Savart's Trapezoid Violin **or** ***Box-****fiddle* was one of the most celebrated and satisfactory experiments ever tried on the construction of the instrument. He was led to its production by a series of carefully conducted experiments, which went to prove

(1) that a plane surface vibrates much more readily than an arched or curved one ;
(2) that consequently there are points on the surface of a violin of the ordinary form where the vibrations are reduced to a minimum, or cease altogether ;
(3) that the bouts, corner blocks, and *ff* holes are the principal causes and localities of this reduced vibration.

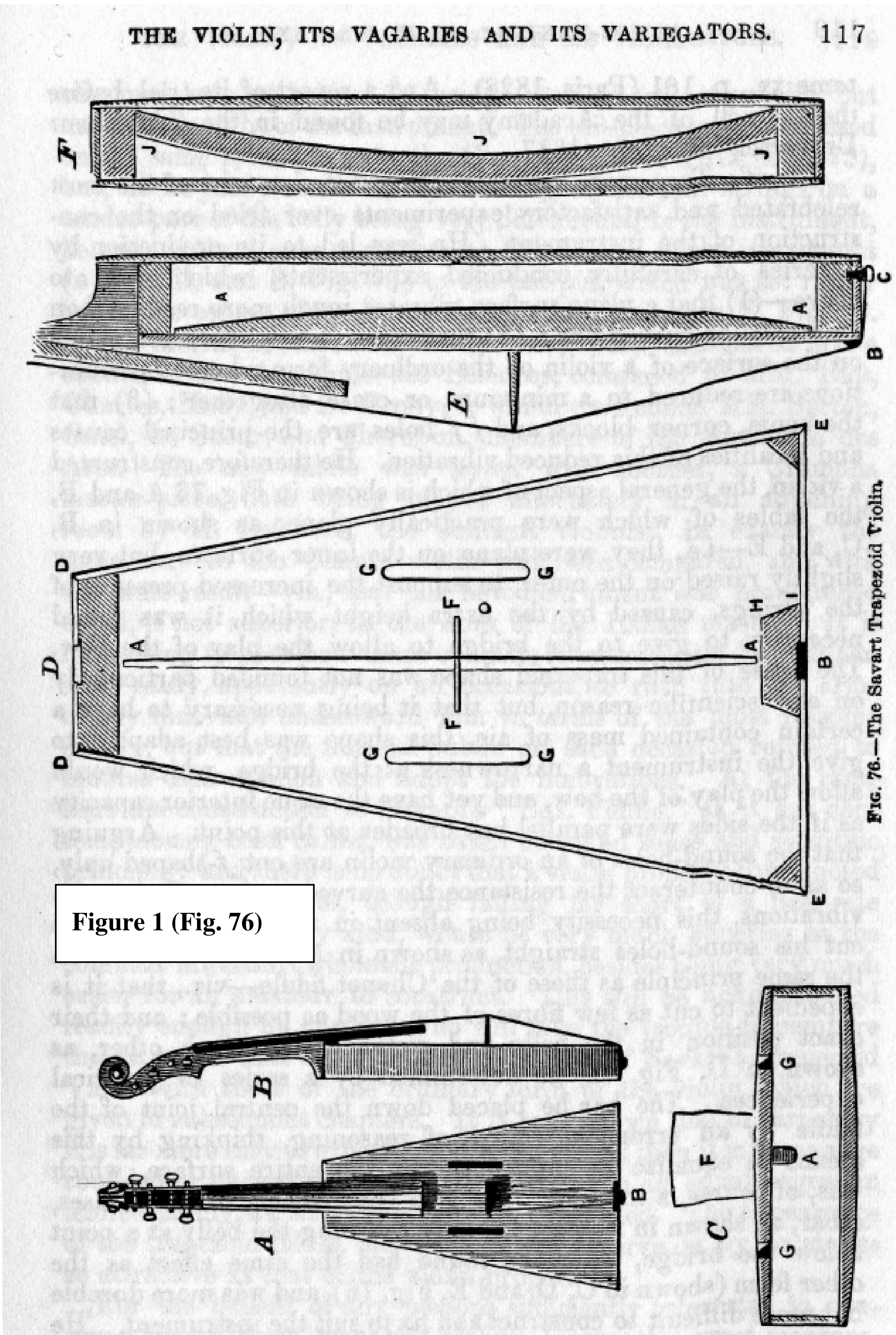

Figure 1 (Fig. 76)

He therefore constructed a violin, the general aspect of which is shown in **Fig. 76 A and B** [see left], the tables of which were practically plane, as shown in B, C, and E—*i.e.,* they were plane on the inner "surfaces, but very slightly raised on the outer, to support the increased pressure of the strings, caused by the extra height which it was found necessary to give to the bridge to allow the play of the bow.

The cause of this trapezoid shape was not founded particularly on any scientific reason, but that it being necessary to have a certain contained mass of air, this shape was best adapted to give the instrument a narrowness at the bridge, which would allow the play of the bow, and yet have the same interior capacity as if the sides were parallel but broader at this point. Arguing that the sound-holes of an ordinary violin are cut *f*-shaped only, so as to counteract the resistance the curved surface offers to the vibrations, this necessity being absent in the Savart fiddle, he cut his sound-holes straight, as shown in A and D, Fig. 76, on the same principle as those of the Chanot fiddle—viz., that it is expedient to cut as few fibres of the wood as possible ; and their exact position in the belly and distance from each other, as shown in D, Fig. 76, he determined by a series of practical experiences.
The bar he placed down the central joint of the fiddle by an erroneous course of reasoning, thinking by this means to equalize its influence over the entire surface, which was, of course, a mistake. He also constructed, in some cases, a

bar, as shown in F, Fig. 76, only touching the belly at a point below the bridge, which he found had the same effect as the other form (shown in C, *D,* and E, Fig. 76), and was more durable but more difficult to construct and fix to suit the instrument. He gave to his sides (which were made of the same wood as the back) - a thickness of $^{1}/_{12}$ in., and, considering that the absence of the curves would support this substance, and again, with this thickness, he used no side-linings. His sound-post, it will be observed, was set behind the bridge, as in an ordinary violin, but more to the right of the instrument. The tail-piece was suppressed on the same principle as in the Chanot fiddle of 1819 (Fig. 75), but, as he justly remarks, the full tug of the four strings on a tender part of the belly being very detrimental to the instrument, he carried them over a nut set at the bottom of the instrument (B in A, D, and E, Fig. 76) to the tail-pin, which was set rather below the centre of the lower side, as shown at c, in E, Fig. 76.

pThe merits of the new fiddle were duly considered by a council of the Académie des Sciences, composed of MM. Biot, Charles, Hatiy, and De Prony, to whom were added MM. Berton, Catel, Le Sueur, and Cherubim, members of the Acadamie des Arts. The new fiddle was tested with another, a Cremona master-piece, both being played alternately in an adjoining room by M. Lefebvre, the eminent violinist, in exactly the same way as the Chanot violin had been compared, and with the same result—viz., that the new instrument was pronounced equal, if not superior, to the work of the Italian master. It is interesting to note how these councils of enthusiastic Frenchmen were ready, apparently on all occasions, to rush into the arms of any innovator and reward him in terms of the most fulsome eulogy, but that the musical public on each occasion refused to indorse their opinion and adopt the innovations. Ac the same time the construction of Savart's "Box Fiddle", as it has contemptuously been called, was based on sound sense and scientific principle; and there is no doubt that a violin properly constructed on the Savart model, though falling far short of a first-rate fiddle of the ordinary kind, would be very much superior to the common Mirecourt wholesale production, besides being very much easier for an amateur to construct. This will be acknowledged readily enough by any one who will take the trouble to compare the diagrams that are supplied in Fig. 76 of Savart's Trapezoid Violin with those of the ordinary form of the violin which are given in subsequent chapters. It is well known that in carpentry it is far easier to execute rectangular work than it is to manage rounded or curved work, and this pertains in an equal degree in fiddle-making, as far as amateurs are concerned. The appearance of the trapezoid fiddle, our readers will observe, is by no means so attractive as that of the violin proper. For the benefit of any persons sufficiently interested to construct one of these trapezoid violins, I give the exact measurements[1] of its various parts, which are as follows:—

	French inches and lignes.		English inches.
Length of the body (D, E, and F, Fig. 76)	13· 0	=	13 13/20
Breadth of upper end (D D in D, Fig. 76)	3· 1½	=	3 4/16
Breadth of lower end (E E in D, Fig. 76)	8· 4	=	8¾
Height of bridge (F in C, Fig. 76)	1· 6	=	1⅝
Breadth of bridge (F in C, Fig. 76)	1· 6	=	1⅝
Length of sound holes (G G in D, Fig. 76)	2· 7	=	2¾
Breadth of sound holes	0· 3	=	¼
Diameter of back and belly at edges	0· 1	=	1/12
Diameter of back in centre	0· 2¼	=	1/6
Diameter of belly in centre	0· 2¾	=	¼
Height of blocks and sides	0·15¼	=	1 7/20
Diameter of sides	0· 1	=	1/12
Diameter of blocks	0· 8	=	11/24
Length of bass bar (A A in D and E, Fig. 76)	11· 2	=	11 7/10
Breadth of bass bar at ends	0· 2	=	3/16
Breadth of bass bar in centre (A in C, D, and E, Fig. 76)	0· 3	=	11/40
Breadth of lower block, narrow side (H in D, Fig. 76)	1· 6	=	1⅝
Breadth of lower block, broad side (I in D, Fig. 76)	2· 0	=	2⅛
From nut to top of bridge	12· 2	=	12 31/40
Depth of bass bar at ends (A A in D and E, Fig. 76)	0· 1	=	1/12
Depth of bass bar in centre (A in C, Fig. 76)	0· 6	=	17/32
Depth of bent bar throughout (J J J in F, Fig. 76).	0· 6	=	17/32

[1] For full description of this instrument and report thereon, see IT. Savart' “Memoire sur la Construction des Instruments a cordes et a archet" (Paris. 1819), and an excellent *resume* of this " Memoire" appears at p. 246 of No. 400 if the *Penny Magazine* for June 30th, 1838, entitled, " How to make a Cheap Violin". The measurements in French inches are the more exact; the sizes in English represent their nearest English equivalents without considering high fractional divisions.

These, therefore, are the principal alterations which have been attempted, a careful study of which only determines the would-be fiddle maker, *stare super vias antiques* [lit. “To stand in the track of my ancestors” (from the Vulgate)].

Patent Repairs have been the ruin of many splendid fiddles in former years, though nowadays people are more careful of trusting valuable instruments to the first quack who invents some patent operation which will increase the value of any fiddle, according to his own account, tenfold. One Maupertuis, in an article, " Sur la Forme des Instruments de Musique," in the *Memoires de l’Académie Royale des Sciences,* 1724, p. 215, declared that the tone of a fiddle is to be improved by breaking it to pieces and having it pieced together again by a good workman. He argues thus:—that the violin ought to be made up of fibres of different lengths, so as to have some of a size to suit every note on the compass of a fiddle. An idea complimentary to the musical powers of glue, but deadly in practice.

Other fiddle-dealers and owners are always tinkering up their instruments by gluing in slabs of wood here, gouging out layers there, shortening or lengthening the bass bar, and shifting the bridge and sound-post about, till the violin, as it were, in very indignation at such treatment, relapses into a sullen or confused silence, until properly regulated by an artist of the trade. It is, as has been already pointed out, almost fatal to destroy, by thinning the wood in old violins, the provision the conscientious old makers laid up for time to expend its strength upon. It is almost equally so to patch up a fiddle, which has been subjected to this destruction, with new wood ; it stands to reason that the vibrations must be very seriously impaired by a stratum of glue and a slab of new wood, whose fibres do not coincide with the rest of the instrument. The acme of short-sighted and destructive repair is reached in a case which occurred, according to Mr. Davidson, at the beginning of this century.

He mentions the case of a Scotch amateur, who being possessed of a splendid Stradivari violin of the large pattern, had it *cut down* smaller, *mirabile dictu,* [lit. wonderful to relate] at the suggestion of the celebrated J. P. Salomon. The fiddle subsequently sold for £56.

Letters patent were granted to J. P. Grosjean, in 1837 (No. 7450), for coating the surfaces of violins with glue and powdered glass, to improve their tone, a practice about as intelligent as that of one Weickert, of Halle, who, at the beginning of the century, imagining that the loss of the resinous particles from the wood of violins by reason of their age, (which is the great advantage of age I) was detrimental to their quality, made a practice of *soaking* violins in a mixture of rosin dissolved in pine oil, to close the pores, an operation which, of course, caused complete and irremediable damage. Similar experiments have been tried to close the pores of the wood, (which it is most important to have open,) with white of egg and other such matters, all of which operations may be classed with the rest of the “patent repairs " I have here enumerated, and on all of which comment is needless. But they serve as warnings to the owners of valuable instruments, not to entrust their fiddles to the hands of musical quacks. If you think your violin wants anything doing to it, go to one of the heads of the profession for advice; a respectable dealer or repairer will never do anything superfluous to your fiddle for the sake of the job; and the love of his art will be subservient to his interest in his profession. I cannot do better than conclude this chapter with the highly epigrammatic remark made by Mr. J. Pearce in his “Violins and Violin Makers," " Beware of ignorance which assumes the mask of knowledge, and of designing roguery which apes the appearance of innocence."