, which are for the eyes peculiar. Of this indication I gave notice in your Num. 20. pag. 359. And of the former indication of Healing springs, I gave you then a hint, but I know not how it was miscarryed.

4. The Springiness of wool, more than of Linnen, offers another visible and tangible Demonstration, how the stronger and quicker Springs of some water, more than of other, may

conduce more or less to healing; or may be more or less noxious, either inwardly taken or outwardly applyed. Upon this occasion I remember, the Lord Bacon somewhere, I think, in Hist. Vita & Mortis, takes notice, that anciently, to preserve Life in dangerous sicknesses, they used to remove Linnen, and to let the Sick I/e next to the woollen blankets. And I have received it well attested, that, in confinite mortis, some have had speedy relief from a flannen wastcoate made of the finest wool: They prefer the scarlet Dye; Ithink, my Lord names a Tincture of Saffron with Oyl of Almonds but I dare not trust my memory, having seen it but once, and that was, when it was first published. Such a woollen garment will drive a warm friction through a shirt of fine Linnen, which may answer in a gentle degree to Eriction, as it is one of the last Medical applications among the witty Chinois; and among other Nations, who adhere stiffy to their oldest, and best tryed Experiments. For the Sanative force of Friction I refer to your Num. 12, p. 26, where the Lord Bacon is recited to observe, that motion and warmth drawes forth into the parts new Juyce and Vigour (and these are the effects of wool, as they are of Friction) and that Frictions conduce much to Longevity. For another purpole I add an Instance of a much differing kind: I knew one who was shot in his heel with an arrow, which carryed with it a very small ragg of the woollen stocken: This ragg being not found be the Chirurgions, though they were then of the best note, the wound became for a year or two incurable; And the pain was so intolerable, that it was thought necessary to cut off his foot: At last by chance the ragg was found, and taken away, and then the cure was foon perfected. Woollen and Linnen may have their turns and seasons; the one as a Mechanical Operation for heating by a close and permanent friction, the other as a quiet Lenitive. Our tender skin can hardly bear the incessant Springiness of Wool; In a deep wound we can less endure it. But the Springs of some waters may be lined with a fofter Liquor than the hairy and curled filaments of wool: And hence we may perceive, how some waters may by their rolling particles be the greatest Probes, and yet the furest Searchers, Cleansers, and Healers. And hence also, on the contrary, we may see, how some waters, which cure UL- cers and Cancers by outward application, may be too bufily

corrofive and dangerous, if taken inwardly.

5. To approach closer to the main point, I should now descend to particulars, and take a more exact accompt of some singular Qualities in waters. Credible Authors, both Ancient and Modern, do make very strange reports of some Fountains and Lakes: And you have given us considerable Narratives of the Boysterous Spring in Westphalia, and of the Salt Springs in Germany, N. 7. Of the Springs in Paderborn, Basel, and in Alsatia, N. 8. And lately N. 54. of the Lake in Carniola: But I must not now pursue wonders; I ought here to apply to the point, with some diversions for general usefulness and property, for our own Country. Salt is a part of our food; it seasons all things and (if rightly ordered) assists Fertility. And Healing waters have somewhat of the obligingness of the divine miracles. And these two shall be my present business, Salt and Healing waters;

Parcarumque colos exoratura severas
Flumina: said the Gentile Poet Claudian.

6: I think I may note, that generally all the Springs in England, that are of very Ancient esteem for Healing, and were commonly call'd Holy-wells; such as St. Winefrids-well in Flint-shire (of which I never made tryal, but it carries the greatest Fame,) are all very pure, and yield no kind of sediment. In this, our hot Baths, and perhaps some few Mineral Springs, are

to be excepted. Imust yet be more particular.

7. I know a Spring, which the old People there call their Holy-well, on the fide of a low Hill in an Arable Field; which (befides the Healing Qualities) hath an extraordinary efficacy in clearing the skin from Sun-burnings and freckles; and addeth as much lustre, as agrees with the finer Art of concealing Art, and with modesty; And, after washing two or three mornings, it makes the skin as smooth as Glass. It passet through a vein of light Sand, if I may call it Sand; 'T is more like to some kind of blewish crisped Marle; 'tis so light and hollow, as if it were freshly working by some ferment; and 'tis so full of very small and thin Lamina, seeming to be Metalline, and bright like the purest Silver, that it encouraged me, about 12 years a-

ago, to fend some of it to the Lord Brereton, who was pleased to shew it to the Refiners, but they could not find it to be of any I was inquisitive to search it out, whether this water had the beautifying property from the Silver-like Lamina, or rather gave those veins of Earth that tincture and ferment. Only two things I can affirm; 1. I faw many Springs opened in the lower Grounds; and which seemed in all appearance to run from the same Head, and had also the very same bright ferment in their passages, where they were opened; but these had nothing of the same property for Healing, or for Beautifying, as I found by many tryals, more than daily for some years together. The common Fields adjoyning, had on their clods and Fallowes, fomewhat of the same glittering, much faded, but enough to dazle their Eyes that fixed on it in a bright Sunshining. not some Subterranean steam give the tincture, both to that vein of Earth, through which it passed more freely; and also more forcibly to that Spring by a greater refort, or by some advantage it got by the ascent of the Ground? (And we commonly find these healing Springs, either near the top, or on the side, or near the foot of some Hill, or running from the Hill:) And thus the steams reverberated and dashed down by the Motion of the Air, and by the weight of the Atmosphere, may beget the same Metalline tindure in the adjacent Fields. This was far enough from yielding sediment, and it had a pleasing smoothness; and was very inoffensive to the stomach; but it searched the Eyes somewhat fmartly, and cleared them speedily, and was generally commended for many healings, both inwardly, and outwardly; And was every way much more pleasing than tormenting. lagers, to whom the Spring belongs, being constantly healthful, and having other affairs than to beautify their skin, they take the less notice of it; but if it were in Hide-Park, or More-fields, it might be valued above the richest Canary.

8. Within two Miles of the same, is another of their old Holy-wells, on the brow of such another Hill in an Arable Field, within half a Mile of a losty Hill: This is very kind for the Eyes, and hath also done many cures upon putrid and sætid Ulcers, which were many years deplored for incurable, as I can affirm upon my own knowledg: I have seen it tryed often, and alwayes to good effect:

- effect; sometimes confiderably wonderful. This is the same Spring, which I meant in my Numb. 20. near the end of p.35 & where by some mistake of my hand (for it was then very bad) it is not distinguished from the other Springs there mentioned, or intended. Many drink of it, and much extol it for healings: And I never could heare of any that complained of hurt done by it. It was somewhat asperous, but pleasing in malignant vicers.
- 9. But much greater is the reputation of the Holy-Wells, as they call them, on the fide of Malvern Hills, which Hills divide Worcestire-shire from Hereford-shire. The higher Spring is peculiar for the Eyes; About a furlong lower is the Healing Spring (which last halfe line was omitted in the Print of your Numb. 20. p. 358, l. 22;) this cureth many Maladies and Cancers, if applyed before the strength of Nature be overthrown. I have read in the Monuments belonging to the Hospital at Ledburg, a Town in the way from Hereford to those Springs, that a Bishop, some Ages past, endowed that Hospital with revenues, for the entertainment of distressed Passengers that travayled to those Springs for relief. 'Tis above 50 years fince I heard a Panic story spread all over the City and Country of Worcester, the the Physicians had poysoned those Wells. I am perswaded. that the ground of this Fable was only thus: After more than ordinary Rain for one, two, or three years together (as it falls out fometimes in England) some common waters, by a part of the same, or some other channel, do drive to the same apperture, and drown the excellency of the healing Water. In this droughty year we find, that many excellent Springs have lost more than half, and some more than four parts of five of the waters which they did usually afford in the same seasons of other moyster years: and the remaining waters have the stronger efficacy. Of this expectation from long Droughts I adverts'd you N. 20. p. 358. And 'tis now remarkable, that these better Springs, which are on the fide of Hills, and on the higher ground, do maintain their current much better, than those which are in the lower Vale. 'Tis so in many places about us here; when the better Springs had lost 4 parts of their current, many of the lower Springs were quite dryed up. This advantage (by the Drought) emboldened

boldened my present adventure, there being now less peril that my Testimony can be refuted. But Foolish people go sweating up the Hill, and then drink the cold water; or apply it Cold to their heated Ulce's, and then what good can be expected? And (withal) these waters are kindest to the Poor and jejone people, who are accustomed to drinks almost as weak as water. So the Air in Bermudas, and near Florida in Virginia, preserves hem that are addicted to a simple and Natural Diet, without sickness; and frequently to the Age of an hundred years; whilst the Wealthy (as perhaps more habitually accustomed to Brandy, or some high and plentiful Diet) have neither firm health, nor long Life. Thus Mr. Stafford in your N. 40, p. 794: And the like is reported of Brasil by Pilo and Bontius. No Salubrity of Air, or Medicine of the purest water, can recover health or secure long life to them that are excessively luxurious. All these waters are purely limpid, free from all sediment, very terfive and fearching, and most effectual at the Spring-head.

10. I omit many other Healing waters, that I may give you a brief touch of such Mineral, Saline, and Medical waters, as I have found, or heard of, in our Neighbourhood; Namely about Yeavil in Somersetshire. I lately hear of two more Mettalline Springs in Dorcetshire, besides that of Farrington, analy ed by Dr H. in your N. 56. Perhaps their vertues and their Fame are encreased by this drought. The Saline Spring there mentioned by Dr H. to be at East-Chenock, is about 3. miles hence Westward. In a very Droughty Summer I found it strong Brine. But there is a Salt-Spring of far greater worth at Everich, about 12 miles hence towards Shepton-Mallet: of this I will owe you a concernment. The Pool, which yieldeth the Vitriolate Salt, which I fent you, is in Sock-Denis, 3 or 4 Miles hence westward. 'Tis not a great Pool, not above 10. foot square. Whether the Salt proceeded from a Spring or from a vein of vitriolate Earth, I cannot yet determine; the Pool having not been drayned fince I extracted the Salt, though I expecedit, when I gave you the notice, recorded in your N.18. p. 323. The Mad and Earth about it is as blew as any Roman Vittiol. In along lasting and hard Frost, I sent for a Quart-Bottie of the water, and found it very thick, and black ish, and it sen-

ted intolerably firong, not much unlike Gunpowder newly inflamed. Close adjoyning unto this Town of Yeavil, were two Springs kind for the Eyes; the one in a Pasture, the other within a Bolt-shoot in a Field. The Old People prefer that in the Pasture before the other, as they have it from Elder Tradition, and their pretended experience: And at this time, the more commended Spring, which is in the Palture, and on the fide of a rifing Ground runs freely; the other is newly dryed up. 'Tis not every, flight Gravelling of the Eyes that fufficiently Indicates an extraordinary Eye-water : Many good Springs have a degree of Terlivenels; but that which is extraordinary, hath a Friction Smewhat permanent; and is in the end gratifying. We have also, close by our Town , & Spring called Rufty well. Where it breaks out, and where it first falls, it tingeth the itones of the Colour of Rully-Iron, and it hath the smell strongly, (and seemeth to tail) of Rufty-Iron. Yet 'tisas clear as any water; and I tryed it for a Moneth or more in my study, putting Cornith-flate and Pobles to it in a Glass; and it gave no tincture at all to the stones, nor any sediment; So that I suspect the tincture to proceed from some Effluvium mingled with the water at first opening: But I confide not much in the fingle and thort tiyal I made. Some Old men boalt of many great cures it hath done. I dare say nothing for it, or against it : Neither do I know, whether I should call it Metalline, or Anti-Metalline, fince Rust is the Putresaction and destruction of Iron. Our Fore-Fathers, and very Old men , scarce heard of the name of the Scorbute; Tis a seasonable providence, if, since that disease is become so Epidemical, the remedy should be to Obvious and Vulgar, as is pretended to be, by such ferrugineous. Springs. This breaks out near the foot of a lofty hill, which continues, with some leffer falls, about ? miles westward to Hamden Quarre, where they dig a hard free stone of a dark yellow colour. At West Canel, five miles hence Northward, is a very fætid black Spring. which tingeth Silver black immediately; and I am told, that about 10 miles hence, more Eastward, near Wine-Caunton, not many years agoe, they digged for Cole, where the Colemen were endangered by a fixed damp; And when they affayed the Cole in the fire. is proved very noylom, fo that they forlook those Cole mines, Perhaps it may be ferviceable to them that know how to make an honeft use of Arsenic and other poysons.

11. Here again, with some timorousuels, I propose the Inquiry, whether Subterraneous steames might not give the dark yello w tincture to the Hamden Quarre, and the property to this water of Rufty well for the fulyous coloration: It cannot be expected a that Materials, differing somuch as stones seem to differ from water, when perfectly petrifyed, thould retain the very same Colour, though both received it from the very same steames. The Same I proposel for the blackness and foetidness of the Spring in West-Cameland of the Cole near Wine Caunton; that both may receive the same tincture, and odour from Subterranean steames, which may perhaps be of so many kinds, and mixtures, as to cause much of the great diversities of Metals, Minerals, Earths, and Soyles; and of some minute differences in the Colour, Tast, Odour, and drefs of Vegetables, Yea and of the Furres, Hayres, Wool, and other little varietyes in Animals (particularly in sheep) in several places; more immediately in Vegetables, and of Animals by remoter circumstances, I will not except the Ethiopick hue, and humors of men in distant Climates; though Vegerables and Animals do (for the most part) retain their seminal properties in distant Climates for many generations: and perhaps from these terrestrial steams the Vegetables do imperceptibly draw some of their Salts, and much of their nutriment. These things I dare not affirm, nor say much more, till I see sit time and place to offer my ressons and other Observations.

12. For these Overtures I will at present instance no more than thus. The Illustrious Mr Boyle hath, methinks, evinced, that the most solid Bodyes we know, have their Atmospheres of steams and Exhalations: And whatever the Materials be, which are under our Terrene crust towards the Centre, whether sluid, slaming, or gross Substances, they must needs hold an Intercourse of transpirations, and munually operate by their percental agitations, and whirlings about: And by the Vulcano's, frequent in Japan, and to be seen in several other places, and by the heats in deepest Mines, and by many other ma-

nifest Arguments, it appears, that there are alwayes strong steams ascending towards the surface of the Earth: And, if their Generative power, and other esticacyes were duely examined, and protecuted to the best purposes, we might perhaps in time find them to have a greater vertue, and more useful for us, than many of the Constellations and Celestial

Influences, which make no small noyse amongst Astrologers.

Of these, we are sure, and they are in many respects manageable; But of those, which are fo far above our reach learned men are to this day, after ferious Disquistions, at a demur, whether they concern us at all, or not. We do not compare with the Solar Influence, which doth almost all that we see done in Nature; And more perhaps than we have hitherto confidered, as hereafter I may propose to you. Next to this, nothing is more frequent amonest the Ancient, than Observations upon the Lunar Influences; Many more, than are sufficiently confirmed by later phansied experience. 'Tis phancied that shee is Queen of the waterish, Cooling, and Feminine Regions: But tis certain, that the Sun is the Masculine Lord, not only over the fiery and dry Regions, but also over the Moon and all her D mi-And yet its somewhat strange, that the strongest Solar Beames should be so totally drencht and quencht in the disk of the Moonsthat by all our contrivances of the nicest Incrmometers, and best burning Instruments, we can have no perception of any degree of Hear; not in the brightest and fullest Rayes of the Sun, reflected to us by the Moon, though we can hardly I nagine Light it self to be any other thing than the purest Flames of Fire. Hence I with a severe attention on both hands both to Terrestrial Steames, and to Celestial Influences, (as the manner now is) impartially, without forestalment, or prejudice. I have in my aim, though not in my present power some expedients, which under one may be accomodable to both Intentions. For these two Considerations, the one in the highest esteem among the Ancient; and the other seeming most Improveable by modern Industry, I have been constrained to be so tedious, as now I have been.

13. But it is full time to tum up here, what hath been attempted in this Discourse; and to take up the result. We have found some Mineral Springs, and have not denyed, that they may in their Channels have gathered up Metalline Salts; sometimes perhaps, where no Metals are yet formed; yea, and where they are never like to be formed, for want of apposite materials. Also, we have not seen cause to deny, that those Mineral Springs may have acquired, as the lately mantioned Springs have done, some other healing properties, besides those that are from Mineral Vertue: And thence we may allow, that some of those siner and unknown Spirits, may, by rest or other accident, soon divide from the water, or dye there, or expire through any sealed Vessels. This we must grant, that as the particles of all Liquers do more or less sutably agree with the Orifices of the Tongue, and Pallate, and thence beget the delight, or dislike in the relish; so the like effect all Liquers have upon our raw sless and deep wounds: And some Ulcers have need of a more active Friction to clear them, and to extirpate their very roots, and soundations.

Now for the words — whatever these spirits be &c. N. 51. p.1039 they may have more aspects, than are taken notice of in the sagacious reslexions; and the wariness of such expressions may well be excused in an Age, that is too apt to entertain malicious suspicions against Physicians, and Philosophers; But tis good to be silent, or very modest in matters which we can neither affirm nor deny upon clear ground; especially when the full debatement cannot be confined within the Sphere of Physiology: Therefore Manum de Tabula. What is hitherto but timorously intimated, may perhaps be more throughly

prosecuted in some other Essays, if this tediousness be forgiven.

Some